

D. JOINT DISCUSSION

ON

PROBLEMS REQUIRING RADIO-ASTRONOMICAL OBSERVATIONS OF HIGH SENSITIVITY AND RESOLUTION

Monday 21 August 1961 at 14^h 00^m

This Joint Discussion was arranged at rather short notice, primarily as a joint session of Commissions 28 and 40.

	Commission 28	Commission 40
PRESIDENTS:	N. U. Mayall	J. F. Denisse
SECRETARIES:	G. C. McVittie	R. N. Bracewell

SUMMARIES OF PREPARED CONTRIBUTIONS

I. REVIEW OF PROBLEMS REQUIRING A RESOLUTION OF ONE MINUTE OF ARC

J. H. Oort

If we had a one-minute beam, solar maps at 400 Mc/s could be obtained during the few minutes at meridian transit, and lunar temperature distributions could be obtained. Resolution of planets is unattainable, except for radiation belts, but detection of outer planets would become possible. The nearest stars might be received, and more distant stars of high radio output would almost certainly be detected. Emission nebulae could be observed throughout the galactic system, and perhaps located optically by high-selective filters. Much fainter nebulae than the Orion nebula could be detected. About 10 supernova remnants of type I should be discoverable in the Galaxy. Support for an instrument in the southern hemisphere would be most desirable.

The disk structure of the Andromeda nebula should exhibit a brightness temperature of about 80° K, but the halo would give only a few degrees. Apart from M81, detailed structure of the normal galaxies would not be accessible to a one-minute beam, but abnormal galaxies offer a rich field.

With the area of 500 000 square metres planned for the Benelux Cross, a distinction should be possible between different cosmological models.

2. NEW RADIO RESULTS ON THE STRUCTURE OF, AND MOTIONS IN, THE MAGELLANIC CLOUDS

F. J. Kerr

The clouds are the only external systems that we can hope to study in very fine detail. Hindman and McGee have mapped the neutral hydrogen distribution, and the velocity distribution, with 2° resolution. The relative positions of the clouds are not yet known without ambiguity, but are needed in order to interpret the neutral hydrogen bridge connecting them. The two clouds are clearly joined in a single composite body. The rotation of the large cloud has been re-determined, and other internal motions studied. Our next step is to study the internal motions with a 15-minute beam.