

COMMISSION 15: PHYSICAL STUDY OF COMETS, MINOR PLANETS AND METEORITES  
(L'ETUDE PHYSIQUE DES COMETES, DES PETITES PLANETES ET DES METEORITES)

Report of Meetings, 15 and 20 August 1979

PRESIDENT: B. Donn, Acting.

SECRETARY: J. Rahe.

15 August 1979

I. WORKING GROUPS

1. Filter Standards

(Members: Delsemme, Giovane, A'Hearn, Matson, Neff, Vanýsek).

It was agreed to concentrate initially on filters for photoelectric photometry of neutral radicals since these are the ones likely to be used by the largest number of observers. Agreement was reached on the approximate characteristics of a suitable set of filters. Detailed characteristics remain to be worked out. There was a consensus that standardization would be effective only if a large number of filter sets were purchased simultaneously. Regular comet observers might participate in the initial purchase, but many sets would be retained for future resale and/or distribution.

The committee also agreed on the desirability of a set of standard diaphragm size and of standard calibration stars. Agreement was reached on the approximate diaphragm sizes, but the question of calibration stars was not resolved.

The working group will investigate detailed specifications, and sources of funding in the near future.

M. F. A'Hearn

2. Coordinated Observations of Bright Comets

(Members: Biermann, Brandt, Dossin, Rahe, Roemer, Wisniewski)

A. Comet Halley

The Working Group met to discuss the techniques necessary to obtain coordinated observations of a bright comet. Obviously, detailed planning must be carried out as far in advance as possible; this poses no problem at present for Halley observations. The Working Group felt that the following would be key elements of a successful program.

- (1) Standardization of observations as far as possible, preferably through issuance of a detailed instruction booklet.
- (2) Observations should be coordinated at a central facility which is both able and willing to do so.
- (3) Publication of results in a timely fashion.
- (4) A dedicated individual (DI) willing to see the project through to completion.

All of these elements are part of the planning for the Halley Wide-Angle Network currently underway at the Goddard Space Flight Center with J. C. Brandt as DI.

The Work Group also saw the need for other Halley Networks headed by other Dis. Examples are:

- (1) Photometry
- (2) Infrared Observations
- (3) Radio Observations
- (4) Spectroscopy
- (5) High-resolution imaging of the nucleus

The Halley Networks could serve as the model for coordinated observations of other bright comets or benefit from the experience gained from networks set up prior to the 1985/86 apparition of Comet Halley.

J. C. Brandt

#### B. Other Bright Comets

Because telescopes are scheduled far in advance, except for the smaller instruments, observations other than for Comet Halley present serious problems. It is proposed that a memo be sent to all well-equipped observatories to stress the importance of cometary observations. Detailed instructions about observational requirements, such as accurate guiding, slit height, exposure time, spectral range, and calibration, should be included.

F. Dossin

### 3. Cometary Archives

(Members: Delsemme, Giclas, Meisel, Rahe).

The compilation of a list of existing comet photographs and spectra is thought to be highly desirable.

An "Atlas of Comet Halley Photographs and Spectra" is presently being compiled by J. C. Brandt, B. Donn, J. Rahe.

A. H. Delsemme is preparing the notebooks of N. Bobrovnikoff for publication.

### 4. High Resolution Spectra

An "Atlas of High Resolution Spectra of Comets," with supplementary coverage of medium resolution optical, as well as UV-, IR-, and radio spectra, is presently being prepared for publication by C. Arpigny, B. Donn, F. Dossin, J. Rahe, S. Wyckoff.

### 5. Research in Space (Non-mission)

(Members: Blamont, Donn, Fechtig, Greenberg, Rahe)

A workshop on "Applications of Modern Observational Techniques to Comets-- With Special Emphasis on Comet Halley" will be held in late 1980 at the Goddard Space Flight Center. It will be organized by J. C. Brandt, B. Donn, M. Greenberg, J. Rahe.

Plans were made for a workshop on "Laboratory Research for Comets," to be held in Leiden, Netherland, in 1981, and organized by B. Donn and M. Greenberg.

## II. MINOR PLANET REPORTS

1. B. Zellner - The Tucson Minor Planet Symposium
2. T. Gehrels, D. L. Matson - Prospects for Coordinated Asteroid Observations

### III. BUSINESS MEETING

#### 1. Commission Activities

An evaluation was made of the expansion of Commission 15 in 1973 to include minor planets and meteorites. Several problems were recognized and discussed. It was concluded that closer interaction among the members of the Commission and the Organizing Committee representing the three areas is needed. A Commission 15 resolution supporting such action was adopted.

#### 2. Election of Officers, Members, and Consultants

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|-----------------------|--|
| President:            | B. Donn.   |
| Vice-Presidents:      | C. Chapman, B. Levin.  |
| Secretary:            | J. Rahe.   |
| Organizing Committee: | O. V. Dobrovolsky, M. Festou, L. Grossman,<br>L. Kresak, D. L. Matson, D. Morrison, N. Richter,<br>Z. Sekanina, G. W. Wetherill.   |
| New Members:          | D. A. Andrienko, D. B. Beard, E. L. G. Bowell,<br>W. Brunk, L. G. Burlaga, W. A. Deutschman,<br>A. I. Ershkovich, H. Fechtig, P. Feldman, M. Festou,<br>R. H. Giese, I. Halliday, M. A. Hanner, B. W. Hapke,<br>A. W. Harris, M. F. A'Hearn, K. Ibadinov,<br>W. M. Jackson, R. F. Knacke, L. Kohoutek, C. T. Kowal,<br>C. F. Lillie, O. T. Matsuura, D. Meisel, P. Millman,<br>H. A. Perez-de-Tejada, C. B. Pilcher, E. M. Pittich,<br>F. Scaltriti, G. J. Veeder, L. L. Wilkening,<br>D. Yeomans, V. Zappala. |
| Consultants:          | V. A. Bronshten, R. D. Chapman, E. Grun,<br>W. K. Hartman, R. Newburn, R. Ong, M. Shimizu,<br>R. Zerrull.  |

#### 3. Resolutions

The following resolutions were adopted for Commission 15.

A. Whereas attendance at the Commission Meetings is essential to the work of the Commission, be it resolved that only those members shall be nominated as officers or as members of the Organizing Committee whose presence at the General Assembly seems reasonably assured.

B. Whereas it is now nearly impossible to correlate, and therefore to interpret, the diverse photometric data on comets, Commission 15 hereby requests the chairman of the comet filters working group to seek funds for purchasing filters for worldwide distribution and/or resale.

20 August 1979

#### SCIENTIFIC SESSIONS

During the scientific sessions, 15 papers were presented:

D. Morrison: Status of Comet Mission

B. Zellner: Multicolor Photometry of Distant Comets

- L. Biermann: Origin of Cometary Nuclei  
T. Fäy: Light Curve of the Nucleus of Comet d'Arrest  
E. Gerard: The OH Radical in Comets - Observations and Interpretation of 18 cm Emission  
W. M. Jackson: Lifetime of OH in Comets  
C. R. O'Dell: Statistical Equilibrium in Cometary C<sub>2</sub>  
A. F. Ershkovich: Theory of Solar Wind - Comet Tail Coupling  
J. C. Brandt: Morphology of Cometary Plasma Tails  
V. Vanysek: Isotopes in Comets  
A. H. Delsemme: Distribution and Origin of Ions in Cometary Heads  
O. V. Dobrovolsky, N. N. Kiselev, G. P. Chernova, F. A. Tupieva, N. V. Narizhnaia: On the Nature of Dust Grains in the Atmosphere of Comet Ashbrook-Jackson 1977 g.  
O. V. Dobrovolsky, Kh. I. Ibadinov, S. Aliev: Sublimation of Comet Nucleus Models of Solid CO<sub>2</sub> and Frozen Water Solutions of Some Organic Compounds in the Conditions Imitating the Cosmic Ones  
O. V. Dobrovolsky, N. N. Kiselev, G. P. Chernova: The Polarization-Phase Angle Dependence for Cometary Atmospheres  
A. F. Bogomolov, N. N. Kroupenio, V. A. Nazarkin, G. I. Petrov, V. F. Volobuev, L. E. Ovchinnikov: Radiophysical System to Study Internal Structure of Comet Nuclei from Spacecraft