

Contents

Foreword	v
Preface	vii
Participants	ix
Characteristics of Interstellar Matter in Our Galaxy	1
<i>Radio Data on the Distribution and Motion of Interstellar Gas.</i> J. H. Oort	3
<i>Evidence for Large Deviations from the Equatorial Plane in the Neutral Hydrogen of the Outer Parts of the Galaxy.</i> A. Blaauw (on behalf of H. J. Habing and H. van Woerden)	23
<i>The Kinematics of the Local Gas System.</i> H. L. Helfer	26
<i>Interstellar Gas and Young Stars Near the Sun.</i> A. Blaauw	32
<i>Photometric Studies of the Distribution of Dust Near the Sun.</i> B. Strömgren	38
<i>Radio Data on Gas Clouds at Intermediate Latitudes.</i> A. Blaauw (mostly on behalf of K. Takakubo and H. van Woerden)	48
<i>Large-Scale Structure in the Region Around η and χ Persei.</i> A. Blaauw (mostly on behalf of Mrs. M. Hack and H. van Woerden)	63
<i>Some Remarks on the Transition Region between Disk and Halo.</i> J. H. Oort	71

<i>Measurement of Polarization of the Continuous Radiation at 75-cm Wavelength.</i> J. H. Oort	78
<i>Cosmic Rays Near the Sun.</i> R. Lüst	80
<i>Galactic Magnetic Fields and the Equilibrium of Interstellar Clouds.</i> L. Woltjer	88
<i>Star Formation and Magnetic Fields.</i> L. Spitzer	98
Characteristics of Interstellar Matter in Other Galaxies	109
<i>Gas in Elliptical and S0 Galaxies.</i> D. E. Osterbrock	111
<i>The Distribution of Gas in Spiral and Irregular Galaxies.</i> E. Margaret Burbidge	123
<i>Gas in Clusters of Galaxies.</i> F. D. Kahn	144
Small-Scale Dynamics of Interstellar Matter	151
<i>Energy Balance of the Interstellar Medium.</i> L. Biermann	153
<i>Dynamics of the Interstellar Gas.</i> F. D. Kahn	164
<i>Thermal Instabilities in the Interstellar Medium.</i> George B. Field	183
<i>Strong Shock Fronts.</i> Sebastian von Hoerner	193
<i>Dynamics of Bright-Rim Structures.</i> S. R. Pottasch	205
Large-Scale Dynamics of Interstellar Matter	215
<i>The Motion of Gas in Barred Spiral Galaxies.</i> Kevin H. Prendergast	217
<i>Gravitational Resonance Effects in the Central Layer of a Galaxy.</i> P. O. Lindblad	222
<i>Spiral Structure.</i> J. H. Oort	234
<i>Dynamic Effects of Magnetic Fields and the Galactic Halo.</i> L. Biermann	245

<i>Contents</i>	xiii
<i>Magnetic Fields and the Dynamics of the Galactic Gas.</i> L. Woltjer	247
<i>Dynamics of Cosmic Rays.</i> R. Lüst	256
<i>Stellar Evolution Phases with Mass Ejection.</i> M. Schwarzschild	266
<i>Past Distribution of the Interstellar Gas.</i> B. Strömgren	274
<i>Nuclear Evolution in the Galaxy.</i> R. F. Christy	282
<i>Evolution of Galaxies.</i> G. R. Burbidge	291
Concluding Session	305
<i>Summary.</i> B. Strömgren	307
<i>Summary.</i> L. Woltjer	311
<i>General Discussion</i>	316
Index	327