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COMET D/1819 W1 (BLANPAIN) AND 2003 WY_{25}

Already more than a year ago, S. Foglia, Milan, Italy, reported a suggestion by M. Micheli that backward integration of the orbit of 2003 WY_{25} given on *MPEC* 2003-Y78 (Catalina Sky Survey discovery announcement on *MPEC* 2003-W41) suggested possible identity — though showing discordances extending up to 17° deg in ω — with the lost comet D/1819 W1 = 1819 IV, which was itself tentatively shown by H. B. Ridley (1957, *BAA Circ.* No. 382) to be related to the one-time Phoenicid meteor shower of 1956 Dec. 5. P. Jenniskens, NASA Ames Research Center, has now independently suggested the 1819–2003 identity with an ω discordance of $0^\circ.2$. Computations by B. G. Marsden, Harvard-Smithsonian Center for Astrophysics, that included reexamination of the 1819–1820 observations confirm a best-fit gravitational linkage with ω discordance $0^\circ.2$. He also showed that the discordances in all three angular elements can be reduced to $0^\circ.01$ by starting from the following orbital elements for 2003 WY_{25} (which had $H = 21.1$ and was consistently of stellar appearance despite a passage only 0.025 AU from the earth on 2003 Dec. 12):

$$
\begin{array}{lll}
 & \text{Epoch} = \text{2003 Dec. 27.0 TT} & \\
T = \text{2003 Dec. 11.5776 TT} & \omega = 9^\circ.0695 & \\
e = 0.675583 & \Omega = 69.3827 & \text{2000.0} \\
q = 1.000069 \text{ AU} & i = 5.9292 & \\
a = 3.082662 \text{ AU} & n^\circ = 0.1821022 & P = 5.412 \text{ years}
\end{array}
$$

Although backward integration of this orbit gives T too late in 1819, adjustment by $\Delta T = -4.28$ days and modification of the angular elements within the range indicated above yield the result

$$
\begin{array}{lll}
 & \text{Epoch} = \text{1819 Nov. 22.0 TT} & \\
T = \text{1819 Nov. 20.27 TT} & \omega = 349^\circ.65 & \\
e = 0.7028 & \Omega = 80.02 & \text{2000.0} \\
q = 0.8893 \text{ AU} & i = 9.23 & \\
a = 2.9928 \text{ AU} & n^\circ = 0.19036 & P = 5.18 \text{ years}
\end{array}
$$

which satisfactorily represents 10 of the 13 observations made at Paris, Bologna, and Milan during 1819 Dec. 14–1820 Jan. 15 within 90″. The integrated orbital elements at the time of the Phoenicid shower are T = 1956 Oct. 25.32 TT, $\omega = 0^\circ.14$, $\Omega = 74^\circ.37$, $i = 9^\circ.60$ (equinox 2000.0), $q = 0.9914$ AU, $e = 0.6767$, $a = 3.0669$ AU, $P = 5.37$ years.

2005 February 13 *Daniel W. E. Green*