PREFACE

The investigation of the Galactic nucleus and its surroundings is necessarily a modern endeavor, for traditional observations made at visual wavelengths have not even begun to penetrate the veil of ~30 magnitudes of visual extinction that intercedes. On the other hand, infrared, and especially radio observers find a relatively unobstructed view of the central portion of the Galaxy, so the study of this arena has proceeded apace with the development of these branches of astronomy. Thus, it is no accident that the first IAU-sponsored conference to be held on the Galactic center is timed to coincide with the initiation, or the immediate aftermath, of major technical developments at long wavelengths, including infrared array detectors, millimeter-wavelength aperture synthesis, and self-calibration and refined deconvolution algorithms in aperture synthesis radio astronomy. The center of the Galaxy is also accessible to X and gamma-ray observers, and progress at high energies has been steady, especially as imaging capabilities are being realized at X-ray wavelengths. However, one might expect that the revolution in the high-energy domain is still ahead of us, as instruments with larger collecting areas and improved spatial resolution are now being developed.

The youth of this subject is evidenced by the relatively small number of meetings that have been devoted to it. In the mid-1970's, a workshop was held on the subject by the National Radio Astronomy Observatory (proceedings unpublished), and during the decade of the 1980's, there has been a periodicity of two years between gatherings on this subject, starting with a two-day workshop at Caltech in 1982 (proceedings edited by G.R. Riegler and R.D. Blandford and published as AIP Conf. Proc. No. 83), continuing with a one-day workshop, also at Caltech, in 1984, and a one-day symposium at the University of California at Berkeley in 1986, in honor of one of the most distinguished researchers in this field, Professor Charles Townes (proceedings edited by D. Backer and published as AIP Conf. Proc. No. 155). Thus, the 1988 IAU conference continues this healthy trend.

These proceedings record much of the enormous body of information that has been gathered. Astrogeographically, the distribution of gas and dust into a myriad of structures of widely varying morphologies is truly complex. Nonetheless, certain fundamental generalities have emerged from the plethora of observations, allowing much of the phenomenology to be linked. From the perspective of the editor, the overriding value of this symposium and the resulting proceedings is that the fundamental theoretical questions have been well posed. The basic geometry of the region is becoming approximately understood (except, perhaps, for the inner 0.1 pc), and subsequent research can now be guided by these questions.

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