passed the peak of its influence. Although an organized campaign for female suffrage had emerged during the 1840's, by 1910 the only states in which women enjoyed full suffrage were Idaho, Colorado, Utah, and Wyoming. In contrast to the many successes achieved by organized women's groups during the 19th century, the struggle for the vote was extraordinarily prolonged.

Degler finds irony in the slow progress of the suffrage movement. Although winning the right to vote did not significantly change the position of women in American society, the widespread belief that woman suffrage would profoundly alter social relations accounted, Degler argues, for the delayed success of the drive for suffrage. "To many men and women the suffrage *appeared* radical because, unlike all other activities in which women engaged outside the home, . . . it would not be accommodated to the idea of the separate spheres" (p. 341). The doctrine of separate spheres and the reality it reflected had given women greater autonomy within the home, substantial influence over their husbands, and some access to political and social movements outside the home (such as temperance). Radical innovations such as the vote seemed to threaten these gains, Degler argues, and hence were resisted.

The converse of Degler's emphasis on the satisfaction of 19th-century women within the family is his de-emphasis of the importance of increasing access to the labor market by women. Although the intensification of the drive for suffrage during the early 1900's coincided with an increase in the proportion of women working outside of the home, Degler argues that this influx of female workers did little to alter traditional conceptions of the appropriate role of women. As late as 1940 most working women were single and only temporarily in the work force prior to marriage. Most working women were still engaged in unskilled factory, sales, and clerical work. Some married women worked, but many of them were black women performing poorly paid work. Degler is convinced that the revival of feminism during the 1960's reflected changes in the economic position of women (the growing pursuit of careers by well-educated, married women), but these changes developed only after 1950.

Like any book that seeks to describe and to interpret the experiences of half of the population during two centuries, *At Odds* is open to attack from a variety of directions. Degler's conclusions at times conflict with his evidence. For example, he argues that suffrage was delayed because even progressively minded women saw it as a serious challenge to the doctrine of separate spheres and hence as a threat to the genuine advantages within the family that they had gained. But much of his evidence indicates that throughout the 19th century women had used the doctrine of separate spheres to secure greater autonomy outside as well as within the family. They had repeatedly argued that the true interests of the home demanded that they be allowed to lecture in public, to smash saloons, and, ultimately, to vote. It is difficult to see how the demand for suffrage posed a uniquely radical challenge.

Why, then, was suffrage delayed? Why did more women join the WCTU than NAWSA? There are various answers, among them the fact that during the late 19th century neither party could see a clear partisan advantage in suffrage. When after 1900 women won the right to vote in states like Utah and Wyoming, the result did not upset existing political balances and hence served to disarm politicians' fear of the unpredictable. The fact that the WCTU attracted greater support than NAWSA can be explained in a number of ways without postulating, as Degler does, that suffrage was uniquely radical. Throughout the late 19th century many middle-class women viewed politics as corrupt (rather than radical) and preferred the purity and piety of the WCTU to the secular atmosphere of NAWSA. It was not accidental that the successful drive for suffrage coincided with the rise of the Progressive reform movement after 1900, for Progressives sought through such agencies as government by commission and by experts to purify politics and thus to render political involvement more attractive to women.

At times Degler's argument is overstated rather than fundamentally misleading. For example, he is right in arguing that there has not been an inseparable linkage between changes in the occupational experiences of women and changes in prevailing conceptions of their place in society. But it is worth remembering that the performance of even subordinate and gender-typed work outside the home made it easier for women to remain unmarried and thus contributed significantly to social change and, ultimately, to change in attitudes.

Despite my reservation about aspects of his argument, I am strongly impressed by Degler's book. Degler does more than merely summarize existing research. He has the ability to find implications in monographic research that were missed even by the authors and to construct a coherent overview of a vast scholarly landscape. Although his argument about suffrage is unconvincing, his belief that the public activities of women can be better understood as related to changes in the family than to changes in the workplace is both original and persuasively argued.

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Northern Peoples

The Human Biology of Circumpolar Populations. F. A. MILAN, Ed. Cambridge University Press, New York, 1980. xvi, 382 pp., illus. $75. International Biological Programme 21.

Between 1967 and 1974, aboriginal inhabitants of the circumpolar region were studied as part of the International Biological Programme's research on human adaptation. This volume reporting the results contains contributions by 19 authors. Groups of Lapps, Ainu, and Eskimos are assessed for the existence of biological and behavioral processes resulting from adaptation to low temperatures and seasonal variation in the photic period and food resources.

Sporadic, but long-standing, contacts with cultures to the south preclude the study of peoples practicing traditional lifestyles. The geographic isolation of northern peoples has been disrupted by increasing interaction with other cultures resulting from recent exploration for natural resources, extension of government programs, and modern communication systems. The organizers of the Human Adaptability Section of the IBP had the foresight to record the human biology of groups last to participate in this culture transition. Although the data collected do not reflect aboriginal patterns, they provide a base line from which future investigators may evaluate the changes brought about by further acculturation. Aspects found to have possible adaptive significance in the northern environment include the frequency of certain blood polymorphisms, a mechanism for glucose homeostasis in the absence of dietary carbohydrates, early onset of cold-induced vasodilation, and a high concentration of active sweat glands around the face.

A multidisciplinary approach to the study of human biology has been followed. Research within the fields of demography, genetics, odontology, ophthalmology, growth, nutrition, physiology, and behavior is synthesized in

individual chapters. The goal of elucidating mechanisms of northern adaptation is brought closer to fulfillment by the excellent critical summations of the technical literature of these disciplines. Unfortunately, each chapter discusses only one aspect of human biology, and little attempt has been made to assess the interaction of biological parameters. Nor was a chapter assessing the adaptive status of circumpolar populations attempted. The lack of comparable data for all populations, particularly the northern peoples of the Soviet Union, precludes assessment of the total range of northern adaptations.

The Human Biology of Circumpolar Populations records the biological status of northern native peoples at one point in time. The topical syntheses make the volume an important reference for those concerned with environmental adaptation, the health of northern peoples, and the impact of culture change on human biology.

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Pollution Biology

Pollution Ecology of Estuarine Invertebrates. C. W. HART, JR., and SAMUEL L. H. FULLER, Eds. Academic Press, New York, 1979. xvi, 406 pp., illus. $28.50. Water Pollution.

Pollution biologists generally adopt one of two alternative approaches to their task. On the one hand, there are those who believe in the regulation of waste disposal according to criteria of toxicity established by laboratory studies of selected organisms. This method allows the regulator to make decisions based on strictly controlled data on relative toxicities of materials to standard test organisms, such as rainbow trout, but it is possible to challenge the relevance of this scale to effects of wastes in nature. One way of attempting to overcome this difficulty is by "in situ" toxicological testing using species found in the environment under consideration, but this may still only demonstrate acute toxicity to adult animals and miss sublethal effects on behavior, feeding, and reproduction and the many possible interactions among species that shape communities.

Field biologists, on the other hand, often prefer to try and detect the impact of effluents on whole communities, though they are sometimes forced to focus much of their attention on a single group because of deficiencies in the taxonomic literature for many groups for large parts of the world. These biologists have progressed from an "indicator species" to an "indicator community" concept, and in this they have been aided by shifting from a simple diversity index to more flexible classification and ordination statistics that enable reasonably objective data plots to be made that can have immediate visual impact—an improvement over the original data matrices of relative abundance by station number of species with unfamiliar names.

Books on pollution biology usually take one or the other of these two approaches, and some attempt to review the field. The present volume might be expected to be aimed at the field-biology approach because it is organized on a taxonomic basis. Several of the authors (those writing on nematodes, bryozoans, polychaetes, and crabs) provide sketches of the general biology of the group in question, some (those writing on nematodes, polychaetes, crabs, and amphipods) indicate the best sources of taxonomic assistance, and all of these authors then provide the sort of information that is necessary to the interpretation of the results of field surveys carried out by nonspecialists. Although all 17 contributors to the book are from the United States, the literature coverage is global.

One might expect the level of effort in such a book to vary depending upon the state of knowledge of any one group at this arbitrary instant, but this volume shows considerably greater inconsistency than might have been expected on those grounds alone. I suspect, judging from the contents of the companion volume on freshwater invertebrates published in 1974, that the editors intended the book to be based largely on field studies, with reference to the toxicological literature where relevant, yet different authors have taken different approaches. The chapters on nematodes and bryozoans bring recent statistical methods to bear on field data and those on polychaetes and ostracods take a somewhat anecdotal "indicator" approach, but the chapters on shrimp and larval decapods are almost exclusively toxicological. The greatest value would have been achieved by having representatives of both the field-biology and the toxicological approach present work on each taxonomic group; alternatively, better focus would have been achieved if only one approach had been adopted.

The selection of taxonomic groups could also be criticized, on grounds both of inclusion and exclusion. For instance, there is a chapter devoted to *Cyathura*, which does not merit detailed treatment in this context, whereas there are none dealing with representatives of the Protozoa, Porifera, Coelenterata, Ctenophora, Platyhelminthes, Nemertinea, and Echinodermata.

In short, the book is a valuable source of a wide variety of opinion and information but would have benefitted from a more stringent editorial policy or some attempt at a summary.

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Anaerobiosis

Living without Oxygen. Closed and Open Systems in Hypoxia Tolerance. PETER W. HOCHACHKA. Harvard University Press, Cambridge, Mass., 1980. xiv, 182 pp., illus. $17.50.

This book arose from a series of lectures presented by the author, a comparative biochemist, to a medical audience. Having encountered limited awareness of metabolic plasticity, he expanded his lectures into a simple account of the diverse mechanisms that permit animal life in the absence of oxygen. The zoological approach was chosen to distinguish the fixed from the adaptable components, a traditional goal of the comparative method, in hopes of yielding medically useful information, a far less conventional goal. As Hochachka points out, only clinical experience will test the usefulness of his approach in the latter respect; but the attempt to illustrate both the strict metabolic requirements of anaerobiosis and the various mechanisms evolved to fulfill them is a success.

Nine chapters range fearlessly over the animal kingdom, from parasitic helminths through the bivalve and cephalopod mollusks, water- and air-breathing fish, and diving mammals. The treatment is based largely on work done on particular members of these groups by Hochachka and his students. The chapters are followed by lists of representative publications from various laboratories. Unpublished findings of studies still in progress are frequently cited. Thus the coverage is quite current, if at times more speculative than it appears to be.

We learn about metabolic relationships, not always obvious, that demonstrate the importance of adaptability.