

40. COMMISSION DE LA RADIOASTRONOMIE

Report of Meetings

PRESIDENT: M. Ryle.

SECRETARY: J.R. Shakeshaft.

Business Meetings, 23 and 29 August 1967

After welcoming both members and non-members of the Commission the President drew attention to the death of Dr Lloyd Berkner, who was deeply involved in the foundation of the U.S. National Radio Astronomy Observatory. The following matters were then discussed:

1. THE DRAFT REPORT

Members were asked to inform the secretary of any minor amendments required: the report was then accepted *nem con*.

The President asked for members' views on the future form of the Draft Report. Ideally this should be a comprehensive, critical, review of the entire field but such a review would necessarily be longer than was feasible. Alternatives were a report with a complete bibliography but little comment as in the present case or else a more personal view of selected aspects of the subject.

F.G. Smith and *Christiansen* spoke in favour of the present form, valuing the bibliography highly, though *Christiansen* noted that the procedure was very expensive. *Denisse* then questioned whether Draft Reports need be circulated other than to members of the particular Commission concerned. *Minkowski* pointed out that the Executive Committee were in a position to influence the form by their instructions to Presidents. In the absence of further opinions the sense of the meeting seemed to be that no change was desirable.

2. NEW MEMBERS

Nomination of the following new members was approved: Abrami, Dieter, Hughes.

The President mentioned that there were many proposed new members of the Union who were likely to want to join Commission 40 and that consideration might have to be given to some limitation of numbers.

3. IUCAF

F.G. Smith reported on the activities of the Inter-Union Commission on Frequency Allocations for Radio Astronomy and Space Science. Although IUCAF were continuing to press for protection of the 322–329 MHz deuterium band there was no hope of it becoming available in the foreseeable future. It was therefore particularly important for all radio astronomers to request from their national administrations better protection in the 406–410 MHz band. He enquired as to whether any radio astronomers had observed in one of the low frequency 'guard bands'. Apparently no one had and the President felt that they were too full of transmitters to be usable.

4. CALIBRATION OF 21-CM LINE RECEIVERS

Van Woerden, the convenor of the Working Group set up at the previous General Assembly to study the standardisation of 21 cm surveys, had written to the President to say that the report on the subject had unfortunately not yet been prepared. It was agreed that a report was still desirable and a reconstituted Working Group was set up, consisting of *Van Woerden* (convenor), *J.A. Roberts*, *Varsavsky*, and *Westerhout* with co-opted members *L. Bottinelli* and *D.R.W. Williams* (not members of the IAU).

5. LUNAR OCCULTATIONS OF THE GALACTIC CENTRE REGION

Kerr reminded members of the opportunities (*Ap. J.*, **148**, 923, 1967) for observations during the next four years. Cooperation was desirable at frequencies of about 250 MHz, at 1420 MHz and at 1667 MHz, both in the continuum and lines. An informal meeting of those interested was arranged.

6. PROPOSED RESOLUTION ON RADIO MAGNITUDE SCALES

Heidmann put forward a recommendation concerning the definition of radio magnitudes, i.e. that the radio monochromatic magnitude m_f at frequency f be defined by $m_f = -53.45 - 2.5 \log_{10} S_f$ where S_f is the flux density in M.K.S. units, with a corresponding expression for absolute radio magnitude.

This resolution was supported by *Laffineur* but opposed by *Scheuer* and *Burke*. *Scheuer* then moved an amendment, seconded by *M. Schmidt* and supported by *Minkowski* 'That the use of radio magnitudes be discouraged'. After further discussion both the original resolution and the amendment were withdrawn without any vote being taken.

7. VARIABLE SOURCE OBSERVATIONS

Minkowski spoke briefly on his reasons for believing that an 'International Year for Variable Source Observations', as suggested in the IAU Bulletin No. 17, was not appropriate. The President then put the resolution that 'Commission 40 recommends that the services of the Central Bureau of Astronomical Telegrams be used to announce without delay significant events and changes in quasi-stellar sources and objects in order to achieve effective communication of observations in all frequency ranges'. This was passed *nem con*.

A meeting of those interested was subsequently held at which *K. I. Kellermann* volunteered to act as a clearing centre for radio observations of variable sources.

8. PROPOSED COMMISSION ON 'RELATIVISTIC ASTROPHYSICS AND COSMOLOGY'

The President suggested that Commission 40 was one of those particularly concerned with this proposal (item 9(a) of agenda for the General Assembly) and should consider the matter. The IAU Executive Committee inclined rather towards a working group than a new Commission.

Minkowski spoke strongly against either possibility since Commission 28, of which he was President, had been looking after Cosmology for many years. He was in fact recommending a change of its title to 'Galaxies and Cosmology'.

Christiansen said that the IAU Executive Committee had thought of a joint working group of Commissions 28, 40 and perhaps one or two more. The President felt personally that such a working group was the best solution. There were no other comments.

9. REORGANIZATION OF THE COMMISSION

The President reminded members of the discussion in Hamburg concerning a possible reorganization of the Commission. This had resulted in a decisive rejection of any split-up but a recommendation for the arrangement of joint sessions and discussions with other Commissions. He had tried, with some success, to do this for the present meeting.

10. INTERNATIONAL RADIO ASTRONOMY OBSERVATORY

The President said that there had been discussions at the 1966 URSI meeting at Munich concerning an International Observatory but no formal approach had been made to the IAU. He felt that discussions could most usefully remain informal for the time being.

11. ORGANIZING COMMITTEE

To assist the new President J.P. Wild and Vice-President D.S. Heesch the following Organizing Committee was nominated: Kardashev, Kundu, Lequeux, Smerd, Westerhout.

Scientific Meetings

In addition to being one of the Commissions sponsoring the Joint Discussions on 'New Techniques in Space Astronomy' and 'Extra-galactic Radio Sources' of which accounts are given elsewhere in this volume Commission 40 had the following scientific meetings:

1. A joint session with Commission 10 on 'Dynamic Solar Radio Events' (30 August). For details see the report of Commission 10.

2. Two sessions on 'Planetary and Lunar Radio and Radar Astronomy' (28 August), jointly with Commissions 16 and 17. These were organized by A.H. Barrett, F.D. Drake and G.H. Pettengill. The programme was as follows:

Radar Astronomy

V.A. Kotelnikov: 'Joint USSR-Jodrell Bank Observations of Venus in 1966'.

G. Pettengill: 'Short Pulse 3.8 cm Radar Observations of Mars'.

B.S. Yaplee (read by *R.W. Hobbs*): 'Comparison of Lunar Topography from Optical and Radar Measurements'.

J.H. Thomson: 'Supersynthesis as applied to Lunar Mapping by Radar'.

J.H. Thomson: 'Three-dimensional Holographic Imaging Techniques in Lunar Radar Astronomy'.

G. Pettengill: 'Lunar Mapping by Radar at 70, 23 and 3.8 cm'.

Radio Astronomy

A.E. Salomonovitch: 'Phase Effect of Mercury at $\lambda = 8$ mm'.

E.E. Epstein: 'Phase Effect of Mercury and Venus at $\lambda = 3$ mm'.

C. Sagan: 'The Microwave Phase Effect of Mercury'.

J.K. Alexander: 'Decametre-Wave Observations of Jupiter'.

N.J.B.A. Branson: 'High Resolution Observations of Jupiter at 1407 MHz'.

A.G. Smith: 'Recent Studies of Jovian Millisecond Pulses'.

J.A. Roberts: 'Linear Polarization of Jupiter at 2650 MHz'.

J.A. Roberts: 'Circular Polarization of Jupiter at 530 MHz'.

3. Three sessions on 'Radio Studies of H II Regions' (24 and 28 August), jointly with Commission 34. These were organized by F. J. Kerr. The programme was as follows:

Recombination Lines

B.F. Burke: 'The large-scale distribution of H II Regions in our Galaxy'.

N.H. Dieter: 'Survey of recombination line sources'.

F.F. Gardner: 'CSIRO work on recombination lines'.

D.R.W. Williams: 'Observations of higher-order recombination lines'.

L. Goldberg: 'Departures from thermodynamic equilibrium'.

Y. Terzian: 'Electron temperatures of H II regions derived from radio observations'.

D.H. Menzel: '*f*-values for high-level hydrogen lines'.

H.C. van Woerden: 'Some observations of the recombination line at 1424 MHz'.

Continuum

B.Y. Mills: 'High-resolution observations of the Orion nebula at 408 MHz'.

- R. D. Davies:* 'Interferometry of H II regions associated with OH sources'.
D. S. Heeschen: 'High-density H II regions associated with OH emission clouds'.
V. A. Hughes: 'The radio source W 49 and anomalous emission'.

OH Lines

- A. H. Barrett:* 'Review of MIT work on OH lines'.
H. F. Weaver: 'Review of Berkeley work on OH lines'.
F. F. Gardner: 'CSIRO work on OH lines'.
R. D. Davies: 'Long-baseline interferometric studies of OH emission sources'.
H. F. Weaver: 'OH in the galactic center region'.
I. S. Šklovskij: 'Theory of OH emission'.
T. K. Menon: 'Time variation in OH sources'.

4. One session (29 August) on miscellaneous topics, organized by Y. N. Parijskij. The programme was as follows:

- T. W. Cole:* 'Interplanetary Scintillations at Cambridge'.
V. V. Vitkevich and T. D. Antonova: 'Interplanetary Scintillation at metre wavelengths'.
V. V. Vitkevich and V. I. Vlasov: 'The Motion of Interplanetary Irregularities'.
M. H. Cohen: 'Interplanetary Scintillation at centimetre wavelengths'.
A. Braccisi: 'Scintillation of Weak Sources at 408 MHz'.
A. E. Salomonovich: 'Cosmic Background Radiation at 8.2 mm'.
B. F. Burke: 'Cosmic Background Radiation at 9.2 mm'.
J. R. Shakeshaft: 'Cosmic Background Observations at Cambridge'.
S. Ya. Braude: 'Low Frequency Spectra of Radio Sources'.
V. A. Sanamian: 'Observations of Radio Sources at Low Frequencies at Serpukhov'.
M. Ceccarelli: 'Clustering of Very Weak Sources'.
I. Kazès: 'Study of Normal Galaxies with High Resolution'.
L. Weliachew: '21-cm Line Observations of Nearby Galaxies'.