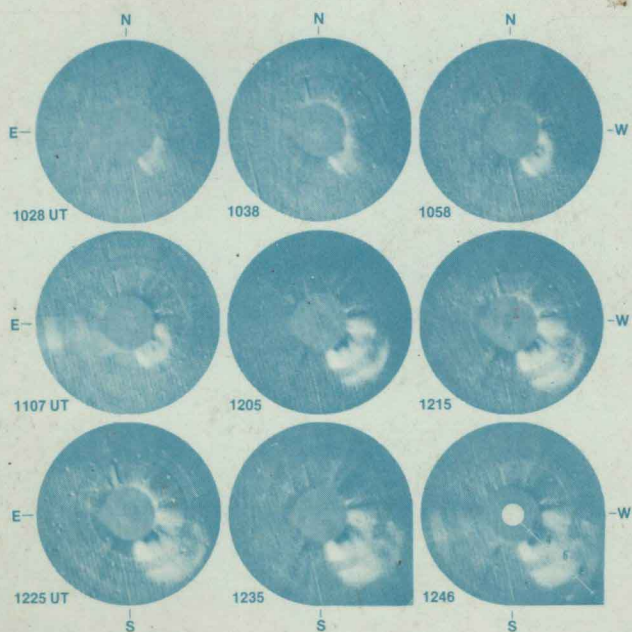


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SOLAR AND INTERPLANETARY DYNAMICS

Edited by MURRAY DRYER and EINAR TANDBERG-HANSEN



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SOLAR AND INTERPLANETARY DYNAMICS

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SOLAR AND INTERPLANETARY DYNAMICS

PREFACE

Informal discussions in 1977 among a number of scientists associated with solar and interplanetary physics revealed a need for a dialogue between the two often-divergent groups. It was clear that the latter group was dependent essentially on the sun for its *raison d'être*. On the other hand it was also clear that the former group could benefit in its search for insight vis-à-vis solar activity by looking beyond the shell of the inner corona. Needless to add that the combined solar/interplanetary topic is relevant to astrophysics when one considers stellar winds and binary star flows. It was felt, therefore, that a symposium was essential to bring together, for the first time, leading solar and interplanetary physicists from the international community to discuss and record herein their own research. The fundamental physical processes underlying our own capricious star's activity can be understood only by the coupling of solar and interplanetary topics in an intimate observational and theoretical structure. This book, intended for active research scientists and advanced graduate students, is an important step in this direction. The background of solar and interplanetary dynamics is provided in Part I (The Life History of Coronal Structures and Fields) and Part II (Coronal and Interplanetary Responses to Long Time Scale Phenomena). The crescendo, so to speak, comes in Part III (Solar Transient Phenomena Affecting the Corona and Interplanetary Medium: Dynamics Deduced from Observations), followed by Part IV which extends this subject to include Theoretical Considerations. This theme is re-examined for short-time-scales in Part V (Coronal and Interplanetary Responses to Short Time Scale Phenomena: Observations) and, again, in Part VI from the viewpoint of Theoretical Considerations. Finally, Part VII considers Future Directions followed by a Summary of the Symposium by Professor M. Kuperus.

As noted above, then, it was in 1977 when we proposed a symposium on this topic to IAU with the support of Commissions 10, 12 and 49. The proposal was accepted, and Symposium 91 on Solar and Interplanetary Dynamics was formally announced together with the co-sponsorship of SCOSTEP and COSPAR. It was held on the grounds of Harvard University in Cambridge, Massachusetts, U.S.A., from August 27-31, 1979. The Scientific Organizing Committee consisted of E. Tandberg-Hanssen and M. Dryer (Co-Chairmen), V. Bumba, A. Hewish, Y. Nakagawa, R. W. Noyes, D. E. Page, J. Rösch, D. M. Rust, M. J. Rycroft, S. F. Smerd (deceased 1978 December 21), S. I. Syrovatskii, and K. Tanaka. At this writing,

we were again grieved to learn of Professor Syrovatskii's death on 1979 September 26. Several of his last scientific papers, including an invited one, are included in this volume.

The Local Organizing Committee was represented by D. M. Rust (Chairman), A. S. Krieger, R. W. Noyes, A. J. Lazarus and K. R. Lang. The brisk, yet relaxed, pace of the meeting was due in large measure to the Session Chairmen, including R. W. Noyes, V. Bumba, S. W. Kahler, Y. Nakagawa, K. Tanaka, A. Benz, and U. Anzer, to whom we owe our thanks. We are also obliged to the 133 participants from 23 countries for contributing the discussion, most of which we hope has been faithfully recorded. We also thank E. O'Neill, S. Kahler, D. F. Webb, and R. F. Willson, Jr. for their assistance in keeping the Symposium arrangements and the discussion record in good order. Finally, we are indebted to C. Holladay for the inevitable re-typing of some manuscripts and her close attention to preparation of the discussion; to C. L. Brown for the preparation of the Index; to the National Aeronautics and Space Administration for some financial support; and to Harvard University and American Science and Engineering, Inc., for their logistical support.

M. Dryer
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1980 January
Boulder, Colorado

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TABLE OF CONTENTS

PREFACE	xiii
LIST OF PARTICIPANTS	xv
PART I. THE LIFE HISTORY OF CORONAL STRUCTURES AND FIELDS	
1. Evolution of Coronal and Interplanetary Magnetic Fields (invited) <i>R. H. Levine</i>	1
2. Search for Giant Cells in the Solar Convection Zone <i>B. J. LaBonte and R. Howard</i>	21
3. Dynamics of Large-Scale Magnetic Field Evolution During Solar Cycle 20 <i>P. S. McIntosh</i>	25
4. A Two-Level Solar Dynamo Based on Solar Activity, Convection, and Differential Rotation <i>A. Bratenahl, P. J. Baum and W. M. Adams</i>	29
5. Location of Compact Microwave Sources with Respect to Concen- trations of Magnetic Field in Active Solar Regions <i>V. Gaizauskas and K. F. Tapping</i>	33
6. Radio Observations of Coronal Holes <i>K. V. Sheridan and G. A. Dulk</i>	37
7. A Model for the North Coronal Hole Observed at the 1973 Eclipse, Between 1.3 and 3.2 R _☉ <i>F. Crifo and J.-P. Picat</i> [⊙]	45
8. On the Possibility of Identifying Coronal Holes on Synoptic Maps of the Green Corona <i>V. Letfus, L. Kulčár and J. Sýkora</i>	49
9. Solar Observations with a New Earth-Orbiting Coronagraph <i>N. R. Sheeley, Jr., R. A. Howard, D. J. Michels and M. J. Koomen</i>	55
10. X-Ray Structures Associated with Disappearing H α Filaments in Active Regions <i>S. W. Kahler</i>	61
11. The Origin of Interplanetary Sectors <i>K. H. Schatten</i>	67
12. Coronal Structure and Solar Wind <i>J. N. Tandon</i>	73

13.	Solar Polar Field Reversals and Secular Variation of Cosmic Ray Intensity <i>H. S. Ahluwalia</i>	79
PART II. CORONAL AND INTERPLANETARY RESPONSES TO LONG TIME SCALE PHENOMENA		
14.	The Coronal Responses to the Large-Scale and Long-Term Phenomena of the Lower Layers of the Sun (invited) <i>J. Šgkora</i>	87
15.	Interplanetary Response to Solar Long Time-Scale Phenomena (invited) <i>C. D'Uston and J. M. Bosqued</i>	105
16.	Stellar Mass Flux and Coronal Heating by Shock Waves <i>P. Couturier, A. Mangeney and P. Souffrin</i>	127
17.	Reflexion and Transmission of Alfvén Waves in an Atmosphere <i>N. Bel and B. Leroy</i>	131
18.	Solar Radar Observations <i>A. O. Benz</i>	135
19.	Mode-Coupled MHD Waves in the Corona and Solar Wind <i>M. Heinemann and S. Olbert</i>	139
20.	Properties of Magnetohydrodynamic Turbulence in the Solar Wind <i>M. Dobrowolny, A. Mangeney and P. L. Veltri</i>	143
21.	An Empirical Relation Between Density, Flow Velocity and Heliocentric Distance in the Solar Wind <i>M. Eyni and R. Steinitz</i>	147
22.	Are Solar Wind Measurements of Different Spacecraft Consistent? <i>R. Steinitz and M. Eyni</i>	151
23.	Observation of Dust Generated Hydrogen in the Solar Vicinity <i>H. J. Fahr, H. W. Ripken and G. Lay</i>	155
24.	Model Calculations of Solar Wind Expansion Including an Enhanced Fraction of Ionizing Electrons <i>E. F. Petelski, H. J. Fahr and H. W. Ripken</i>	159
25.	Correlated Variations of Planetary Albedos and Solar-Interplanetary Parameters <i>G. W. Lockwood, S. T. Suess and D. T. Thompson</i>	163

26.	Large-Scale Magnetic Field Structure at the Earth's Orbit, Its Correlation with Solar Activity and Orientation and Motion of the Solar System in the Galaxy <i>G. J. Vassilyeva, M. A. Kuznetsova and L. M. Kotlyar</i>	167
PART III. SOLAR TRANSIENT PHENOMENA AFFECTING THE CORONA AND IN- TERPLANETARY MEDIUM: DYNAMICS DEDUCED FROM OBSERVATIONS		
27.	Energy and Mass Injected by Flares and Eruptive Prominences (invited) <i>O. Engvold</i>	173
28.	X-Ray Evidence of Coronal Preflare Emission <i>D. F. Webb</i>	189
29.	Spicules and Macrospicules <i>W. van Tend</i>	195
30.	UV Emitting Spicules <i>G. Poletto</i>	199
31.	On a Peculiar Type of Filament Activation <i>A. Bruzek</i>	203
32.	The Filament Eruption in the 3B Flare of July 29, 1973: Onset and Magnetic Field Configuration <i>R. L. Moore and B. J. LaBonte</i>	207
33.	Dynamics of a Quiescent Filament <i>B. Schmieder, M. Martres, P. Mein and I. Soru-Escaut</i>	213
34.	Particle Acceleration in the Process of Eruptive Opening and Reconnection of Magnetic Fields <i>Z. Švestka, S. F. Martin and R. A. Kopp</i>	217
35.	On the Thermalisation of Flare-Time Energetic Electrons Observed at Radio and X-Ray Wavelengths <i>S. S. Degaonkar, H. S. Sawant and R. V. Bhonsle</i>	223
36.	Recent Observations of Energetic Electrons in Solar Flares <i>S. R. Kane</i>	227
37.	An Energy Storage Process and Energy Budget of Solar Flares <i>K. Tanaka, Z. K. Smith and M. Dryer</i>	231
38.	Flare Associated Eruptive Prominence Activity of February 1, 1979 <i>A. Bhatnagar, R. M. Jain, D. B. Jadhav and R. N. Shelke</i>	235

39.	The Disruption of EUV Coronal Loops Following a Mass Ejection Transient <i>E. J. Schmahl</i>	241
40.	Decameter Radio and White Light Observations of the 21 August 1973 Coronal Transient <i>T. E. Gergely and M. R. Kundu</i>	245
41.	Radio Data and Computer Simulations for Shock Waves Generated by Solar Flares <i>A. Maxwell and M. Dryer</i>	251
42.	Estimation of Shock Thickness from Dynamic Spectra of Type II Bursts <i>H. S. Sawant, S. S. Dégaonkar, S. K. Alurkar and R. V. Bhonsle</i>	257
43.	Evidence for Open Field Lines from Active Regions: Short Communication <i>K. V. Sheridan</i>	261
PART IV. SOLAR TRANSIENT PHENOMENA AFFECTING THE CORONA AND INTERPLANETARY MEDIUM: - THEORETICAL CONSIDERATIONS		
44.	MHD Aspects of Coronal Transients (invited) <i>U. Anzer</i>	263
45.	Flare Model with Force-Free Fields and Helical Symmetry <i>D. K. Callebaut</i>	279
46.	The False Equilibrium of a Force-Free Magnetic Field <i>B. C. Low</i>	283
47.	Energy Storage and Instability in Magnetic Flux Tubes <i>T. Sakurai</i>	291
48.	The Filament Instability in a Sheared Field <i>C. Chiuderi and G. Van Hoven</i>	295
49.	A Model for Impulsive Electron Acceleration to Energies of Tens of keV <i>P. Hoang, A. Duijveman, Th. F. J. van Grunsven and D. R. Nicholson</i>	299
50.	A Model Flare and the Continued Post-Flare Mass Release from the Flare Region <i>Y. Uchida</i>	303
51.	A Model of Surge <i>G. Noci</i>	307

52.	Radiative Hydrodynamics of Flares: Preliminary Results and Numerical Treatment of the Transition Region <i>A. N. McClymont and R. C. Canfield</i>	313
53.	Reconnection Driven Coronal Transients <i>G. W. Pneuman</i>	317
54.	Coronal Propagation of an MHD Shock in the Vicinity of a Magnetic Neutral Sheet <i>D. J. Mullan and R. S. Steinolfson</i>	323
55.	Two-Fluid Theory of Interplanetary Shock Waves <i>P. Rosenau</i>	327
PART V. CORONAL AND INTERPLANETARY RESPONSES TO SHORT TIME SCALE PHENOMENA: - OBSERVATIONS		
56.	Transient Disturbances of the Outer Corona (invited) <i>R. T. Stewart</i>	333
57.	Transient Phenomena Originating at the Sun-An Interplanetary View (invited) <i>D. S. Intriligator</i>	357
58.	Measurements of Mass Flow in the Transition Region and Inner Corona <i>G. J. Rottman</i>	375
59.	The Association of Type III Bursts and Coronal Transient Activity <i>B. V. Jackson, G. A. Dulk and K. V. Sheridan</i>	379
60.	Recent Very Bright Type IV Solar Metre-Wave Radio Emissions <i>R. A. Duncan, R. T. Stewart and G. J. Nelson</i>	381
61.	The Solar Mass Ejection of 8 May 1979 <i>D. J. Michels, R. A. Howard, M. J. Koomen, N. R. Sheeley, Jr. and B. Rompolt</i>	387
62.	Variations of Interplanetary Parameters and Cosmic-Ray Intensities <i>A. Geranios</i>	393
63.	Two Classes of Fast Solar Wind Streams: Their Origin and Influence on the Galactic Cosmic Ray Intensity <i>N. Iucci, M. Parisi, M. Storini and G. Villoresi</i>	399
64.	A Large Decametric Wavelength Antenna Array for IPS Observations of Radio Sources <i>Ch. V. Sastry</i>	403

65.	Interplanetary Scintillation-Preliminary Observations at 103 MHz <i>S. K. Alurkar and R. V. Bhonsle</i>	405
66.	IPS Observations of Flare-Generated Disturbances <i>T. Watanabe</i>	409
67.	MAGALERT: August 27, 1978 <i>J. A. Joselyn and J. F. Bryson, Jr.</i>	413
68.	Classification and Investigation of Solar Flare Situations Conformably to Interplanetary and Magnetospheric Disturbances <i>K. G. Ivanov, N. V. Mikerina and L. V. Evdokimova</i>	421
PART VI. CORONAL AND INTERPLANETARY RESPONSES TO SHORT TIME SCALE PHENOMENA: - THEORETICAL CONSIDERATIONS		
69.	Physical Driving Forces and Models of Coronal Responses (invited) <i>S. I. Syrovatskii and B. V. Somov</i>	425
70.	Theoretical Interpretation of Travelling Interplanetary Phenomena and Their Solar Origins (invited) <i>S. T. Wu</i>	443
71.	Physical Processes and Models of Interplanetary Responses: Suggested Theoretical Studies (invited) <i>S. Cuerman</i>	459
72.	The Cross Sectional Magnetic Profile of a Coronal Transient <i>M. K. Bird, H. Volland, B. L. Seidel and C. T. Stelzried</i>	475
73.	Evolution of Coronal Magnetic Structures <i>R. S. Steinolfson and S. T. Wu</i>	483
74.	Magnetically Driven Motions in Solar Corona <i>B. V. Somov and S. I. Syrovatskii</i>	487
75.	Gasdynamics of Impulsive Heated Solar Plasma <i>B. J. Sermulina, B. V. Somov, A. R. Spektor and S. I. Syrovatskii</i>	491
76.	Dynamics of Coronal Transients: Two-Dimensional Non-Plane MHD Models <i>Y. Nakagawa, S. T. Wu and S. M. Han</i>	495
77.	Observations of Interplanetary Scintillation and a Theory of High-Speed Solar Wind <i>H. Washimi, T. Kakinuma and M. Kojima</i>	499