

REPLY TO 'ON THE HYDROMAGNETIC MODELS OF THE COMET TAILS'

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In Mendis (1978) I attempted to explore the consequences of the pressure balance in the tail as given by Equation (3) of the above paper (Ershkovich, 1979). Had it not been for the careless algebraic mistake pointed out by Ershkovich, I would have been led to the conclusion that the plasma temperature near the tail axis was negative! rather than the value of 2000 K which was obtained. I regret this error and also the extent to which this exercise created the impression that I accepted the use of Equation (3). I have argued against its use as well as the idealization of the cometary plasma tail as a uniform plasma cylinder separated from the solar wind by a well-defined discontinuity surface elsewhere (Mendis, 1977) and need not be reiterated here. All that needs to be said is that observations of cometary plasma tails show them essentially as bundles of filaments or rays rapidly folding onto the tail axis like the spokes of a folding fan, and this is the basis of our phenomenological model which is used to evaluate the tail magnetic field (Ip and Mendis, 1976; Mendis, 1977, 1978). We have already accepted the fact that the earlier value of 1000γ near the tail axis obtained by Ip and Mendis (1976) was too large (Mendis, 1977) and that it reduces to about 100γ when the appropriate shielding of the convective electric field of the solar wind is taken into consideration (Mendis, 1977).

With regard to the values of $b/B \approx 1.1-1.4$ used by me (Mendis, 1978) for the large amplitude Alfvén waves, they refer to assumed 'initial' values near the cometary head. According to our model, the final value of $b/B \approx 1.0$, and this is indeed what was observed by Hyder *et al.* (1974) far down the tail of comet Kohoutek (1973f).

References

- Ershkovich, A. I.: 1979, *The Moon and the Planets* 21, 193. (This issue.)
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