Fundamental Research in Superconductivity

Foreword to papers in this issue

The papers on superconductivity in this issue of the *IBM Journal of Research and Development* were presented at the IBM Conference on Fundamental Research in Superconductivity, June 1961; this was held as part of the dedication ceremonies of the new Thomas J. Watson Research Laboratory in Yorktown Heights, New York.

Manuscripts were submitted at the option of the speakers. More than half the speakers did submit manuscripts, some of them detailed reports, and the twenty-four papers published here give a fairly representative view of the interests of workers in superconductivity at the time of the Conference. Some of the other Conference papers are expected to appear in the literature in the course of time.

Special mention should be made of the invited paper by J. Bardeen of the University of Illinois, which opened the Conference and reviewed the present state of superconductivity theory. We are indebted to Dr. Bardeen for permission to use a transcript of this talk, which he subsequently edited.

The papers reflect the increasing activity in the field of superconductivity stimulated, on the one hand, by the Bardeen-Cooper-Schrieffer theory and, on the other hand, by the development of important applications of superconductors. Thus they include not only extensions of the fundamental theory and detailed comparisons of theory with the measured properties of superconductors, but also extensive investigations of the effects of alloying on superconducting properties and the study of complicated inhomogeneous systems of superconductors with interesting critical field - critical current characteristics.

I should like to thank the external members of the program committee, P. W. Anderson of the Bell Telephone Laboratories and D. E. Mapother of the University of Illinois, for their very valuable assistance in planning the Conference and arranging the program. J. C. Swihart of IBM Research has shared the responsibilities of planning and editing; I also wish to thank H. B. Michaelson and D. E. Udell of the Journal staff for their aid in editing manuscripts.

P. M. Marcus, *Guest Editor*