

aldosterone and related compounds, together with techniques for analysing epinephrine, norepinephrine and thyroxine-like substances. Many of the methods are described so fully that they can be employed without reference to the original source. It is a useful reference to all who need precise and comprehensive information on the chemical determination of hormones. Like the first edition this is once again a workmanlike job, comprehensive in its field, authoritative, carefully produced and well organized. It is produced in such a provocative way and is critical enough to stimulate new ideas for the development of yet better methods.

Unfortunately, the book has one main failing: there is but a mere mention of the new and extremely sensitive protein-binding radioassay methods. The protein binding techniques today include simple and reliable methods for oestrogens, testosterone, progesterone and most of the corticosteroids all of which can be used for small amounts of animal and human plasma as well as for urine; it is a great pity they are not included in this book.

In spite of this—and, as the editor himself points out, there is already a great need for a third edition—the second edition includes many valuable techniques not included in the first edition.

This book is a "must" for all steroid chemists and analytical biochemists, endocrinologists, gynaecologists and for many other people in the clinical field.

D. EXLEY

SPIDERS' WEBS

A Spider's Web

Problems in Regulatory Biology. By Peter N. Witt, Charles F. Reed and David B. Peakall. Pp. viii + 107. (Springer-Verlag: Berlin and New York, April 1969.) 36 DM; \$9.

THIS slim volume contains a valuable summary of the work of Drs Witt, Peakall and Reed, starting with Witt's experiments in the late 1940s on the use of web-spinning spiders of the family Argiopidae (orb-web spinners) for drug assay. The web building behaviour of spiders is conveniently recorded by the form of the web itself. By measuring a number of web parameters, a picture was built up of the "normal" web which is itself a function of the age of the spider, body weight, state of feeding and integrity of the first two pairs of legs which play a sensory part in web building. Orally—or subcutaneously—administered drugs produce characteristic abnormalities: for example, D-amphetamine causes the web to be smaller and less regular than controls; a low dose of LSD 25 improved the regularity of the web; caffeine produces severe irregularities; and so on. Some twenty-three different drugs have been tested and some use of the method has been made in assay work although the technique has severe limitations.

Peakall contributes a section on the silk glands and the constitution of silk. Unlike silkworms, which have one pair of glands (with functionally distinct regions), spiders often have a hundred glands divisible into several (in the Argiopidae, at least 6) morphologically distinct types producing silks of different amino-acid composition. Each gland empties through a duct leading to a hollow hair (spigot) borne on one of the three pairs of tubular spinnerets. This condition raises several problems: what are the functions of the different types of gland and the silks they produce and how are the properties of the silks related to amino-acid composition; how are the different glands brought into activity and how is the silk forced along the narrow and often tortuous duct; what influences solidification of the liquid silk? Peakall has interesting light to throw on these problems. In particular, his work on the effects of cholinergic stimulation of the

ampullate gland is conveniently summarized. His claim to have discovered a nerve supply to the gland, and a receptor at the mouth of the gland, is not convincing and we still have little idea as to the mechanism of bringing the different glands into play at the appropriate time, in an activity like web building.

Reed returns to the classical problem of web construction: what is the sequence of events and how much does the animal rely on external information when changing from one behaviour pattern to the next? One of the species studied conveniently makes a new web daily, but less conveniently does so at 5 a.m. Not surprisingly, web building becomes increasingly predictable as the process continues. The spider's first task is to construct an open vertical framework secured to suitable supports, and to lay down "radii" from this framework to a common centre. At this stage, the environment presents many variables and the spider's behaviour is correspondingly variable. Once a few radii have been made and a centre thus defined, the main stimulus for additional radii appears to be the angle between existing ones. Finally, the construction of a temporary spiral from centre to periphery, and its replacement by a functional adhesive spiral from periphery to centre, is very stereotyped. A few observations have been made on the effects of brain lesions on web-spinning behaviour, but this work is in its very early stage.

D. A. PARRY

RUSSIAN SEA URCHINS

Fauna of Russia and Adjacent Countries

Echinodermata. Vol. 1: Echinoidae. By A. M. D'yakonov. Translated from the Russian. Pp. iv + 265. (Israel Program for Scientific Publications: Jerusalem. Distributed in the UK by H. A. Humphrey: London, July 1969.) 120s.

THIS study of Russian sea urchins first appeared in 1923, nearly ten years before the first volume of Mortensen's monumental monograph of the echinoids. The classification used, however, is based on that evolved by Mortensen in the early years of this century, though inevitably there are a few changes in the nomenclature from that subsequently used by Mortensen and followed by neontologists today, while the higher taxa have been more drastically modified by Durham and others, as shown in the recent *Treatise on Invertebrate Paleontology*, part U. Nevertheless, D'yakonov's extensive discussions on the relative merits of the prior, and often contradictory, classificatory schemes of Agassiz, H. L. Clark, Jackson, Döderlein and Mortensen are of considerable interest. The book also provides a compact comprehensive study of the class Echinoidea, with a detailed and well illustrated account of those morphological features used in taxonomy, together with a glossary of terms and keys to all the families of echinoids then recognized. The taxonomic section is unfortunately incomplete. Although the introduction mentions thirty-nine species as being included within the geographical scope—northern Norway eastwards to Alaska and south through the Bering Strait to northern Japan—the book, in fact, stops short at the family Echinidae and no "irregular" species are dealt with at all, nor is the arctic echinoid par excellence—*Strongylocentrotus droebachiensis*—included. Thirteen species are, however, covered at length with diagnosis (in Latin), detailed description and comparative discussion of related taxa from outside the geographical range. These thirteen include *Echinus esculentus* and *acutus*, common in British waters, the remaining species being from the North Pacific. There is a full bibliography and a short historical account of previous studies on echinoids of Russian and adjacent waters. Indeed, the main interest of the book is a historical one.

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