Preface to the Present Volume

This volume contains research papers based on lectures which were either delivered at, or related to, the US-Japan Joint Seminar on Commutative Algebra and Combinatorics, held in Kyoto from 25 to 31 August, 1985.

Commutative Algebra has its roots in number theory and algebraic geometry, but in recent years it has also developed a close connection with combinatorics as well as with topology and the theory of Lie algebras. This new trend has been started and promoted by Hochster, Stanley, Roos and Buchsbaum among others. We are glad that the Seminar could reflect some of these new developments, and we would like to acknowledge our indebtedness to David Buchsbaum in the choice of the theme "Commutative Algebra and Combinatorics".

The topics of the papers range from pure commutative ring theory to combinatorics, representations of classical groups, algebraic geometry and non-commutative invariant theory. Among other things the reader will find successful applications of commutative algebra and combinatorics to each other.

The Seminar was held under the US-Japan Cooperative Science Program between the National Science Foundation of the United States (NSF) and Japan Society for the Promotion of Science (JSPS), and was financed by these organizations. It took place at the Research Institute of Mathematical Sciences (RIMS) of Kyoto University. Immediately after the Seminar there was a three-day conference, open to the mathematical public, on the same subject at the same place, which was partially financed by RIMS. Some of the lectures delivered at the conference are also included in this volume.

There were seven participants from the United States with D. Buchsbaum as the organizer, and twelve from Japan with M. Nagata as the organizer. There were also two observers from Europe, namely J. Herzog of Essen and J.-E. Roos of Stockholm, and also some Japanese observers.