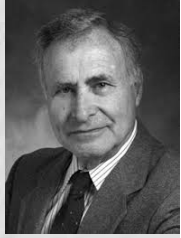

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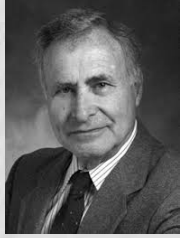

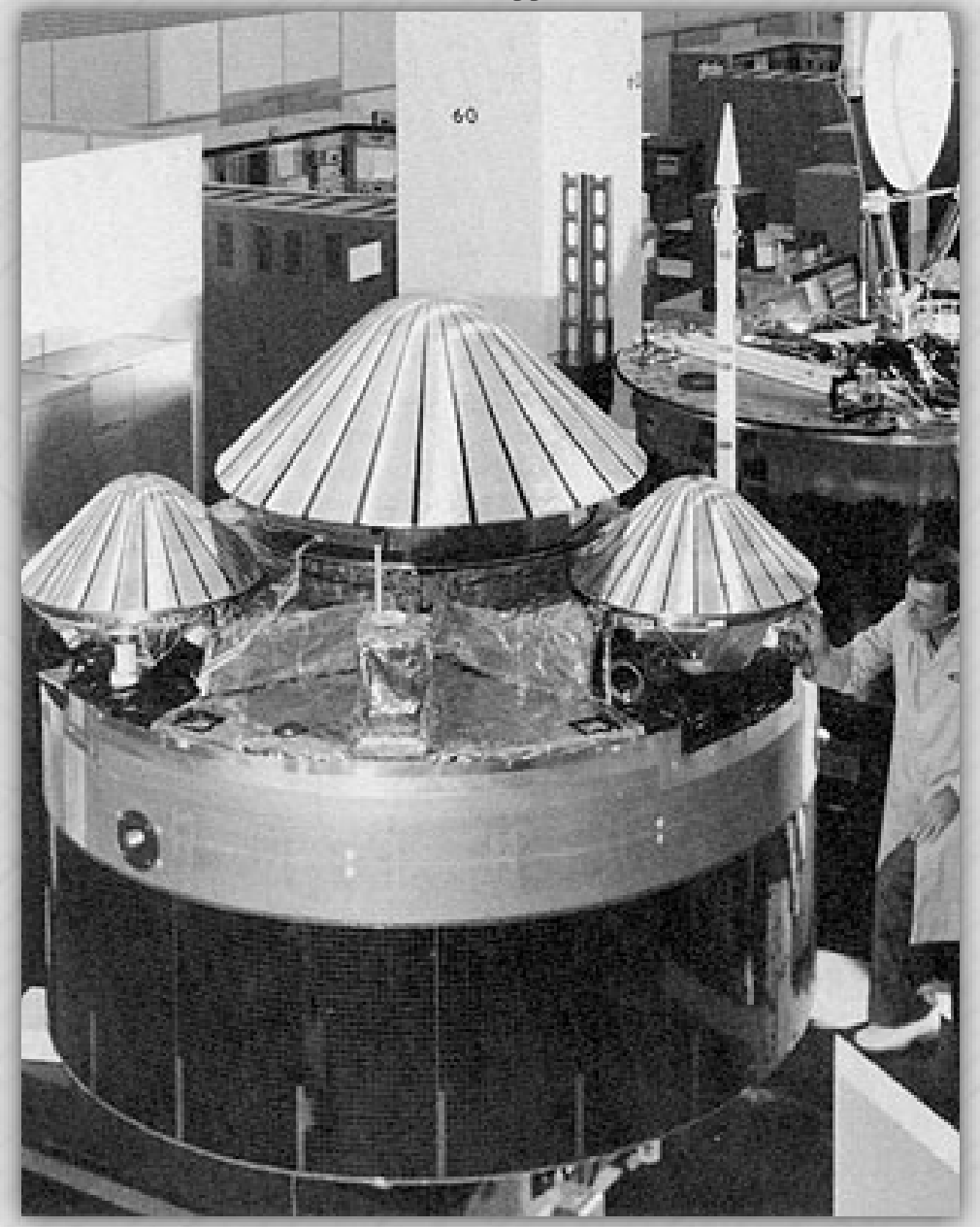

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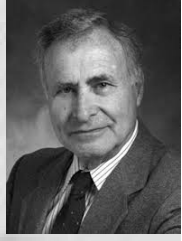

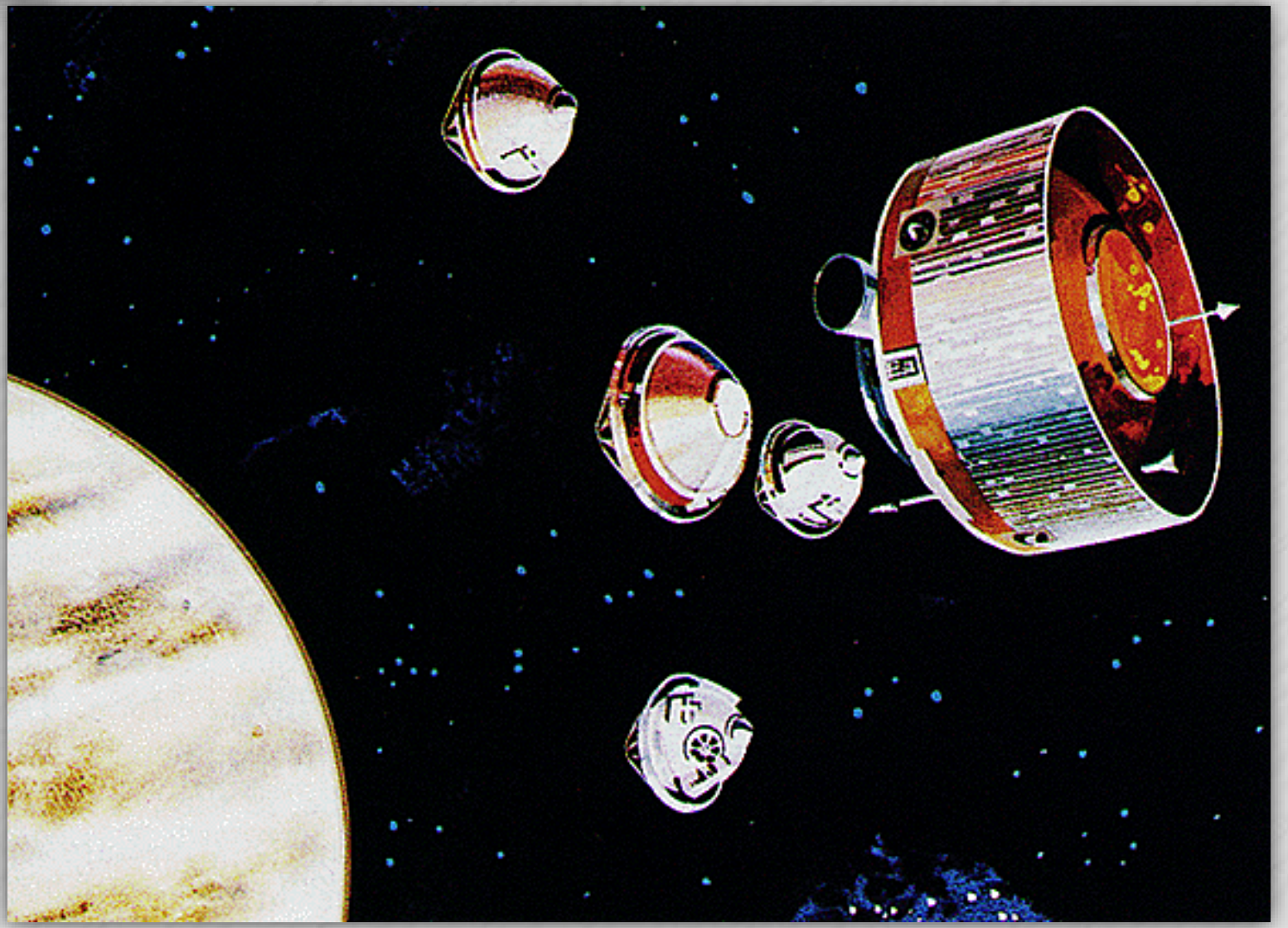

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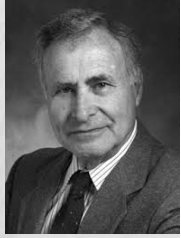

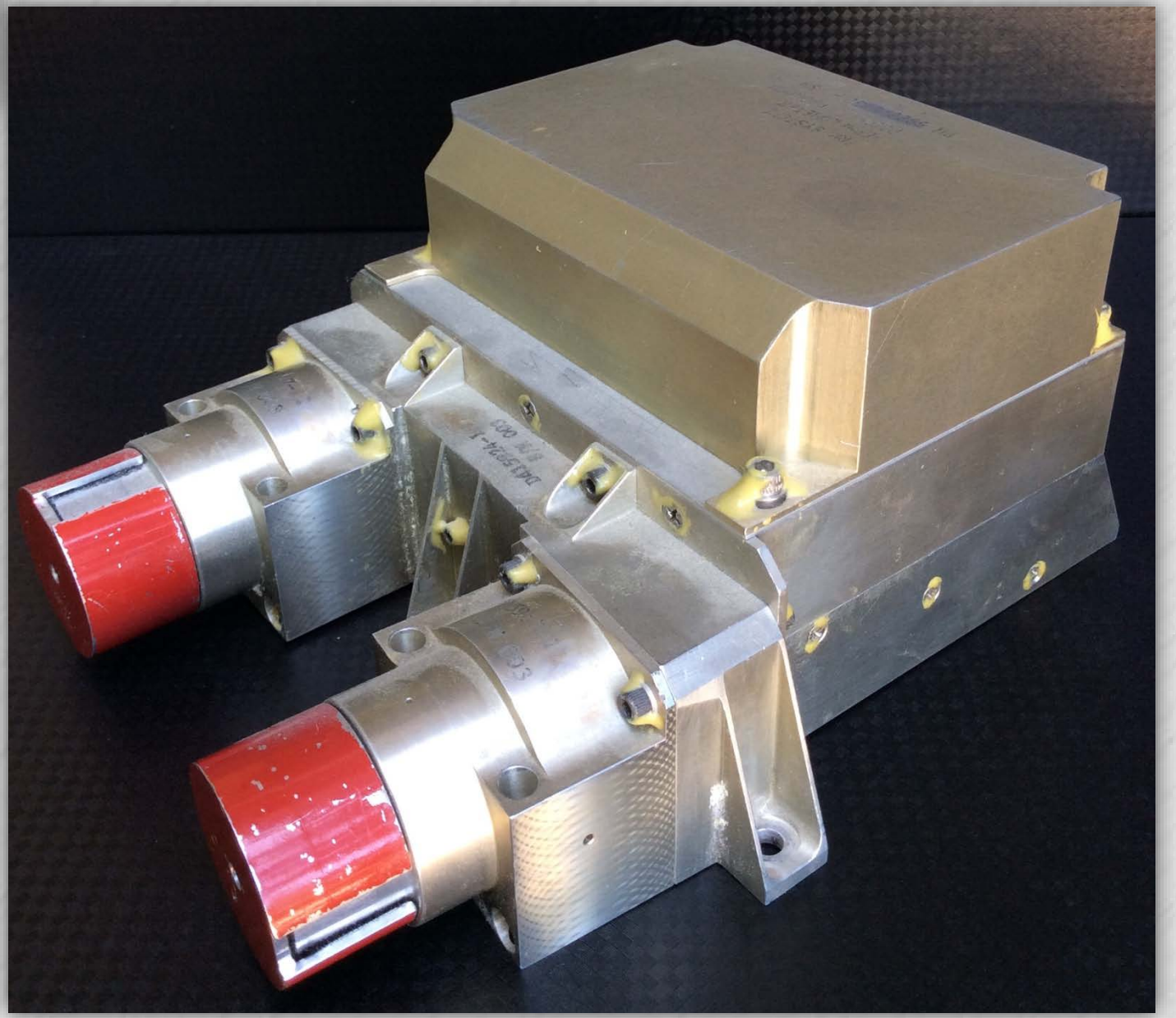

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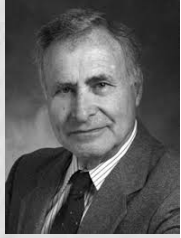

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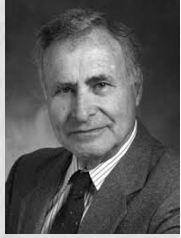

The structure of the clouds of Venus: Results of the Pioneer Venus Nephelometer Experiment

Boris Ragent

J. Blamont

Journal of Geophysical Research Atmospheres (Impact Factor: 3.44). 01/1981; 85(A13).
DOI: 10.1029/JA085iA13p08089
Source: NTRS

ABSTRACT The nephelometer measurements by the four Pioneer Venus probes reveal an upper haze area in the vertical cloud structure with several less clearly delineated layers in the main cloud bank. Concentrated sulfuric acid is the main component of the majority of the particulate matter in the clouds; the near UV radiation is absorbed by the clouds. The particles ejected from the planet surface are in the 10 to 100 micron range.

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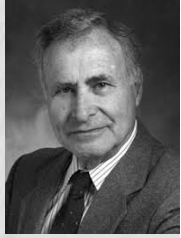

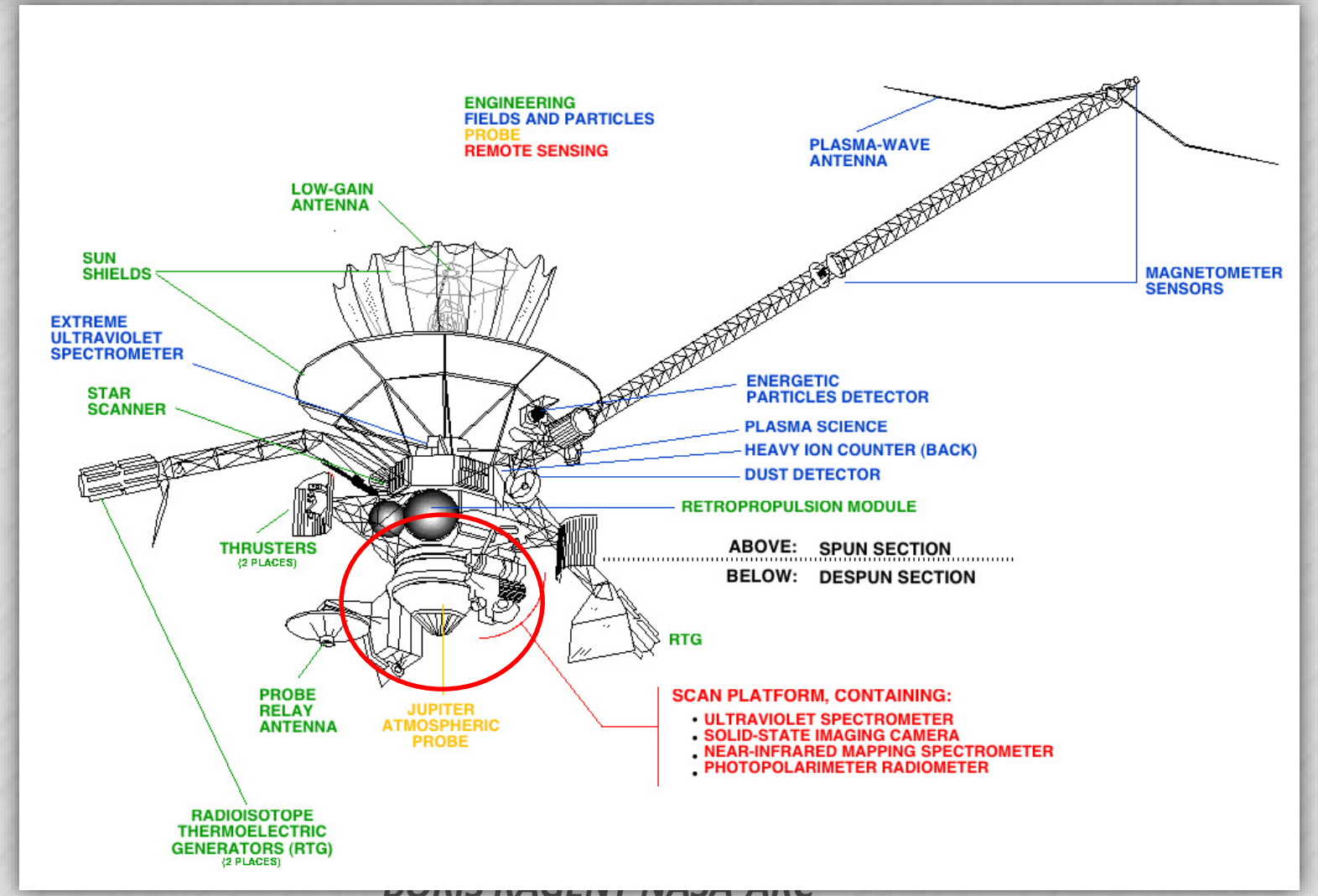

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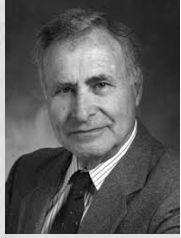

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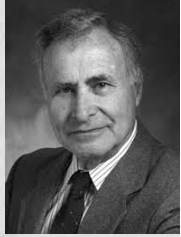

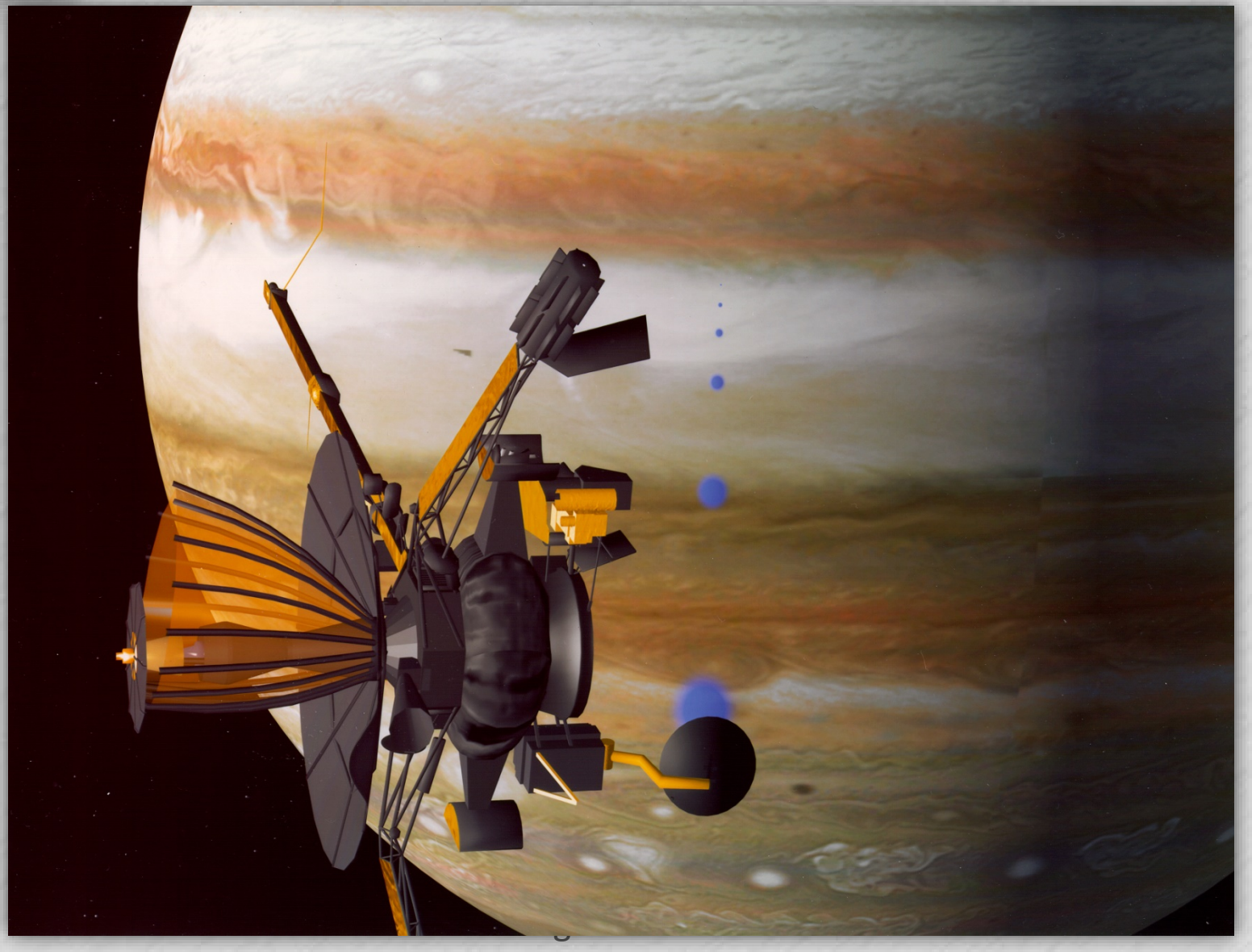

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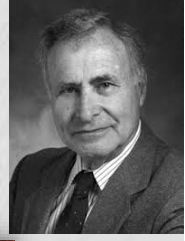

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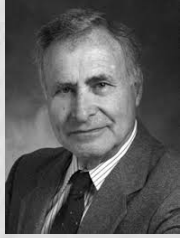

Space Science Reviews
May 1992, Volume 60, Issue 1-4, pp 179-201

Galileo Probe Nephelometer experiment

B. Ragent, C. A. Privette, P. Avrin, J. G. Waring, C. E. Carlston, T. C. D. Knight, J. P. Martin

Abstract

The objective of the Nephelometer Experient aboard the Probe of the Galileo mission is to explore the vertical structure and microphysical properties of the clouds and hazes in the atmosphere of Jupiter along the descent trajectory of the Probe (nominally from 0.1 to > 10 bars). The measurements, to be obtained at least every kilometer of the Probe descent, will provide the bases for inferences of mean particle sizes, particle number densities (and hence, opacities, mass densities, and columnar mass loading) and, for non-highly absorbing particles, for distinguishing between solid and liquid particles. These quantities, especially the location of the cloud bases, together with other quantities derived from this and other experiments aboard the Probe, will not only yield strong evidence for the composition of the particles, but, using thermochemical models, for species abundances as well. The measurements in the upper troposphere will provide 'ground truth' data for correlation with remote sensing instruments aboard the Galileo Orbiter vehicle. The instrument is carefully designed and calibrated to measure the light scattering properties of the particulate clouds and hazes at scattering angles of 5.8°, 16°, 40°, 70°, and 178°. The measurement sensitivity and accuracy is such that useful estimates of mean particle radii in the range from about 0.2 to 20 μ can be inferred. The instrument will detect the presence of typical cloud particles with radii of about 1.0 μ, or larger, at concentrations of less than 1 cm^3.

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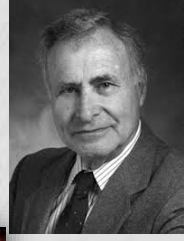

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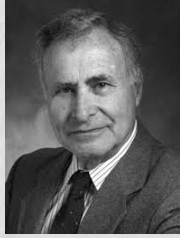

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