

rearing, communal dining, the spartan existence, and the rejection of material values of personal significance, and so forth, which characterize the commune particularly during the bund stage.

As the bund stage shifts to the commune stage, familistic values gain not only in legitimacy but in salience in the value hierarchy of each individual. Talmon provides nice measures of these shifts. Her analysis of this process over time is superb. Indeed, the step-by-step analysis of the role of ideology in reforming norms, the role of norms in reforming value-attitudes, and the role of social action both as cause and consequence, but by no means simply one or the other, is one of the most valuable features of this book.

Of particularly timely interest is Talmon's finding on the part women play in undermining the revolutionary orientation and especially that part of it that affirms the equality of the sexes. As the kibbutz changes from bund to commune, the number of persons showing more and more concern with familistic and individualistic goals increases, and it continues to increase. But it is the women who take the lead in reaffirming the values of family, in undermining the communal child care and rearing centers, and in affirming the rights of the individual to creature comforts and to special forms of personal gratification, at the same time themselves slipping back to the inferior position of women within the whole system. Not only are women more willing to take on menial jobs for the sake of the family and the children, but in Israel they have ample support from the religious system in this, and are correspondingly more willing to accept a subordinate position in the family itself. In its own special way, the evidence here supports those in the women's liberation movement who see the family as one, if not the major, source of sex role inequality.

One of the most illuminating analyses in the book concerns the interesting finding that those who have been reared in the same peer group in the same commune almost never intermarry, although exogamy is not normatively enjoined. Is this an incest taboo in the making? Not at all, says Talmon, and she shows why in a chapter on mate selection. Similarly interesting is the finding that there is no formation of elites despite the increasingly high degree of functional differentiation as time goes on.

It goes without saying that the ideology of the kibbutz is very close to that of a host of other such communal organizations whether in contemporary America, earlier periods of American history, or in certain European variants. Hence the relevance of this study of the Israeli phenomenon goes far beyond that small country.

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## Coastland

**Ecology of Salt Marshes and Sand Dunes.** D. S. RANWELL. Chapman and Hall, London, 1973 (U.S. distributor, Halsted [Wiley], New York). xiv, 258 pp., illus. \$14.50.

Public awareness of the value of salt marshes has coincided with increased contamination of coastal waters, heightened development of marshlands, and generally increased human activities of sorts in coastal areas.

This not only applies to the United States but seems to embrace much of the world. D. S. Ranwell writes in a highly readable way about salt marshes and dunes which he studied extensively in Britain, though the book is not restricted to that coast.

"Salt marshes are the product of land erosion and therefore an expanding resource. It is no accident that the greater part of the world's population derives its food from the great deltas, largely in the form of fish and rice." This quotation is taken from section 4, devoted to the management of salt marsh and sand dune wildlife resources. That Ranwell sees as a major management problem the creation of marshes on previously open flats is a comment on the ability of the hybrid *Spartina anglica* to spread into suitable habitats. Although marshes expand on our coast as well, we are destroying them faster and would think of marsh management from this aspect. Both aspects are discussed by Ranwell.

The book was written to be read, not only referred to occasionally for needed facts. Despite occasional truisms and use of unnecessary ecological jargon, such as "therophyte" for "annual species," Ranwell has succeeded in his aim to make the book easily understandable to students, research workers, and even the general public.

The book is designed more along the lines of a textbook than of a trade volume, but it is clear and concise and passes the barrier between the two.

Ranwell has included a good summary of the literature from both sides of the Atlantic on most aspects of dunes and marshes. A few omissions, such as the lack of an adequate explanation for the function of air spaces in marsh plants, mentioned several times, are notable. A report of work on the effects of management on the beach and dune systems of the barrier islands around Cape Hatteras would have added to the section on management, but the work may well have been too recent for inclusion. These, however, are minor criticisms against a basically sound book.

The volume covers the plant ecology and geology of marshes and dunes with some completeness. Not a great deal is written about the animals of these environments, but, as the author points out in relation to the dunes, what the animals do and where they do it has not been well worked out.

Probably the effects of most animals on the marsh and dune systems are not very great. The important animals are man, domestic cattle and sheep, and rabbits, whose abundance is also greatly influenced by man. The effects of these animals are discussed in the balanced section on management, which should also serve as a useful summary of practices and their effects for people who have to make the actual decisions about the future of these limited resources.

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## Environmental Physiology

**Physiological Adaptations.** Desert and Mountain. A symposium, Las Vegas, Nev., April 1971. MOHAMED K. YOUSEF, STEVEN M. HORVATH, and ROBERT W. BULLARD, Eds. Academic Press, New York, 1972. xiv, 258 pp., illus. \$14.50. Environmental Sciences.

This volume, dedicated to David Bruce Dill on his 80th birthday, is a tribute to that early pioneer, who has been a continuous contributor to environmental and exercise physiology for more than four decades. Appropriately, this collection of papers includes contributions from some of

Dill's early co-workers as well as more recent authorities. The book is broad in scope, containing theoretical discussions of the concepts of adaptation as well as accounts of adaptations within systems and their interrelations, and including a section dealing with psychophysiological problems at altitude and the similarity of symptoms of mountain sickness and senescence. Each chapter is complete in itself so that it can be read without reference to others.

For the most part, the book is devoted to the physiological response of man to heat, exercise, and altitude. Indeed, the two chapters on large and small mammals in the desert seem almost out of place. The brevity of this treatment is not inappropriate, however, because desert animals have been reviewed in several recent books.

The chapter "Vertebrates at altitudes" by the late R. W. Bullard provides very interesting and stimulating reading, particularly for comparative physiologists. Its major thesis is that adaptations of species native to high altitudes are different from those of their sea level relatives acclimatized to altitude. One of the major features of acclimatization to altitude in sea level species is increased red blood cell production and an increase in the oxygen-carrying capacity of the blood. For example, in men exposed to altitudes of 5300 meters for long periods of time there may be a 30 percent increase in the oxygen capacity of the blood. A survey of isolated highland species revealed no unusually high hematocrit. In fact, llamas at sea level had higher  $O_2$  capacities than llamas at 5340 meters. The affinity of hemoglobin for oxygen is critically important in the transport of oxygen from environment to tissues. The discovery that 2,3-diphosphoglycerate (DPG) and other organic phosphates reduce the affinity of hemoglobin for oxygen has precipitated a search for an adaptive role of such compounds in controlling the release of oxygen from hemoglobin to tissues. When man, rat, and domestic guinea pig are exposed to high altitude the concentration of DPG in red blood cells increases. The increase in DPG (which shifts the  $O_2$ -hemoglobin dissociation curve to the right) along with the increase in oxygen capacity results in an increase in  $O_2$  delivery to the tissues and has been considered an adaptation to altitude. Bullard has pointed out again that native high-altitude species have dissociation curves to the left of

those of sea level residents. Furthermore, most high-altitude mammals have blood which contains no DPG or hemoglobin which binds weakly, if at all, with DPG. It is suggested that those species that are most successful at high altitudes have become so without the perceived benefits of DPG and increased oxygen capacity. The chapter concludes with the demonstration that isolated tissues from ground squirrels native to 5800 meters have a greater capacity for anaerobic glycolysis than those from rats acclimatized to the same altitude, implying that evolutionary adaptation occurred primarily at the tissue level and resulted in the ability to maintain function at low tissue  $pO_2$ . The factors that permit the maintenance of cellular function at low  $pO_2$  are yet to be resolved.

From a comparative viewpoint I found this chapter particularly stimulating. Readers of a different inclination will surely also find interesting reading and provocative speculations among the contents of this book.

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## Human Development

**Developmental Physiology and Aging.** P. S. TIMIRAS. Macmillan, New York, and Collier-Macmillan, London, 1972. xii, 692 pp., illus. \$19.95.

*Developmental Physiology and Aging* is a textbook concerned with the physiological changes that occur during the human life-span. The book is in two parts. Part 1 covers events taking place from the time of fertilization to adulthood, and part 2 those of the adult years and senescence. The section on aging constitutes about one-third of the text. Seven of the 31 chapters were written by or with the aid of collaborators. What the author considers optional reading has been set in smaller type, and there is a good deal of such material. The author is most interested in neurophysiology and endocrinology. However, she does not hesitate to include anatomical and biochemical information when appropriate. The references at the end of each chapter are a valuable feature of the book. They seem carefully selected and complete titles are given.

The quality of the chapters is uneven. The book is strongest in the areas of Timiras's expertise, where she can

make interpretations and criticisms. It is not particularly original in areas such as biochemistry, although an effort is made to compile relevant information. It is weak in some areas, for example, the immunology of aging. The author is not particularly concerned with microscopic anatomy or the finer details of the anatomy of the nervous system. In spite of its size this is therefore somewhat a personal book. It reflects Timiras's interests and skills and her approach to teaching. Whether or not it is used in a course on developmental physiology and aging will depend on the approach of the teacher. To some it will be a valuable book, to others with particular interests in pathology or biochemistry it will prove rather disappointing. Reading the book straight through will require effort. The book is attractive physically, with appropriate tables, figures, and photographs. The idea of treating development and aging in the same volume is carried off rather well. This reviewer is not an enthusiast for the approach that regards senescence as analogous to embryonic development. This issue is handled with restraint, and the ability to refer backward and forward between the two sections of the book seems a valuable feature. A good index helps.

The book will seem rather advanced to most undergraduates, because of its encyclopedic coverage, but it will disappoint many specialists when they seek out the chapters on their subjects. It will probably not prove to be the definitive book in this field, but on the other hand there is no comparable volume available. It would be a useful book for a small library. A behavioral scientist interested in learning something about the physiology of development and aging would find it helpful, as would a biochemist with a background deficient in this kind of physiology. For a graduate student trying to get it all together it might be very helpful. Timiras makes an honest effort to take a broad interdisciplinary approach and to tell what is known about some fundamental aspects of physiology from the viewpoint of different disciplines. Many of the shortcomings of the book derive from the magnitude of the task of writing something somewhere between a textbook and a definitive monograph on such a broad topic.

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