

PREFACE

When the 200-inch telescope went into operation just over a quarter of a century ago it was planned to use the vast light-gathering power of this new telescope to study the size and structure of the Universe. As a first step in this process Walter Baade wanted to study Cepheids and other distance indicators in nearby galaxies. With the exciting discovery of radio galaxies and then of QSO's Baade's plan for the systematic exploration of the nearer galaxies, which would have required vast amounts of large telescope time, was quietly shelved in favour of what appeared to be more exciting work on exploding galaxies and quasars.

The scientific content of our colloquia can, in large measure, be traced back to this decision. Many of the differences between the values of the Hubble parameter determined by different techniques and discussed on the first day of our colloquia can be traced back to calibration difficulties which, at least in part, resulted from the lack of optical observations of Cepheids, novae, etc., in a sufficiently large number of nearby galaxies.

The second day of our colloquia was mainly devoted to studies of the Hubble diagram. It turned out that there is now general agreement that our early hopes of obtaining an accurate numerical value for the deceleration parameter q_0 from observations of the magnitude-redshift relation were too optimistic. Both brightness changes due to the evolution of individual stars and a luminosity increase resulting from the effects of dynamical friction (which allows the brightest cluster galaxies to swallow their lesser companions) are found to swamp the cosmological effect on q_0 .

The discovery of quasars, which appear to have luminosities that are two orders of magnitude greater than those of the brightest galaxies, led to the first doubts regarding the cosmological interpretation of redshifts. Arguments for and against the reality of anomalous redshifts were forcefully presented on the third day of our colloquia. Finally the last day of the

conference was highlighted by summarising papers by Geoffrey Burbidge, who vigorously exploited all of the possible evidence for non-cosmological redshifts, and by Martin Rees who felt that even some of the oddest observations might eventually be fitted into the conventional framework. The conference concluded with a beautiful summary by Philip Morrison.

The organizers of these colloquia are deeply grateful to the I.A.U. and the C.N.R.S. for their financial and moral support and to the members of the Local Organizing Committee who took care of all of our worldly needs so that we could keep our eyes and thoughts directed towards the stars.

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