many of the leading workers in the field, with data and conclusions that are otherwise scattered in many journals. What a pity it is that, as in most volumes of this type, no subject index is provided. From another point of view, the book is a fascinating cross-section of the state of interferon research in mid-1979. Some of the puzzles that existed then have already been solved. How baffling they seemed at the time, and, with hindsight, how easy it is to reinterpret the data. Also, how rapid progress has been in some areas. Was it such a short time ago that all interferons were thought to be glycoproteins, that the very first partial amino acid sequences for any interferon were published?

Space will not allow the mention of more than a few papers that particularly interested me. The demonstration by De Maeyer and De Maeyer-Guignard that electrophoretically pure mouse interferon exerts multiple biological effects is a landmark. For the first time, some 22 years after interferons were discovered, one can be sure that interferon molecules rather than impurities were responsible for certain effects previously reported as obtained with cruder interferon preparatins. Conversely, the blocking effect of large doses of crude preparations on the production of interferon by stimulated mouse cells was not seen with the pure material. Of course other properties have now been studied, and pure human interferons prepared and similarly tested.

Gresser and his colleagues review work on the toxicity of interferons in newborn mice and rats and suggest that interferon plays a role in the glomerulonephritis that develops in mice infected at birth with lymphocytic choriomeningitis virus. Although Schellekens has since reported that interferons do not seem to have similar effects in newborn monkeys, these data point out the need for caution in administering interferon to infants. Indeed, Gresser *et al.* speculate that the embryotoxic effects of rubella virus could result from interferon induced in the embryo itself.

There are many papers dealing with interactions between interferons and immunological mechanisms. For example, six discuss the stimulation by interferons of the activity of natural killer cells: the possible role of this effect in the antitumor activity of interferons continues to excite considerable interest.

It seems that only a proportion of patients with cancer respond to injections of interferon. Epstein and her colleagues describe how they have adopted the technique of Hamburger and Salmon to test human ovarian cancer cells for their in vitro sensitivity to interferons. Perhaps such studies will in the future provide a logical basis for choosing which patients should be treated.

Both the interferon specialist and the general reader will find a great deal of interest in this book. It can be cordially recommended.

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Changes of Place

Animal Migration, Orientation, and Navigation. SIDNEY A. GAUTHREAUX, JR., Ed. Academic Press, New York, 1980. xii, 390 pp., illus. $39. Physiological Ecology.

Most of the recent volumes on animal migration and orientation emphasize the mechanisms of orientation. This book takes a much broader view. It starts with a consideration of which animals migrate and why (Dingle), goes on to examine how these patterns are influenced by both long-term and short-term climatic changes (Gauthreaux), how animals store the energy necessary for migration (Blem), and what environmental cues trigger migration and how (Meier and Fivizzani), and concludes with a chapter on the mechanisms of orientation (Able).

Each chapter considers a variety of animal groups; some plant biology has even sneaked into Gauthreaux's chapter on climatic influences—no doubt on the reasonable premise that where the plants are the animals are sure to follow. Indeed, one of the major themes running through the book is that while migration is a complex phenomenon in which every animal seems to behave differently its effect is to allow the animals to utilize changing environments, whether the changes are seasonal, daily, tidal, or longer-term. In a way this theme follows from the definitions of migration proposed: "a specialized behavior especially evolved for the displacement of the individual in space" (Dingle) or "any oriented, long-distance, seasonal movement of individuals" (Able). I think that both of these definitions are more useful than Baker's view (in *The Evolutionary Ecology of Animal Migration*) that any movement of a plant or animal is migration.

The breadth of this book's coverage makes it especially useful. It summarizes and reviews a veritable mountain of literature in sufficient detail to lead one to specialized reviews or to the original papers. It is a pity that the bibliographies do not include the titles of the papers cited. With nearly 60 pages of references, brevity is obviously desirable; yet the references are such a central feature of the book that the omission of the additional information is particularly unfortunate.

Every reader will have a favorite chapter. I particularly liked Dingle's "Ecology and evolution of migration." His emphasis on the diversity of migratory patterns and processes and his attempt to find a basis for understanding the variety is appealing. I especially like his comment that "no single factor theory of migration is ever likely to be adequate." The same comment could easily be made on the basis of Able's contribution on the mechanisms of orientation. Here also there seems to be a diversity of mechanisms: the sun in the day and the stars at night, magnetic fields, olfaction, and even the moon all seem to play a role. The search for a single, unitary mechanism has been abandoned in favor of a Chinese menu approach. The problem now is to understand which cues animals use under which conditions and what information they can derive from them. Able does a splendid job reviewing the recent developments in the field, although the turmoil and rate of progress in this area are such that his review is already somewhat out of date.

The chapters fit together to make a well-integrated whole, constituting a comprehensive account of animal migration that will be a required volume for anyone in the field and a useful introduction for everyone else.

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Women as Workers at Risk

Work and the Health of Women. VILMA R. HUNT with assistance from Kathleen Lucas-Wallace and Jeanne M. Manson. CRC Press, Boca Raton, Fla., 1980. viii, 236 pp. $64.95.

The impetus for this book, Hunt reports in the preface, dates from 1974, when the Women's Equity Action League passed a resolution calling for more attention to the occupational health of women workers. This volume is thus intended as a resource for policy-makers—"those who are responsible for providing answers and influencing the quality of our work environment." It is not