COMETS IN THE POST-HALLEY ERA

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VOLUME 1

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INTERNATIONAL ASTRONOMICAL UNION,
HELD IN BAMBERG, GERMANY, APRIL 24–28, 1989

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We dedicate these volumes to Fred L. Whipple
("Fred" to everyone in the field),
Grand Young Man of cometary science,
who led us all to the right path

The Editors

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PREFACE

In the early 1980s, it became clear that the 1986 apparition of P/Halley would likely result in a considerable advance in our knowledge of comets, especially if some of the spacecraft being planned were successful. It also became clear that, after a reasonable period, during which the new observations could be analyzed and mentally digested, a conference and a book should review the new discoveries.

Following up on that idea, two of the undersigned began planning just such a conference. The conference was held in Bamberg, Federal Republic of Germany, on April 24–28, 1989—more than three years after Halley perihelion and the mission encounters, giving the investigators time to reduce and analyze their data. The reviews presented at that conference became the basis of this book.

Rather to everyone's amazement, all of the cometary spacecraft—ESA's Giotto, NASA's ICE, IKI's VEGA-1 and VEGA-2, and ISAS' Sakigake and Suisei—were successful. So, too, was the IHW, which coordinated much of the ground-based observing of the comet. In excess of 20 gigabytes of ground-based Halley data and much of the spacecraft data will appear later this year in *The Comet Halley Archive*. P/Halley itself apparently has retained some residual activity at heliocentric distances beyond that of Saturn! As a result, although the 1986 apparition is nearly over, the data still are being reduced and ideas still are developing rapidly. This healthy continuing development in our field made it important to the editors to produce this book as rapidly as was consistent with thorough reviews and editing. It appears that about 21 months will have been the interval required.

We originally intended that every paper would be reviewed by two external reviewers, as well as by at least one of the technical editors and by the production editor. In this, we were largely successful, and we wish to extend our sincere and heartfelt thanks to all of those who helped with the critical reviewing work. Their names are listed in the acknowledgments.

This book has been produced from camera-ready manuscripts. As a result, it contains some inevitable nonuniformities that could have been avoided only by completely retyping it entirely at one location. That probably would have resulted in new errors in the manuscripts, as well as requiring both additional time and additional resources. We chose not to retype it.

There has been perhaps a tendency in some places to think of Halley as a sort of divide, providing many answers and marking a peak in research activity on comets. However, as is usual in research, Halley provided more questions than answers. Just since the Bamberg conference, three moderately bright and exciting comets—P/Brorsen-Metcalf, Austin, and Levy—have received considerable ground-based study. Further, most experiments on the Giotto spacecraft survived their 70-km/s flyby 600 km from the nucleus of Halley in sufficiently good health to justify at least consideration of an encounter with P/Grigg-Skjellerup in 1992. Also, the U.S. Congress has approved funding for the Comet Rendezvous Asteroid Flyby (CRAF) mission. Therefore, this book provides one more interim report on our attempts to understand the nature, origin, and evolution of those enigmatic solar system members called comets.

Ray L. Newburn, Jr.
Marcia Neugebauer
Jürgen Rahe

August 1990

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