

## *Preface to the Revised Edition*

In the years since the first edition of this little book appeared much has been learned about the various kinds of interplanetary materials. Increasingly fast cameras, sensitive and stable photoelectric cells, and the use of radio techniques have provided types of information not previously available.

During these years discussions of the origin of the solar system by von Weiszäcker, ter Haar, Spitzer, Kuiper, and Urey have involved a modified nebular hypothesis in which small particles play important roles. The available evidence about comets and meteor streams has been clarified by Whipple's "ice model" of comets. Both photographic and radar observations now allow not more than 1 percent of the meteors to have origins outside of the solar system. There have been other important advances in our knowledge. The whole area discussed here is rapidly growing both in significance and in technical detail.

In keeping with the plan of the initial edition an effort has been made in this revision to keep the technical details at a minimum while indicating broadly what is known, how this information may be fitted together, and where apparent inconsistencies remain. Because routine observations were severely interrupted between 1939 and 1946, some statistical tabulations have been retained from pre-war observations.

Many have helped in this revision through comments and discussions. For advice on the radio chapter I am especially grateful to Drs. Peter Millman and Donald McKinley of the National Research Council of Canada and to Prof. A. C. B. Lovell of the Jodrell Bank Experimental Station in England. Dr. E. P. Henderson of the United States National Museum has supplied both constructive criticism and recent photographs of meteorites. Dr. Fred L. Whipple of the Harvard Observatory has continually encouraged and advised. To these and many others I express my sincere thanks. Despite their best ad-

vice the book may contain errors of fact or interpretation; these are the author's own responsibility.

I hope that the volume will stimulate further inquiry into some of the many complex problems presented by the bodies that move between the planets.

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