

observed mortality. The author concludes that intraspecific competition from wildebeest and topi to some extent limits the food supply even more but that rainfall and retention of soil moisture ultimately set limits on the carrying capacity for all ungulates.

Sinclair concludes with a discussion of the management implications of his research. He rightly points out that conservation attempts in East Africa and elsewhere are hampered by deficits in our knowledge concerning distributions and our inability to define even an approximation to the carrying capacities of habitats designated as National Parks. His work is a refreshing blend of ethology, ecology, and management. It deserves to be read not only as a major field study of an ungulate species but also as providing a valid, pragmatic approach to the resolution of critical ecological questions related to long-term preservation.

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Muscle Research

The Biochemistry of Smooth Muscle. Proceedings of a symposium, Winnipeg, Manitoba, Canada, Aug. 1975. NEWMAN L. STEPHENS, Ed. University Park Press, Baltimore, 1977. xviii, 734 pp., illus. \$34.50.

This book is an essential source of information for all those interested in a remarkable set of relatively primitive cells, many of which can and do contract spontaneously and rhythmically and all of which can be stimulated to contract or relax by many drugs and can respond in many ways. Although we cannot control our own smooth muscles consciously, their behavior has enormous control over us and we should know much more about them. This symposium volume is a contribution to such knowledge.

There are 37 papers by 66 contributors in seven sections dealing with the energetics of contraction, carbohydrate and fat metabolism, cyclic nucleotides, contractile proteins, calcium metabolism and cell membranes, and applied biochemistry.

There is a significant degree of overlap between this book and an earlier symposium volume (*Physiology of Smooth Muscle*, Edith Bülbring and M. F. Shuba, Eds., Raven, 1976); both books are necessary reading for those interested in recent developments in our

knowledge of smooth muscle. Many of the gaps in earlier books on smooth muscle are filled by material in this one, and accounts of the subject are now reasonably adequate.

The book is as up to date as could be hoped. The references give ready access to what was known in 1975, although a flood of new, important, and sometimes contradictory findings has appeared since the symposium.

Perhaps the most remarkable development in the study of smooth muscle in recent years has been the effective application of virtually all appropriate sophisticated techniques to a tissue that for many years was mainly the basis for bioassays by pharmacologists. Smooth muscle was deliberately ignored by most others as being too variable and difficult to study properly. Many years ago it was even described as "headache muscle" (by A. Csapo in *The Structure and Function of Muscle*, G. H. Bourne, Ed., vol. 1, p. 232, Academic Press, 1960) because it plays a role in headaches, because thinking about it caused headaches, and because through "a lack of appreciation of the significance of adequate techniques, smooth muscle physiology [had become] an isolated and retarded discipline, conducted without regard to the fundamental similarity of contractile tissue."

That time has long passed, as this book clearly demonstrates. In fact, the great range of structure and behavior exhibited by smooth muscle makes it likely that investigations of it will produce new advances in even greater profusion than will investigations of skeletal and cardiac muscle.

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Body Politics. Power, Sex, and Nonverbal Communication. Nancy M. Henley. Prentice-Hall, Englewood Cliffs, N.J., 1977. x, 214 pp., illus. Cloth, \$9.95; paper, \$3.95. A Spectrum Book.

Chemistry and Properties of Crosslinked Polymers. Proceedings of a symposium, San Francisco, Aug. 1976. Santokh S. Labana, Ed. Academic Press, New York, 1977. xiv, 582 pp., illus. \$29.50. *To order this book circle No. 474 on Readers' Service Card.*

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The Eye in Chromosome Duplications and Deficiencies. Marcelle Jay. Dekker, New York, 1977. xii, 250 pp., illus. \$22.50. Ophthalmology Series, vol. 2.

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The Hartree-Fock Method for Atoms. A Numerical Approach. Charlotte Froese Fischer. Wiley-Interscience, New York, 1977, xii, 308 pp. \$22.95.

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RESEARCH NEWS

(Continued from page 855)

looping-out model, if it is correct, is an unexpected development. Darnell, who is one of the investigators studying the hnRNA's, thinks that the new results are compatible with his views about their role but says that he was surprised to learn that interior sequences, not just those on the ends, might be removed from the molecules.

If several interior sequences are excised from the precursors, then it might be possible to detect a series of hnRNA's that show progressive loss of interior nucleotide segments. The experiments are extremely complicated, but Sharp and Berget have preliminary evidence for the existence of these intermediates in RNA prepared from the nuclei of cells infected with adenovirus.

So far, the bulk of the evidence indicates that during messenger synthesis, noncoding sequences become attached to sequences coding for proteins. But splicing may also occur within structural sequences themselves. Weissman and his colleagues say that the section of SV40 DNA that codes for the T antigen, a large viral protein produced early in infection, contains a number of termination signals whose presence in messengers normally stops protein synthesis. Weissman says that, if the size estimate for the T antigen is correct, either there is selective suppression of the termination signals during translation of the T antigen messenger or else the messenger must be synthesized in such a way that the signals are excluded from it. Further work will be required to determine whether this situation is comparable to the intramolecular splicing seen with the late viral messengers.

The big question is whether a similar phenomenon occurs during gene expression in nucleated cells themselves. The existence of spliced cellular mRNA's has not been demonstrated directly, but several of the investigators doing the viral work cite recent results from other laboratories that could be interpreted as supporting the existence of spliced mammalian messengers. However, the researchers who are actually doing this work currently disavow any such interpretation. They say that other possible explanations have not been eliminated. Nonetheless, the recent developments will no doubt stimulate a lot of new research and encourage investigators who until now have experienced more frustration than success in their studies of gene expression in the cells of higher organisms.

—JEAN L. MARX

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The National Health System in Denmark. A Descriptive Analysis. Dorte Gannik, Erik Holst, and Marsden Wagner. National Institutes of Health, Bethesda, Md., 1977 (available from the Superintendent of Documents, Washington, D.C.). vi, 86 pp. Paper. \$1.15. A Publication of the John E. Fogarty International Center for Advanced Study in the Health Sciences.

The Nation's Use of Health Resources. 1976 Edition. National Center for Health Statistics. Rockville, Md., 1977. x, 104 pp. Paper.

Principles of Zoology. Willis H. Johnson, Louis E. Delaney, Eliot C. Williams, and Thomas A. Cole. Holt, Rinehart and Winston. New York, ed. 2, 1977. xii, 748 pp., illus. + plates. \$16.95.

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Problems in Calculus and Analytic Geometry. Richard J. Palmaccio. J. Weston Walch. Publisher, Portland, Me., 1977. iv, 148 pp. Spiral bound. \$3.50.

Proceedings of the Second International Symposium on Clinical Enzymology. Norbert W. Tietz, Albert Weinstock, and Denis O. Rodgerson, Eds. American Association for Clinical Chemistry, Washington, D.C., 1976. xiv, 338 pp., illus. \$15.

The Sewing Machine. Its Invention and Development. Grace Rogers Cooper. Published for the National Museum of History and Technology by Smithsonian Institution Press. Washington, D.C., ed. 2, 1976. x, 238 pp., illus. \$14.95.

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