

INTRODUCTION

In 1972, the Laboratory for Extraterrestrial Physics at the Goddard Space Flight Center began a detailed study of the technical and scientific phases of a cometary mission. One outcome of that activity was the realization that much information about comets needed to be acquired in order to properly carry through a cometary mission analysis. It appeared that an international meeting with emphasis on the structure and composition of the nucleus and coma would be timely in late 1974. This would be four years after the Leningrad meeting which emphasized problems of the motion and orbital evolution of comets as well as the nature of the nucleus.

Such a meeting was proposed to the IAU and COSPAR and was approved as IAU Colloquium No. 25 with cosponsorship by COSPAR. The International Organizing Committee consisted of B. Donn (Chairman, USA), L. Biermann (Germany), A. Delsemme (USA), O. V. Dobrovosky (USSR), B. J. Levin (USSR), B. Marsden (USA), N. F. Ness (USA, representing COSPAR), E. Roemer (USA), P. Swings (Belgium), V. Vanysek (Czechoslovakia), F. L. Whipple (USA). The discovery of Comet Kohoutek (1973f) in March 1973 with its anticipated great luminosity near perihelion in late December 1973 led to a revision of the Colloquium program. The combination of a bright comet and a number of new or improved observing techniques indicated that important new results would soon be forthcoming. This expectation together with observations of other recent bright comets, Comet Bennet (1970II) and Comet Tago-Sato-Kosaka (1969IX) led to a division of the program into two parts. The first two days were devoted to Part I: Observations of Recent Comets. Part II: Theory and Interpretation of Cometary Observation, took up the last three days. The division of the material was not, of course, as distinct as the titles of the two parts would indicate.

It was believed that the meeting would be more valuable by concentrating on reviews or selected areas and extensive discussion among the participants. Significant new results were generally presented by the investigators whereas the reviewer was requested to summarize and coordinate papers reporting on similar types of standard observations, e.g. photometric or spectroscopic measurements. We wish to acknowledge the cooperation of all authors and reviewers in making this procedure as successful as it was. All papers not published elsewhere for which manuscripts were submitted are included in the Colloquium Proceedings. For papers already published, abstracts with reference to the detailed paper, are given. In the case of a review all discussion remarks made following it are given after the review, although in a few cases the comments referred to a summarized paper subsequently presented and published here in full.

In order to expedite publication, discussion questions and comments were edited by the Local Organizing Committee. Only where a complete statement was not available or where a statement appeared to require clarification was it sent to the speaker for review. In some cases this judgement may have done a speaker an injustice for which an apology is extended. We trust the value of early publication is adequate compensation for such incidents. A few discussion remarks were omitted by the editors when the exchange became too confused even with the tape recorded material or if they were trivial comments. Some of the lengthier exchanges were considerably reduced by the editors or the speakers during their review.

The Local Organizing Committee consisted of W. Jackson (Chairman), M. A'Hearn, R. S. Harrington and M. Mumma. Phyllis Zuckerman accepted the task of arranging for guests of participants to visit various governmental, educational, medical, social service and similar agencies or services in the metropolitan Washington area in addition to visits to interesting sights.

This Colloquium was made possible by the facilities and financial support provided by the Goddard Space Flight Center - NASA, for which we are indebted to Drs. John Clark and George Pieper. The Graphic Arts Branch provided valuable assistance prior to and during the Colloquium. The publication of these Proceedings has received considerable support from the Publications Branch, particularly from Margaret Becker. Additional financial assistance was provided by the IAU, Howard University Graduate School and the University of Maryland Department of Physics and Astronomy. The initial motivation for this Colloquium came from Norman Ness who had an active role in the early stages of its formulation and gave continued support during its preparation. The Local Committee is grateful to Barbara Holland, Blanche Newton, Carl Wagonfuhrer, Sandra Morey and Martha Harding, for their efforts prior to and during the Colloquium.

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