

17. THE MOON (LA LUNE)

PRESIDENT: A. Dollfus.

VICE-PRESIDENTS: G. P. Kuiper, B. Levin.

ORGANIZING COMMITTEE: A. Anders, G. Fielder, D. Menzel, P. Millman, T. Weimer.

The President of Commission 17 "The Moon", M. Minnaert, died soon after his election at the IAU 1970 general assembly. His fundamental contribution to lunar photometry and nomenclature is well remembered. A. Dollfus, former President of the Commission, was invited by the IAU Executive Committee to serve again as President for the period 1970–1973.

Other members, whose deaths are regretted, are W. J. Eckert and C. B. Watts; and among the former members V. G. Fesenkov and N. P. Barabashov.

The period 1970–1973 corresponded to the apex and the completion of the U.S. Apollo manned lunar exploration program, and to the development of the U.S.S.R. Luna automatic lunar exploration program. It has been an unparalleled period in the annals of lunar studies. The major task of the IAU Commission has been to respond to new requirements by an adaptation of the international structures of science. This has been effected by the organization and guidance, within the IAU and other international scientific unions, of suitable working groups, a working party and an inter-union commission. The groups set up are:

IAU Working Group "Lunar Nomenclature" (Chairman D. H. Menzel).

IAU Working Group "Figure, mouvements et positions observées de la Lune" (Chairman Th. Weimer).

IAU Working Group "Geology and Geophysics of the Moon" (Chairman G. Fielder).

IAU-COSPAR-IUGG Working Party "Lunar Laser Ranging Experiments" (Chairman C. O. Alley).

ICSU "Inter-Union Commission for Lunar Studies" (IUCM-CIUL) Affiliated to IAU-URSI-IUGG-IUGS-COSPAR, (Chairman A. Dollfus).

The individual activities of these groups are outlined below.

The coming period 1973–1976 will be dominated by the USSR Luna automated lunar exploration program, the U.S. post-Apollo lunar science program, and the extensive exploitation of the vast quantity of lunar observational data already acquired.

The international groups listed above are preparing their individual contributions to this fundamental task.

INTER-UNION COMMISSION FOR LUNAR STUDIES (IUCM-CIUL)

In 1965, the former President of IAU Commission 17, Prof. Menzel, in view of the proposed NASA-Apollo manned lunar landing program, predicted that future studies of the Moon will involve more diversified fields than astronomy, namely, space sciences, geology, geophysics. He proposed to study the need for organizing a coordinating body grouping scientists representing the different disciplines involved.

During the first part of his mandate (1967–1970), the following President (A. Dollfus) re-investigated possibilities with a view to the urgent pressure triggered by the large amount of scientific results outcoming from the first manned landing operation (Apollo 11). The International Committee of Scientific Unions (ICSU) decided, during their 13th General Assembly (September 1970), to create a "Inter-Union Commission for Lunar Studies – Commission Inter-Union pour l'Etude de la Lune" (IUCM-CIUL).

This group of representatives of the Scientific Unions of ICSU involved in lunar studies operate on three ways: an advisory panel – a coordinating body – a channel through the Scientific Unions.

The Unions and members are the following:

IAU (Astronomy): A. Dollfus (Chairman) – E. Anders.

IUGG (Geophysics): S. K. Runcorn, G. D. Garland (Alternate).

IUGS (Geology): W. Von Engelhardt – S. Van der Heide (Alternate).

URSI (Radio-Science): M. P. Misme – T. Hagfors and V. S. Troitsky (Alternates).

COSPAR (Space Research): H. Mazursky – K. P. Florensky (Alternate).

The parent Union is the International Astronomical Union. The Chairman is A. Dollfus (Observatoire de Paris, 92 Meudon, France). The Secretary is J. E. Guest (University of London Observatory, 33/35 Dawns Lane, London NW7 4SD, England).

The Constitution meeting was held in Paris on 24 May 1971. The first formal session was held in Paris on 15 November 1971. An informal session was organized in Houston (Texas) on 12 January 1972. A general assembly met on 28–29 Nov. 1972.

One of the first actions of IUCM-CIUL was to react officially at the NASA's announcement concerning a possible cancellation of the two last already scheduled manned missions to the Moon – Apollos 16 and 17. The Chairman of IUCM-CIUL transmitted to President Nixon, through IAU's General Secretary, the statements and resolutions adopted by IAU during the past years to emphasize the importance of lunar exploration for the development of science in the present conjuncture.

The following items have been given active consideration by IUCM-CIUL:

Lunar nomenclature: The need for a proper nomenclature to lunar features of smaller scale than those already designated in the IAU system (worked out for the earth-based telescopic observations), was reviewed through the different disciplines represented within IUCM-CIUL. It was agreed that the responsibility for this task should continue to be the existing IAU Working Group, and the extension of its responsibility to the smaller features was fostered by the appointment of Dr Mazursky to this group. IUCM elaborated also the contacts with the United-Nations Working Group "Names of Extraterrestrial topographic features" under the chairmanship of Dr Komkov.

Lunar coordinates: The Inter-Union was asked to consider the problem of a unified lunar coordinates system. Reports and discussions on earth-based, spacecraft and other results concluded that, at the present time, it is premature to accept a system of coordinates derived by one method. A final system should be based on the Moon's center of mass and the principal axis of inertia. A list of about 200 craters to be used as reference locations for measurements should be agreed between workers from different groups. This list should include sufficient craters within the areas covered by Apollo metric photography to satisfy those workers involved in photogrammetric analysis. The sub-group of the IAU-Working Group "Figure, mouvements et positions observées de la Lune" is working along this line.

Panel of Scientific Priorities: IUCM-CIUL act as an advisory group emanating from the different disciplines involved in lunar science to localize the lunar studies in the scientific priorities requested by the Panel of ICSU.

WORKING GROUP ON LUNAR NOMENCLATURE

Members: D. H. Menzel (Chairman), B. Levin, A. Dollfus, H. Mazursky.

The task assigned to the former Working Group (1967–70) was the designation of the major craters of the farside of the Moon. After completion of this work and its official endorsements at the last 1970 IAU General Assembly, the task of the Group was re-directed towards the nomenclature problem of the smallest features of the lunar surface.

Apparently the current system of nomenclature worked out at the time of lunar telescopic observations and improved in successive steps by IAU fitted well the needs for the lunar studies at the groundbased telescopic scale. But clearly the new needs of the space exploration reaching resolving power of the order of 100 times smaller than the best telescopic observations (10^4 more pixels), and a fortiori of the direct exploration needing mineralogic sizes scale, requires more than a crude