teresting, are unsatisfying because unprovable. But overall he has provided a well-written and meticulously researched biography that makes judicious use of voluminous archives. With its numerous photographs (including many of Barnard's own) it is a handsome and well-produced volume, marred only by a series of mismatches, in chapter 20, between footnote numbers and superscripts in the text.

After Barnard's death one of his Nashville friends spoke of "the immortal fire within" that drove Barnard ruthlessly to observe night after night in his effort to understand the universe, sometimes to the detriment of his personal health and safety. Although it is unlikely today that one could reach the top of any profession in science without formal training, this biography recounts an inspiring example of what one individual can accomplish with hard work and dedication, against all odds. It is a lesson that should not go unheeded by students or professionals; even in the era of big science.

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## All About Mice

**Mouse Genetics**. Concepts and Applications. LEE M. SILVER. Oxford University Press, New York, 1995. xiv, 362 pp., illus. $49.95 or £40.

Mapping the human genome and identifying genes that contribute to susceptibility and resistance to disease are currently major preoccupations in biomedical science. The foundations for much of this sophisticated field of research were established in the mouse. Almost a hundred years ago, when it was recognized that laboratory mice developed tumors, attempts were made to use transplantable tumors as a means of inducing immunity to cancer. This led ultimately to a requirement for genetic uniformity in this species and the subsequent construction of inbred strains beginning in 1921. It soon became apparent that individual strains differed in their susceptibilities to cancer. Strains with a high incidence of mammary tumors (C3H) or leukemia (C58, AKR) stood in contrast to low–spontaneous-cancer strains (BALB/c, C57BL). The biological problems evolving from the transplantation of tumors in inbred strains opened a brilliant chapter in mammalian genetics with the discovery of the major histocompatibility locus. But quickly the progress in the mouse led to comparable work in humans and the mouse was relegated to a more parochial role in mammalian genetics.

Several important developments rekindled interest in the genetics of the mouse and made genetic findings more relevant to our understanding of human biology. Molecular geneticists discovered that many genes are highly conserved throughout evolution and that the order of genes in segments of chromosomes is conserved as well. Despite exceptions, "over 80% of the autosomes have now been matched up at the subchromosomal level." This linkage homology has made possible the transposition from one genome to another. Yet another series of observations opened additional ways in which to study human genes in mice. Construction of transgenic mice and gene targeting by homologous recombination to "knock out" the function of genes has created new strains of mice for studying mechanisms of gene action. The combination of these two methods can potentially produce mice that function with human genes.

Lee Silver in a pleasing and easy style presents a unique synthesis of modern mo-

lecular genetics and the biology of the laboratory mouse. As the house mouse and its genome are sometimes employed or regarded (regrettably) as a genetic "test-tube," there is growing need for the student as well as those who manage colonies of mice to become familiar with the biology of this fascinating creature. Though mundane, "all you ever wanted to know about the sex-life and reproductivity of the house mouse but were afraid to ask" is covered in this book. However, one should not be misled into thinking that the primary mission of the book is to give equal and independent time to husbandry issues along with molecular genetic technology. *Mouse Genetics* is truly a composite in which all elements contribute to a global understanding. It provides exciting reading for the student and continuing education for the more applied worker and above all unifies its topic. There are practical discussions for the student or researcher including such sections as "starting *from scratch* with a new mapping project." In his effort to assist the reader in the "fundamental goal of molecular genetics," Silver describes and evaluates strategies for mutagenesis (chemical, transgene, knock-out) and linkage analysis (using backcross, congenic, and recombinant inbred strains) to dissect how "genotypes *are* translated into phenotypes." Silver's insightful interest in the evolution of genomes surfaces over and over again in the text, making this book an exciting introduction to the comprehensive biology that is involved in the intriguing mysteries of the evolutionary process.

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## Interleukins Etc.

**Guidebook to Cytokines and Their Receptors**. NICOS A. NICOLA, Ed. Oxford University Press, New York, 1995. xvi, 261 pp., illus., + plates. $75 or £45; paper, $39.50 or £22.50. A Sambrook and Tooze publication.

Most books on cytokines are of evanescent value, being rendered obsolete very quickly by the emergence of new ligands, new receptors, new transducers, and new facts. With this thought in mind I looked askance at *Guidebook to Cytokines and Their Receptors*. Surely, I thought, the task of evaluating it would be akin to appraising a computer with a 386 chip. Refreshingly, it was not. True, there are specific areas in which discoveries have eclipsed the material presented. But for the most part the facts and principles set forth are not likely to change. This attests, in part, to the diligence of Nicola and the panel of experts he has enlisted to lay out the information. It also says something about the field as a whole, which seems at last to have reached a point of maturity.

The book begins with an overview of the cytokines, written by Nicola himself, and an overview of their receptors, written by Douglas J. Hilton. The reductionist approach that these authors entertain is most helpful, since only four families of receptors are known to accommodate the dozens of cytokines that exist. It is a bit disappointing to find that the book then presents the cytokines in an order dictated by their numbers, rather than clustering them in groups related to receptor function or structure. What, after all, do the appellations "IL-1, IL-2, . . . IL-*n*" really mean?

The enduring quality of this *Guidebook* owes much to the stylistic consistency and thoroughness of the individual entries. Many, though not all, of the cytokines have