Outburst of Comet Halley at 14.3 AU . . . . . K. J. Meech

Observations of comet Halley on 1991 February 15 showed that the comet had undergone a tremendous outburst in brightness sometime before the past month. At the time of the observation, the comet was at a heliocentric distance, *R* of 14.3 AU, and the expected nuclear magnitude was near 25.4 in the m_R bandpass. The comet was observed to have an extensive dust coma, extending at least 300,000 km in diameter towards a position angle of 135 degrees. The anti-solar direction was at a position angle of 27 degrees. The brightness of the comet within a 5 arcsec aperture was approximately 20.2, and the total brightness of the nucleus and coma is estimated near 17. An effective exposure of 4.75 hours shows that the coma is well defined with a brightness enhancement at the outer edge. The last observations of the comet were obtained during 1990 April with the Cerro Tololo 4m telescope when the comet was at a distance, *R* of 12.75 AU. At that time the comet had reached its expected nuclear brightness of 24.9 and there was no evidence of activity. This new episode of activity in the comet is most likely caused by sublimation of a more volatile species than water, for example CO or CO_2, which had built up sufficient pressure beneath the dust mantle to initiate an outburst. Continued monitoring of the comet is planned to observe the evolution of the dust coma. Measurements of the expansion velocity may suggest which volatile was responsible for the activity.