produce a remarkably well-balanced summary of what is known of the geology of western Canada. The area considered extends from the edge of the Precambrian of the Canadian Shield to the Pacific, and from below the International Border to the 61st Parallel, more than a million square miles. As the editors remark, ". . . this project demonstrates to the full the value of a technical society. It shows that such a group can coordinate the resources of industry, universities and government to carry out projects whose magnitude would make them impractical or impossible for any single organization." Half a dozen governmental agencies supplied direct financial support, and 21 different groups furnished assistance with the tremendous task of drafting. The editors deserve great credit for maintaining remarkably uniform standards of treatment with so many, and such diverse, cooperating groups.

The book presents a summary, period by period, of the history of this huge area, as far as it had been deciphered to about the close of 1962. (There are a few references to later work.) Each system is treated uniformly, in much the same manner as in the *Paleotectonic Map Series* of the U.S. Geological Survey, with a paleogeologic map, lithofacies maps of the recognizable stratigraphic intervals, isopachs, cross-sections showing onlaps and offlaps, many graphic logs, and finally, analytical and interpretive summaries of depositional and orogenic history and paleogeography. Colored maps, mostly on a scale of 1 : 5,000,000, have been profusely used. Many of the 217 numbered illustrations are multiple, and some have as many as four separate parts; there must be well over 500 separate drawings in the book. Their quality, and that of the map reproduction, is excellent.

The Tertiary and Quaternary, being of relatively slight economic importance, are not given as detailed treatment as most of the other subdivisions; nevertheless both sections include much new information in useful summary. The remainder of the geologic column is handled in a remarkably uniform way, considering the very large number of contributors and the variable amounts of information available. Naturally the systems with the greatest proved economic importance have been penetrated by the most wells and are therefore best known in detail. The discussions of the Upper Devonian, Triassic, and Cretaceous units are thus especially noteworthy, but it must be emphasized that all the units are very well summarized.

In addition to consideration of the more usual geologic features, there is an excellent discussion of formation fluids in the Plains area: petroleum, natural gas, and formation waters. Brian Hitchon, of the Alberta Research Council, has summarized the results of nearly 20,000 analyses in a series of most informative graphs. It is clear that much geologic information can be wrung from such analyses.

This work is an outstanding contribution to an understanding of the geologic history of the North American continent, and it will be quoted for many years. Few, if any, geological organizations south of the 49th Parallel have the capacity to carry through so complex and ambitious a program. The Alberta Society of Petroleum Geologists, and all who were concerned with this project, have placed the entire geologic profession in their debt.

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Survey and Review

Concepts in Quantum Mechanics. F. A. Kaempffer. Academic Press, New York, 1965. xvi + 358 pp. Illus. $9.75.

The multiplicity of available texts on quantum mechanics causes one to ask whether an additional one would be of value. In this case, however, the answer is in the affirmative due to the author's novel and desirable approach to his subject matter, combined with a very refreshing mode of presentation. First, quantum mechanics is presented in a deductive fashion where, as the book title suggests, emphasis is on the formal conceptual structure of the subject. Dirac notation is introduced at the very beginning, and the first six sections are essentially a lucid treatment of the theory of measurement in quantum mechanics. Sections 7 through 15 consider the dynamical aspects of the theory, the topics covered being those traditionally associated with a first-year graduate course in quantum mechanics. They include the Heisenberg, Schroedinger, and interaction pictures; uncertainty principle; invariance principles; and conservation laws. The theory of photons and electrons is introduced in sections 16 through 19 where boson states, fermion states, and the Dirac theory of the electron are presented. This serves as a basis for the second half of the book, which treats more advanced topics. Quantum electrodynamics provides an opportunity for the introduction of Feynman graphs, followed by a treatment of perturbation theory and propagators, selection rules, parity, and permutation symmetry. The book concludes with topical sections on strong interactions and on quasi particles.

The fact that there are 30 sections in this 350-page book gives a hint about the author's style. Each section is written in a terse, forthright manner, with mathematical formalism taking precedence over elaborate discussion. Applications of the theory to concrete problems are few, and examples are chosen to illustrate the theory only where deemed necessary. In spirit the book appears to parallel some parts of Messiah's text. Messiah, however, is more discursive, and Kaempffer's text has the advantage of a more direct and concentrated approach to many important elements of quantum mechanics which are found distributed throughout Messiah's two volumes. This is not to say, however, that this book merely parrots portions of Messiah. Although his text is not as extensive as that by Messiah, the author presents quantum mechanics in such a way that the mathematical structure and useful concepts of the theory appear in sharp relief, and he also treats some topics not found in Messiah, for example, superfluidity.

This book would be excellent for use in graduate courses on quantum mechanics, if a supplementary text such as that by Landau and Lifshitz be used to supply, among other things, supporting application of the theory. For those who are familiar with one or more of the practical applications of quantum mechanics, this book provides a very readable survey and review of basic principles.

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