

of market forces. The authors rightly point to the need for a combination of contingency planning, continuous budgeting and rolling planning, so that there can be adequate and speedy responses and adaptations to unforeseen events, both favourable and unfavourable.

The authors treat planners and planning as part of the social and political environment which they are supposed to plan. Planning the planners is not an invitation to an infinite regress but a reminder that there must be continuous mutual adaptation between plan objectives and social constraints.

PAUL STREETEN

Steroid receptors

Steroid-Cell Interactions. By R. J. B. King and W. I. P. Mainwaring. Pp. 440. (Butterworth: London, February 1974.) £10.

JENSEN and Jacobsen showed in 1962 that tissues such as the uterus and vagina, which are responsive to oestrogens, will retain administered oestradiol to a greater extent than non-responsive tissues and that this retention was due to the presence in the responsive tissues of specific receptor proteins. Since then the receptor hypothesis has been extended to many other hormones and the interaction between hormone and receptor is considered to be one of the links in the chain of events by which the hormone exerts its biological action. This concept has thus become of interest to molecular biologists as well as endocrinologists. The increased interest in this topic over the past five to six years has led to its discussion in numerous reviews and symposia; so what are the advantages of reading this monograph over consulting the reviews? Undoubtedly in the chapters reviewing the interaction of the various steroid hormones with the cell receptors there is more detail than found in most of the reviews. By far the main advantage, however, is the account of both the theoretical and practical background to the topic contained in the first two chapters on "Physicochemical Considerations of Steroid-Receptor Interactions" and "Methods Used to Study Steroid-Tissue Receptor Interactions" and the chapter giving a readable account of the molecular biological aspects of steroid-receptor interaction.

The title is slightly misleading since the monograph is mainly concerned with interactions involving receptors. Both androgens and oestrogens affect tissues or metabolic processes in which receptors have not yet been shown to be involved and this might suggest that there are other kinds of steroid-cell interactions. Many examples are

quoted by the authors. Androgens are anabolic but androgen receptors in skeletal muscle are difficult to identify nor has 5 α -reductase activity been demonstrated in the muscle of many species. Androgens stimulate both RNA and protein synthesis in liver but androgen receptors have not been identified in this tissue although it seems to contain oestrogen receptors. Normal breast tissue, which is influenced by oestrogens, accumulates oestradiol but does not seem to contain oestrogen receptors whereas breast tumours do. Little attention is paid to the interaction between the hormones in the tissues (uterus for example seems to contain an androgen receptor in addition to oestrogen and progesterone receptors), nor is the effect of other modifying influences on the hormones considered. This might be particularly important regarding events in the pituitary and brain. Conversion of testosterone to dihydrotestosterone seems not to be necessary for all biological activities of testosterone. Indeed some biological effects of testosterone seem to be produced by its conversion to oestrogen whereas dihydrotestosterone is not aromatised in this way. Until more knowledge is available it might be better to draw a distinction between androgen-sensitive tissues and androgen-dependent ones.

The authors point out the remarkable similarity of the different receptor proteins from different tissues. These similarities are deduced from current physicochemical data and it will be of interest to see whether they are upheld on further examination. Evidence that hormone binding correlates with hormone activity is reviewed. In respect of oestrogens and progesterone the evidence is quite good even though knowledge is limited. For androgens the situation is complicated by the extensive metabolism undergone by testosterone in the target organs and the possibility that the various metabolites may have different biological activities.

The monograph is well arranged and the newcomer to the field will have no difficulty in finding what he wants. In an attempt to bridge the gap between the writing of the book and its publication a summary of current literature is included. Whereas some of the chapters contain general summaries which are useful, others do not. I feel that the brief chapter on clinical and immunological aspects of steroid binding is superfluous to the main theme of the book. It will be a handy reference book to all investigators in this field and because of the amount of time it will save, it should be greatly appreciated by research students starting work in the area.

K. FOTHERBY

Spoonful of saccharin

Sensory Processes: The New Psychophysics. By Lawrence E. Marks. Pp. x+334. (Academic: New York and London, February 1974.) \$17.50; £8.25.

PEOPLE who use saccharin to sweeten their tea may have noticed a surprising thing: halving the concentration of sugar in a solution reduces its sweetness far more than halving an equally sweet (although much weaker) concentration of saccharin. This is one of many examples that demonstrate differing relationships between sensory magnitude and physical stimulus. How does one measure sweetness, brightness, pitch, odour? It has been shown, particularly in the pioneering work of the late S. S. Stevens, that asking subjects to assign numbers to sensation strength leads to a power function with an exponent dependent upon the stimulus and sensation considered. Lawrence Marks draws a clear distinction between this, the "new" psychophysics, and sensory physics, the "old" psychophysics, in which the observer is simply a detector of threshold, masked threshold, or null point, with measured quantities all in the physical domain. He describes and attempts to interrelate the various psychophysical procedures such as fractionation, category rating, and magnitude estimation and discusses the influences of extraneous factors. The senses are each considered under the headings of sensitivity, temporal and spatial factors, and qualitative aspects. Although one detects a certain antipathy towards the "old" psychophysics it is a carefully reasoned and comprehensive account and shows great concern for validation of the approach. Unfortunately his rather detached attitude coupled with the large number of references makes difficult reading in parts and a certain amount of repetition is inherent in the organisation he has adopted.

Although the new psychophysics gives insights into sensory processes not obtainable in any other way the field has a certain contrived air to it. We do not generally use our senses, or numbers, in this way. We normally use our sensory systems to perceive objects and relationships in the outside world. The idea that perceptions are built up from elementary sensations has been superseded by the concept of perception as an active, generative, process. We frequently see more than our sense organs convey because of past experience and expectations which can be triggered by a few salient features of sensory data. In this wider, more complex field of perception, detection could be of greater importance than sensory magnitude.

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