

22. COMMISSION DES METEORES ET DES METEORITES

Report of Meetings

ACTING PRESIDENT: L. Kresák.

SECRETARY: J. G. Davies.

First meeting, 16 August 1961

The meeting was opened by Dr Kresák explaining that the Executive Committee had asked him to be Acting President of the Commission, as Dr Fedynsky was unfortunately unable to attend.

The future of the present two Sub-Commissions, 22*a* and 22*b*, was discussed with regard to the changes of the By-Laws of the Union. At a suggestion by Dr Whipple it was agreed that Sub-Commission 22*a* should become a 'Committee on Meteorites' within Commission 22. The main task of this Committee should be to produce a three-yearly review of work in the field of meteoritics and to provide a point of contact with meteorite experts who are not astronomers. At a suggestion by Dr Millman it was agreed that Sub-Commission 22*b* should become a 'Committee on Terminology and Notations' within Commission 22, with the task of unification of the terminology and notations used in meteoric literature in different languages.

The recommendations summarized by the President in the *Draft Report* were discussed; several additional recommendations have been submitted and considered. At a suggestion by Dr Whipple it was agreed to combine the original four recommendations, relating to future observations by means of the artificial Earth satellites into a single, more general resolution. The final version of the recommendations, as discussed, amended and approved, is printed at the end of the present report.

Dr Richter drew attention to the lack of attention to problems of the Zodiacal Light by any Commission of the IAU. The extent to which studies of the Zodiacal Light should be included in the reports of Commission 22 was considered. It was felt that observations of the Zodiacal Light are rather more within the scope of Commission 21; however, investigations into the physical nature of the Zodiacal Cloud, as one of the components of interplanetary matter, should be reported by Commission 22 in the future.

Second meeting, 19 August 1961

Proposals for the President, Vice-President and Organizing Committee of Commission 22, and for the Presidents and Vice-Presidents of the two Committees, were submitted by the Acting President and approved by the members of the Commission as follows:

COMMISSION 22: Dr V. V. Fedynsky, President; Dr P. M. Millman, Vice-President; Dr Z. Ceplecha, Dr A. C. B. Lovell and Dr F. L. Whipple, Members of the Organizing Committee.

COMMITTEE ON METEORITES (22*a*): Dr E. L. Fireman, President; Dr E. L. Krinov, Vice-President.

COMMITTEE ON TERMINOLOGY AND NOTATIONS (22*b*): Dr L. G. Jacchia, President; Dr B. Y. Levin, Vice-President.

Changes in the membership of the Commission and the appointment of the members of the Committees were left to the new Organizing Committee. The President, in co-operation

with the Organizing Committee, will prepare a current list of the members of the Commission for the *Transactions*.

The *Draft Report*, having been distributed among the attendants at the first session on 16 August, was discussed section by section. Some changes and additions were proposed and approved. The Acting President and the Secretary will correct the proofs accordingly and submit them to the President.

Taking into account the International symposium on the 'Astronomy and Physics of Meteors' to be held at the Smithsonian Astrophysical Observatory immediately after the General Assembly, the scientific programme of the meeting was restricted to one report, presented by Dr N. Richter. Dr Richter reported on his laboratory experiments on the optical properties of clouds of particles of different composition, size, shape, and concentration, including specimens of meteoritic matter. The values of the albedo and polarization at different phase angles, as obtained by Dr Richter, were presented in a series of diagrams.

RECOMMENDATIONS

1. To study experimentally in laboratories, and also by means of rockets and satellites, the physical parameters entering into theoretical and analytical work on meteor investigations, namely:

- (a) the accommodation coefficients for gases and solids in the range 1 eV – 100 eV;
- (b) the inelastic excitation and ionization cross-sections for atom-atom collisions;
- (c) the macroscopic behaviour of the excitation mechanism (air-density dependence of the luminosity-producing mechanism).

(Proposed by R. N. Thomas, F. L. Whipple.)

2. To undertake observations of micro-meteorites from Earth artificial satellites and cosmic rockets in order to determine:

- (a) the energy and momentum of the particles simultaneously;
- (b) the distribution of radiants;
- (c) the variations in rate, particularly at the times of meteor showers; and to collect and recover micro-meteoritic particles.

(Proposed by T. R. Kaiser, L. Kresák, Z. Ceplecha, S. Chapman.)

3. To realize the study of the physical properties of the first suitable bright comet, using direct measurements by means of a cosmic rocket which penetrates to the comet. (Proposed by Z. Ceplecha.)

4. To undertake special radio-echo observations of meteor numbers, simultaneously with the recording of micro-meteorites using Earth artificial satellites. (Proposed by S. M. Poloskov.)

5. To combine photographic, radar and spectral observations of meteors to obtain complete data of individual meteors, mainly with respect to the physical processes of meteor flights. (Proposed by Z. Ceplecha.)

6. To study telescopic meteors by photographic- and image-amplification techniques in the red spectral region. Such observations should be compared with telescopic, visual, and radar observations. (Proposed by Z. Ceplecha, C. L. Hemenway.)

7. To introduce systematic programmes of fireball photography with all-sky cameras equipped with rotating shutters and distributed at mutual distances greater than 100 km, in order to determine orbits and to recover newly-fallen meteorites. (Proposed by Z. Ceplecha.)

8. To realize the same programme of simultaneous photographic and radar studies of meteors in different latitudes, for comparative study of the physical parameters of the upper atmosphere. (Proposed by V. V. Fedynsky.)
9. To realize a wider distribution of meteor wind equipment to yield the large-scale circulation in the 80–100 km region. (Proposed by T. R. Kaiser.)
10. To study by all techniques the atmospheric regions of strong auroral luminosity and ionization, which may reveal new phenomena. (Proposed by S. Chapman.)
11. To use meteor trails simply as radar targets of the absorption and magnetoionic effects in the D-region of the ionosphere. (Proposed by T. R. Kaiser.)
12. To study the influences of interplanetary dust in promoting recombination of ions and electrons, or atomic combinations and reactions. (Proposed by S. Chapman.)
13. To ensure that amateur astronomers do not become discouraged or indifferent to visual observations of meteors for the determination of the hourly rate and magnitude distribution, and for the study of fireballs and persistent trains. (Proposed by C. P. Olivier.)
14. To refer and discuss in future all publications on Zodiacal Light as an important component of interplanetary matter and to keep contact on this subject with Commissions 12, 15, 20, 21, 43, and 44. (Proposed by N. Richter.)

22 a. SOUS-COMMISSION DES METEORITES

Report of Meeting, 17 August 1961

PRESIDENT: F. L. Whipple.
SECRETARY: Z. Ceplecha.

The President reported that, in accordance with the decisions of the Executive Committee, the Sub-Commission would be dissolved. It had, however, been agreed that the Sub-Commission should become a 'Committee on Meteorites' within Commission 22.

22 b. SOUS-COMMISSION POUR NORMALISER LA TERMINOLOGIE ET LES NOTATIONS CONCERNANT LES METEORES

Report of Meeting, 17 August 1961

PRESIDENT: P. M. Millman.
SECRETARY: L. Jacchia.

One meeting of Sub-Commission 22 b was held in Berkeley at 16^h on 17 August, 1961, with an attendance of fifteen astronomers who are working in the field of meteoric astronomy. The *Draft Report* was carefully discussed and, in addition to some of those named in this report, the following contributed to the discussion: Miss M. S. Burland, A. F. Cook, J. G. Davies, G. Guigay, I. Halliday, C. L. Hemenway, Miss D. Hoffleit, C. Hoffmeister, J. Hoppe,