of measurement and analysis. Though the essays are usually clear and concise, many of them are not particularly well written for a general audience. Furthermore, though the volume is ideal from a scholarly perspective in that it includes extensive statistics and ample documentation, it is often difficult to follow because of the unusually small size of print of the footnotes—a result, undoubtedly, of the effort to keep the size of the volume within reason.

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Learned Men's Home Lives

Behind Every Successful Man. Wives of Medicine and Academe. MARTHA R. FOWLKES. Columbia University Press, New York, 1980. xvi, 224 pp. $17.50.

It is an economic imperative of human existence in our time that the demands of work color every other aspect of life including family and marital relationships. In this book the author draws upon her study of 20 women married to university professors and 20 married to physicians to describe in detail the way in which the structure and demands of the husbands' work influence the families' general lifestyles, the amount of time the husbands spend with the families and something of the quality of that time, the major activities the wives engage in, and the wives' feelings about their husbands' work and about their lives together.

The people described are similar in many respects. Race is not mentioned. They range in age from 29 to 50 and have been married from 7 to 25 years. All but three couples are in their first marriage, all but two have two or more children, all children save one are between the ages of 6 and 18. The families, then, are in mid-cycle, with childbearing years gone but the children still living at home. The husbands are in mid-career as well, established and successful, none of them world renowned but all presumably well thought of by colleagues and peers, and all with many productive years ahead. There are some important differences between the groups of wives, however, the academic wives being better educated and more of them working. But despite these differences, all the couples divide the work of earning a living, maintaining a home, and bringing up children along "traditional" lines.

The author states that the wife relates to and affects her husband's work life in three major ways. As an adjunct, she helps him directly with the work itself; as a source of emotional support and nurturance, she enables him to continue to work; and she makes family life a reality for him while protecting him from its time-consuming demands, doing "double duty" by playing the chief role in the household and in caring for children.

The specifics of the wifely role performance vary by the husbands' occupations. As adjuncts, the wives are "girl Fridays," ready to do whatever is needed. However, the doctor's wife represents him in the community by engaging in good works as a volunteer, through the medical wives' auxiliaries or other prestigious organizations. She maintains an elaborate home, a lavish life-style, and an attractively groomed physical appearance. She participates fully in a lively round of social entertaining, chiefly within the medical community. The wife thus helps her physician husband to be connected to colleagues from whom referrals flow and to maintain social distance from, while showing concern for, the lay community that provides his patients. Whereas the nearest the doctor's wife usually gets to the office is to help to decorate it or offer advice about the interpersonal tensions of the personnel around her husband, the academic wife is more likely to be directly involved with her husband's work product, typing, correcting papers, serving as a sounding board for ideas, or helping to locate them as a sort of low-level assistant.

As the person who provides emotional support and nurturance, the doctor's wife is there at the day's end providing ego support for the weary, harassed husband, who can rest and seek leisure in an atmosphere separate from work in the physical sense but imbued with the deference for The Doctor that he finds at work and in the community. The academic husband is more likely to work at home for part of his day; his needs for quiet and uninterrupted time to work are met by the wife's keeping the swirl of household activities away from his study. She offers her opinions to him as an equal rather than as an emotional prop when he discusses the problems that disturb him. When it comes to their double duty, all the wives take on the chief responsibility for home and child care. Fourteen of the 20 academic wives report no hired help in their homes, whereas 13 of the doctors' wives report such assistance. Help costs money, and the doctors make far more of it than do the academic husbands. In fact, the income distribution is virtually nonoverlapping; one physician and one professor earn between $32,000 and $40,000 a year; all the rest of the professors earn less and the rest of the doctors earn more. But in every comparison, the physicians seem to be far more difficult to live with. One could jest here about how maternal admonitions to upwardly aspiring daughters might need some rethinking. The author comments far more appropriately, however, that "the regimen of medical training . . . is poor preparation for a profession supposedly dedicated to caring as well as curing, since it precludes the opportunity for a doctor's personal growth and time to spend in caring for persons as intimately connected with him as his own wife and children" (p. 197).

The doctors are described as more distant emotionally, more finicky about household standards, less likely to be at home at times of crisis, including childbirth, less involved with their children, less sharing than the professors. All the wives, however, are described as subordinating their own career and educational goals to their husbands', moving when the husbands needed to move for their careers, starting and stopping their own educational and work activities in relation to spouse and children in a way that the husbands did not need to and never did in fact do. Of the entire sample, only two couples (one academic, one medical) share a good number of work and family-life tasks, and in both cases they are involved in *his* work.

Some of the women express disappointment over their lives, and the doctors' wives long for more of their husbands' time and affectionate attention; most of the women, however, have accepted the major dimensions of their lives and feel fairly satisfied. Few of the wives are prepared at this point to be independent economically if the need arose, nor have most made plans for filling their time with deeply satisfying activities once their children leave home.

This book is most useful when it shows the specific ways in which the husbands' occupations, which assume competition and production on the job, fulfillment of timely requirements of career lines based upon a family-free model, and adherence to customary organizations of work, influence family life. The author does her best work when she stays close to the data gathered in her interviews and questionnaires and de-

scribes the quality of the lives of these men and women. Her conclusions that the wives' achievements outside of family roles are far less than those of their husbands, precisely because of the heavy demands of wife and motherhood, seem valid in the case of the women who were prepared by education and experience equivalent to the men at the time they joined their lives in matrimony. However, when she concludes as well that the descriptions therefore demonstrate that the husbands could not have been successful without the contributions of the wives, the familiar argument does not stem from her data. That is, she does not compare the achievements of these men and any other men; the men in this study might well have been as successful as they are with other kinds of wives or as unmarried men or living with roommates or with their mothers and fathers.

There are a few other flaws in the book. Though the author describes her approach as qualitative, she does not provide the interview schedules or the questionnaires she used. And, though she does point out that the women the doctors married were different in various ways from the ones the professors married—the latter had more education and were more likely to be working at the time they met their husbands—she does not consider that the greater participation of the academic husbands in the work of household and childrearing may be related to the fact that 15 of the academic wives are employed more than six hours a week (including two who run small farms), as compared to three of the doctors' wives.

All in all, however, the book should be of some interest to specialists in the fields of women's studies, women and work, occupations and professions, and family life. Social scientists interested in social stratification will find it of interest for the details of differences in life-styles of families who would be ranked equally on the usual stratification measures. The student of social change will find descriptions of the differences in the attitudes and activities of older and younger wives scattered throughout the work.

In sum, though the book reaches no startling conclusions, it is gracefully written and provides some interesting insights into and commentary on the importance of the way we earn our livings for the way we live our lives.

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Atomic Collisions

Electron-Molecule Scattering. Papers from a symposium, New Haven, Conn., Oct. 1977. SANBORN C. BROWN, Ed. Wiley-Interscience, New York, 1980. xvi, 196 pp., illus. $22.95. Wiley Series in Plasma Physics.

This is a delightful collection of papers from authors who possess a wide variety of skills, writing styles, and research philosophies.

A paper by Schulz on vibrational excitation of molecules demonstrates how experimenters and theorists have worked together in the development and testing of simple models through which we now understand many of the qualitative features of low-energy inelastic collisions between electrons and small molecules. This progress has required great improvements in the precision of measurements, the sensitivity of detectors, and the amount of detailed information that can be gathered and analyzed. The current status of laboratory experiments is assessed by Linder, who gives examples of recent studies of many different collision processes. In a complementary discussion of theory, Lane summarizes some of the more significant methods and describes some applications for which comparison between theory and experiment is possible.

A paper by Biondi on atomic processes in planetary atmospheres is biographical in nature and shows how laboratory experiments, ionospheric observations, and theoretical modeling have increased our knowledge of the properties of the upper atmosphere. The history of the study of dissociative recombination is of special interest. This process, in which an electron collides with a molecular positive ion to form an unstable molecule that dissociates into neutral fragments, was postulated to explain the rapid decay of ionization in the ionosphere at sunset and during solar eclipses and in many laboratory plasmas. The new experimental methods designed for the investigation of this process have not only clearly established its importance in controlling the charge density in many ionized gases but have also been adapted to provide valuable diagnostic techniques for atmospheric analysis.

The need for atomic collision data is not confined to ionospheric studies, and Phelps provides an introduction to several other applied fields in which atomic processes are important. There is room in this chapter for only a brief indication of the significance of electron-molecule collisions for gas lasers, energy generation, gaseous electronics, and air quality control.

It is obvious from the five main chapters of the book that much progress has been made in the last 20 years in this branch of atomic collision studies. However, in the postscript to the volume. Massey points out that our knowledge is far from complete and that there is much more work to be done.

There are several other collections of review papers that present more detailed descriptions of current techniques in atomic collision physics and others that cover particular applications of atomic physics in greater depth, but I know of no volume that I would recommend more highly for a balanced overview of research in electron-molecule collisions.

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Observational Cosmology

Objects of High Redshift. Papers from a symposium, Los Angeles, Aug. 1979. G. O. ABELL and P. J. E. PEEBLES, Eds. Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). xvi, 340 pp., illus. Cloth, $42; paper, $21. International Astronomical Union Symposium No. 92.

Few subjects are more fascinating than the study of the whole universe, and few symposium volumes are more interesting than this book. It contains the papers presented at an International Astronomical Union symposium on distant galaxies and quasars and the microwave background generally regarded as the remnant radiation from the "big bang."

Some of the most interesting papers deal with the counts of faint galaxies on long-exposure plates obtained with large telescopes. A paper by I. D. Karachentsev is one of the few reports in the Western literature on actual research results from the 6-meter telescope of the Special Astrophysical observatory in the U.S.S.R. Using an electronographic camera from the United Kingdom, Karachentsev obtained films in three colors and was able to count galaxies down to magnitude $B = 25$ and with less accuracy to the fainter limit $B = 26.2$, although stars and galaxies could be distinguished reliably only to $B = 23$. At magnitudes fainter than this, it was safe to assume that nearly every object was a galaxy, not a star. Like J. A. Tyson and J. F. Jarvis, who made counts of galaxies on fine-