Palestinian Observations of the Comet of 1577

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The comet of 1577, discovered and widely observed in the first week of November, was one of the intrinsically brightest comets of the past 500 years (*e.g.*, Kronk 1999). It was also important in the history of astronomy (see, *e.g.*, Hellman 1944; Christianson 1979; Schechner Genuth 1997; Nouhuys 1998; Granada 2006). This note calls attention to observations from Safed, Palestine (long. 35o30' east, lat. +32o58'), by Chaim Vital (b. 1542 October 11, d. 1620 April 24). In *The Book of Visions* (translated by Faierstein 1999), a collection of Vital's (and others') dreams and omens, he relates the following:

"Rosh Hodesh, Kislev, 5338, after sunset,[1] *a large star with a long tail, pointing upward, was seen in the southwestern part of the sky. Part of the tail was also pointing eastward. It lingered there for three hours. Then it sank in the west behind the hills of Safed. This continued for more than fifty nights."*

The date, the first of Kislev in the Jewish year 5338, converts to the Julian date 1577 November 11. Since the Jewish day begins at sundown, the observation was made on the evening of November 10, consistent with European observations of the comet in the southwestern part of the sky. Vital's description of a double tail — or, more accurately, of a part of the tail pointing in a different direction — was well noted by Cornelius Gemma (1578), who also published a sketch of the comet clearly showing a long, curving dust tail and a shorter, straight gas tail.[2] The duration of visibility of the comet by Vital — some fifty nights - is supported by the European observations, in which the comet was seen from November into January 1578 before it faded from naked-eye visibility.

Vital's description of the comet is straightforward — in contrast to the remainder of *The Book of Visions*, which consists of dreams and omens, and Vital's interpretation of them. It might be expected that he would also have provided a comment on the significance of the comet as a portent. Faierstein (1999, p. 8) notes that Vital had intended for some time to move from Safed to Jerusalem, and suggests that the comet, as a portent of great change, was the omen that precipitated his move. Certainly he left for Jerusalem two weeks after his view of the comet. Another possibility for this omission of interpretation is that comets usually, though not always, were represented as a harbinger of evil events. Such interpretations can be found throughout the descriptions cited by Hellman (1944).

More pertinent to Vital, perhaps, was the interpretation of comets in Jewish tradition. Josephus noted both a sword and a comet hanging over Jerusalem for almost a year, as a portent of the destruction of Jerusalem.[3] Schechner Genuth (1997, p. 32) also discusses other Jewish texts that allow for descriptions or inferences of apparitions as comets. In view of this general perception of comets as portending various evils, including destruction, it is quite possible that Vital was afraid to acknowledge the possible significance of the comet, and felt it more comfortable to simply note its appearance.

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[1] The printed version here says "before sunset". In a personal communication with the translator, on rechecking this point, he states that this should be "after sunset", and that the correction will appear in any subsequent editions.

[2] One of Gemma's depictions (his Fig. 2) of this two-tailed comet appears on the cover (p. 121) of this issue of the *ICQ*; the hand-coloring was not contemporary (and so has no bearing on whether Gemma saw coloration in the comet). Another, more-detailed version was reproduced in the January 2001 issue of the *ICQ* (**23**, 4). — *Ed.*

[3] *The Wars of the Jews*, Book 6, Ch. 5, section 3; *e.g.*, translation by Whiston (1736).

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Whiston, W. (1736). *The Works of Josephus*; specifically, *e.g.*, p. 742 of the 1987 republication (Peabody, MA, U.S.A.: Hendrickson Publishers).

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Tabulation of Comet Observations

Regarding the descriptive information that has appeared in every issue of the *ICQ* for the last couple of decades, complementing the tabulated data, we are planning to remove information that is generally uninteresting to read to a database and make it available at the *ICQ* website (and by request) instead of printing it. Until this new format is fully developed, we begin in this issue with removing (a) the names of amateur software packages used to extract comparison-star magnitudes (*i.e.*, non-primary sources that are flagged by the special-notes letter '`x`' in the tabulated data), and (b) routine comparison-star magnitudes and colors away from print and into plain-ASCII text data; these types of data will be both archived in a standard manner and posted at the *ICQ* website as soon as the tabulated data are posted; however, comparison-star data for very red stars (B–$V > +1.0$) will continue to be published in print.

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 6P/d'Arrest* ⟹ 2008 July 26.98: nearby field stars checked via Digitized Sky Survey; motion checked during a 60-min period; mountain location, very clear sky [GON05].

⋄ *Comet 7P/Pons-Winnecke* ⟹ 2008 May 16.9: from aperture photometry by Gustavo Muler (Lanzarote, Spain), Cesar Piret (Lanzarote, Spain), and Jose Maria Ruiz (Malaga, Spain), mean R-band magnitudes in 10″, 20″, and 30″ apertures were 18.4, 18.2, and 17.2, respectively [report communicated by Mark Kidger (European Space Agency, European Space Astronomy Centre, on behalf of the "Observadores cometas" group]. May 17.9: presumably using a 30-cm T, comet was of magnitude $R = 18.5$ in a 10″ aperture, 18.3 in a 20″ aperture, and 17.9 in a 30″ aperture (each mag being a mean of two measures) [Gustavo Muler (Lanzarote, Spain), via Mark Kidger]. May 23.9: presumably using a 30-cm T, comet was of magnitude $R = 16.0$ in a 10″ aperture, 15.4 in a 20″ aperture, and 15.2 in a 30″ aperture (each mag being a mean of three measures); this appears to be a significant outburst of at least 2.5 mag in six days (see notes for May 17.9, above); outburst had already caused the comet's coma to fill a 60″-diameter aperture and was decaying at this stage [Gustavo Muler (Lanzarote, Spain), via M. Kidger]. May 24.0: presumably using a 20-cm $f/6.3$ T in challenging obs. conditions (determined to be poorer-quality data than those of May 23.9, above), comet was of mag $R = 15.9$ in a 10″ aperture, 15.1 in a 20″ aperture, and 14.8 in a 30″ aperture (each mag being a mean of six measures) [Cesar Piret (Lanzarote, Spain), via M. Kidger, on behalf of the "Observadores cometas" group]. May 24.9: from aperture photometry by Gustavo Muler (Lanzarote, Spain), Cesar Piret (Lanzarote, Spain), and Jose Maria Ruiz (Malaga, Spain), mean R-band magnitudes in 10″, 20″, and 30″ apertures were 16.6, 15.8, and 15.4, respectively; "images show a rapidly expanding coma that is now more extended than a $1/R$ profile, w/ a faint, straight tail visible to the SE" [report comm. by Mark Kidger, on behalf of the "Observadores cometas" group]. May 25.9: from aperture photometry by Gustavo Muler (Lanzarote, Spain), Cesar Piret (Lanzarote, Spain), and Jose Maria Ruiz (Malaga, Spain), mean R-band magnitudes in 10″, 20″, and 30″ apertures were 16.9, 15.8, and 15.4, respectively [report comm. by M. Kidger]. June 23.91: alt. 19° [PAR03].

⋄ *Comet 15P/Finlay* ⟹ 2008 June 14.80: enhanced through Swan-band filter [SEA]. July 8.11 and 15.13: mountain location, very clear sky [GON05]. July 8.11: alt. 9° [GON05]. July 15.13: alt. 12° [GON05].

⋄ *Comet 17P/Holmes* ⟹ 2008 Feb. 8.77: still visible to the naked eye, but very difficult, as a faint glow just above the sky background [BOU]. Feb. 9.18: CCD images w/ 62-cm $f/5.1$ L yield mag $R = 15.6$–15.8 (ref: USNO-A2.0 catalogue) in a 10″ circular aperture centered on nuclear cond.; a 200-sec exp. shows a 35″ tail in p.a. 86°; a 600-sec exp. w/ a Canon 20Da camera on a Takahashi Epsilon-180 telescope (aperture 180 mm; f.l. 500 mm; hyberbolic flat-field astrograph) shows a coma of size 1°.6 × 1°.3 elongated toward p.a. 330° [James McGaha, Tucson, AZ, U.S.A.]. Feb. 10.97: comet still faintly visible to naked eye as a large, ill-defined glow, possibly as large as 2° [BOU]. Mar. 5.00: also seen w/ naked eye [DIJ]. Mar. 7.81: large elliptical structureless cloud, very difficult to est. [COM]. Mar. 7.84: comet seen w/ averted vision as a very faint, large, diffuse glow [BOU].

⋄ *Comet 26P/Grigg-Skjellerup* ⟹ 2008 May 5.03: difficult obs. (comet involved w/ two stars of 13th and 14th mag) [BOU]. May 8.02: difficult object — just a faint glow in rich star field [BOU].

⋄ *Comet 29P/Schwassmann-Wachmann* ⟹ 2008 Jan. 14.78: in outburst; bright, round, inner coma w/ dia. 30″; faint outer coma w/ dia. > 1′.5 [BRE03]. Feb. 28.86: difficult obs.; comet appears as a very diffuse glow in rather crowded star field [BOU].