

zoologist as well as the specialist in fish physiology". I think it will, and I expect that it will be found in all relevant libraries, in spite of the heavy price that has to be paid.

C. E. LUCAS

NEW WORLD FLORA

Vascular Plants of the Pacific Northwest

Part 1: Vascular Cryptogams, Gymnosperms, and Monocotyledons. By C. Leo Hitchcock, Arthur Cronquist, Marion Ownbey and J. W. Thompson. Pp. 914. (University of Washington Press: Seattle and London, November 1969.) 238s; \$25.

THE recent publication of part one now completes this magnificent and already well known flora, the other four parts (each worthy of being called a volume) having appeared in reverse order during the past fifteen years, starting with Cronquist's *Compositae*.

The Pacific North-West, as defined by the authors of the flora, is an extensive area of territory covering the states of Washington, northern Oregon, Idaho north of the Snake River plains, the western mountainous part of Montana and southern British Columbia. Some 4,000 species of vascular plants are known to be indigenous here or to have been introduced and these have now been fully dealt with in the five parts. As the title indicates, part one includes the vascular cryptogams (ferns and fern allies), gymnosperms and monocotyledons, most of them dealt with by the senior author C. L. Hitchcock. Users of this and probably the other parts of the flora may possibly be confused by the circumscription and nomenclature of the divisions and classes of the higher plants. For instance, here the name Pinophyta is used for Gymnospermae, Magnoliophyta for Angiospermae and Liliatae for Monocotyledonae, following the recent proposals of Cronquist *et al.* in *Taxon*, 15, 1966. The sequence of monocotyledon families also follows Cronquist's *Evolution and Classification of Flowering Plants* (1968) and might seem strange to those not already familiar with this treatise. Besides the usual keys to families, genera and species and rather full descriptions, complete "regional" synonymy is given together with details of chromosome number (very frequently known), "genuine" vernacular names and information on distribution and ecology. Finally, notes on infraspecific variation have been added. Following the (unfortunate?) tradition of most temperate floras, no matter how elaborate, no specimens are, however, cited other than type material.

Perhaps two features above all contribute to the usefulness of this particular part. The first of these is the excellence of the illustrations by J. R. Janish. Practically every species has been illustrated by simple but extremely clear and accurate line drawings, depicting habit and diagnostic characteristics. The second is the inclusion of special keys. One to the grasses of the area (again illustrated) is based purely on vegetative features and will be of great potential use to pasture ecologists and agriculturists who so often must, of necessity, identify sterile material. There is also a key to aquatic plants (all vascular groups included), again chiefly on vegetative characters.

This volume, being the last and largest part of the flora to appear, includes several sections relating to the work as a whole. There is, for instance, an index to all the plant families, a glossary and a corrigendum to the other parts. Finally, there is a complete index to vernacular, generic and specific names.

The sheer bulk of this flora means that it will serve chiefly as a work of reference, but the thoroughness of its production will certainly ensure for it a status and value far above that of a mere regional flora, for many years to come.

BRIAN T. STYLES

QUANTUM CHEMISTRY

Methods of Molecular Quantum Mechanics

By R. McWeeny and B. T. Sutcliffe. (Theoretical Chemistry—A Series of Monographs, Vol. 2.) Pp. ix+307. (Academic Press: London and New York, December 1969.) 84s; \$13.50.

WRITTEN for a far more sophisticated and exacting readership than the first volume in the series, this is a book in which even the most experienced quantum chemist should find a great deal of value. A rigorous yet economical exposition, characterized throughout by refreshing critical insight, it has all the qualities one would expect of its authors.

Being designed "for students specializing in theoretical chemistry or molecular physics", it uses techniques which go well beyond the repertoire of the average chemist. It is certainly a work of consolidation rather than primary instruction. At first sight, much of the analysis will seem formidable to student readers; and, while those who do battle with the difficulties will find themselves very well rewarded, I think this book will probably be more popular with teachers of quantum chemistry than with their students.

Together with two appendices, the first two chapters present a brisk survey of the general principles and theorems of wave mechanics, illustrated by reference to one- and two-electron systems. Next comes a careful account of the various operators used in formulating many-electron antisymmetrized wave functions.

Having completed the usual preliminaries (though by no means always in the usual way), the authors then provide a most welcome discussion of electronic charge distribution, including, of course, a description of density matrices.

The next three chapters deal in turn with the Hartree-Fock theory and its principal elaborations, with valence-bond theory, and with various recent developments (generalized product functions; variation-perturbation theory for group functions; cluster development; correlated pair functions).

A chapter on electrical and magnetic effects is supplemented by a quite substantial appendix dealing with relativistic terms in the Hamiltonian operator.

The book concludes with a description of some typical molecular calculations. This is the only chapter in which any numerical results are discussed.

It could perhaps be argued that much of the material in this book could have been expounded accurately and effectively in a simpler way; but this was clearly not the authors' intention, and they are to be congratulated on producing a contribution to the didactic literature of quantum chemistry that is really distinctive.

E. THEAL STEWART

Obituaries

Dr Peyton Rous

EXPERIMENTAL pathology and cancer research, and indeed the whole of biological and medical science, have sustained immense loss from the death, on February 16, 1970, of Francis Peyton Rous, at the age of 90. His special fields will never be the same without him. Yet our main emotion must be of gratitude for his long life and epochal contribution.

Rous's mother was descended from Huguenots who had settled in Virginia after the Edict of Nantes; and his father was a Baltimorean of English forebears. Reading of his early life evokes and recaptures in remarkable degree the spirit of a great period in the history of the United States and, a little later, that of an outstanding