Comment on 'Carbon Monoxide in Jupiter after Comet S1.-9' by NoU, K. S., Gilmore, D., Knacke, R. F., Womak, M., Griffith, C. A., and G. Orton (*Icarus* 126, 324-335, 1997).

in this paper Nell et al. present new evidence that the bulk of the carbon monoxide in Jupiter's atmosphere is concentrated in the Jovian stratosphere. They rightly note that this has significant implications for its origins and for the chemistry and dynamics of Jupiter's atmosphere. They express surprise that this new study contradicts their earlier work (Nell, K. S., Knacke, R. F., Geballe, '1'. R., and A.T. Tokanaga, The Origin and Vertical Distribution of Carbon Monoxide in Jupiter, Astrophys. J., 324, 1210-1218, 1988) in which they found that the bulk of the CO was in the lower atmosphere.

Regrettably, however, they do not acknowledge or reference an even earlier paper by ourselves (Bern, R., and Taylor, F.W., The Abundance of Carbon Monoxide in Jupiter. *Astrophys. J.,* **221,** 1100-1109, 1978) in which we showed from our own data that the rotational temperature of the CO on Jupiter can only be consistent with a profile concentrated in the stratosphere. This omission is all the more remarkable considering that their 1988 paper consisted primarily of a refutation of our finding.

CO is a non-equilibrium species which requires a sophisticated argument to explain why it is present at all in significant quantities on Jupiter. The original detection in the stratosphere of Jupiter provoked much theoretical discussion, for example in the papers by Prather *et al. (1978)* and Strobel and Yung (1979). These considered the influx of oxyg,en-bearing material and oxygen ions sputtered off the icy satellites as possible sources of the CO in the upper atmosphere of Jupiter. Following the rebuttal in 1988, which seems to have been widely accepted and unquestioned, most texts (e.g. Owen and Gautier, 1989) have stated that the carbon monoxide on Jupiter is due to reactions between methane and water vapor in the interior of Jupiter. Now, the models which propose an external oxygen source appear to be better supported at a time when there is renewed discussion of possible mechanisms for de] ivering water, not just to Jupiter, but to other atmospheres including those of Titan and the Earth.

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