

cesses that impinge on such a wide variety of fields.

The book itself is not particularly well prepared. The typescript with handwritten equations is difficult to read. Several of the papers contain an annoying number of typographical errors and, in one case, transpositions of text. The references have not been updated; papers from 1980 are still listed as "to be published."

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Radio Emissions

Extragalactic Radio Sources. Papers from a symposium, Albuquerque, N.M., Aug. 1981. DAVID S. HEESCHEN and CAMPBELL M. WADE, Eds. Reidel, Boston, 1982 (distributor, Kluwer Boston, Hingham, Mass.). xviii, 490 pp., illus. Cloth, \$54.50; paper, \$26. International Astronomical Union Symposium no. 97.

In some ways this book is to extragalactic radio astronomers what a detailed field guide to tree identification is to foresters. The 148 papers (27 of which were invited) in the volume are prize specimens. The range of subjects, the depth of research, and especially the amount of activity from related fields described in these proceedings are remarkable.

Ten years ago the material in a book such as this would have consisted mainly of radio continuum and polarization studies of radio galaxies and quasars. No longer. In the past five years the field has broadened explosively, and the book contains optical and x-ray, as well as radio, observations. In addition, the types of objects discussed include the galactic center, SS 433, Seyfert galaxies, and Centaurus A, as well as the usual radio galaxies, quasars, and BL Lacertae objects. Size scales vary from a millisecond of arc to 2π radians; distances from the microscopic, solar-system-like scales of superluminal radio sources to billions of light years; and times from "flickers" of a few hours to cosmological scales.

But the book is more than a field guide. Notable trends of unification at a level, for the first time, beyond the speculative can be found in it. J. Oort's opening lecture summarizes the emerging synthesis found in some detail in other papers. Quasars, radio galaxies, and Seyferts have long been thought to exhibit substantial morphological differ-

ences in their radio properties. As radio sources, they have been separated into phyla. Although no grand consensus is evident in the proceedings, a point made repeatedly is that the morphological differences may, in fact, be illusory and attributable to strong observational selection effects as well as to evolutionary changes in the universe on time scales of galaxy evolution. It is especially exciting that the new diversity in extragalactic radio astronomy seems to be leading to synthesis and understanding rather than fragmentation and incohesiveness.

To the active researcher in extragalactic astronomy the book can be the most important addition to a bookshelf in years. Even though its research content will mostly appear in standard journals, the compilation of the material in a single reference is invaluable for expediting the merger of timely observations, speculation, and research strategies into bold new ideas and interpretations. Because the meeting was so well attended, the contents of the book are essentially complete, as any useful field guide must be.

The book does not and was probably never intended to provide a simplified overview of the entire field and all of its most pressing research directions. Therefore it is not a book for the casually interested. What's more, the amount of information is overwhelming if not intimidating. There were times in my reading of the book when I felt like a Martian handed only a field guide to tree identification and given the task of summarizing the latest results in terrestrial forest ecology.

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Books Received

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