to the international or Passamaquoddy project first proposed by Dexter P. Cooper in 1919. A second paper by the same author reviews the economics of tidal power including the possibility of combining tidal power production with a pumped-storage scheme.

The objective of the paper entitled "Mathematical model of tidal regimes in the Bay of Fundy" is to provide a quantitative evaluation of the effects of several power schemes on tidal ranges throughout the bay. The paper is largely a qualitative description of a two-dimensional tidal model which includes Coriolis effects. None of the governing equations are given and there are no references to the details of this model or to any previous mathematical models for tidal motion in the Bay of Fundy.

Several papers are concerned with other potential tidal power sites: an experimental station on the White Sea near Murmansk in the U.S.S.R., Cook Inlet in Alaska, and San José Gulf in Argentina. A number of short papers discuss engineering aspects of hypothetical tidal power schemes, turbine design, and corrosion properties of ferrous and nonferrous metals and concrete.

A well-documented, one-dimensional tidal model for the Bristol Channel is given. The objective is to calculate the head difference across a proposed barrage in this estuary. Another British contribution is a mathematical model for predicting the effect of tidal barriers on sedimentation in estuaries. The last paper discusses some of the environmental aspects of tidal power production.

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Water

Water and Aqueous Solutions. Structure, Thermodynamics, and Transport Processes. R. A. HORNE, Ed. Wiley-Interscience, New York, 1972. x, 838 pp., illus. $37.50.

Few of the properties of liquid water and aqueous solutions have been satisfactorily explained at the molecular level. There are two major reasons for this. First, liquids are more complicated than solids with their periodicity and gases with their randomness. The radial distribution function of water reveals that it possesses some structure, but details of this structure and how it fills space are unknown. Second, hydrogen bonding is not well understood; but it dominates the properties of water and its solutions. In view of these difficulties, what might be expected from this book?

There are 19 chapters, most of which are reviews of various topics more or less related to the book's title. The choice of topics is puzzling. Three chapters are devoted to ice but none to solid hydrates or aqueous clathrates. Four chapters are devoted to liquid water, including a whole chapter on its viscosity. There are no chapters on the quantum chemistry of water or on water vapor. Ten chapters are devoted to aqueous solutions. The inclusion of chapters on seawater and biological fluids, to remind the reader that these are aqueous electrolyte solutions, was unnecessary. The chapters devoted to nonaqueous electrolyte solutions and fused salts are inappropriate for the book.

There are two excellent chapters. Ben-Naim and Stillinger's chapter on a statistical mechanical theory of water is a prelude to the molecular dynamics study of liquid water by Rahman and Stillinger (*J. Chem. Phys.* **55**, 3336 [1971]). In the molecular dynamics study, the motion of 216 rigid water molecules under the influence of a carefully chosen intermolecular potential was simulated in a computer. The positions and orientations of the molecules were recorded as a function of time; thus, transport and thermodynamic properties could be calculated for the set of molecules and observations could be made on structure in the set. What is observed with molecular dynamics depends on several things, including the intermolecular potential. In their chapter, Ben-Naim and Stillinger discuss the choice of a suitable potential function, the properties of the function used by Rahman and Stillinger, and how such a function might be used to study water with the methods of statistical mechanics that have been used to study simpler fluids. In another chapter, on dilute aqueous solutions of nonpolar solutes, Ben-Naim examines the statistical mechanics of such solutions, scrutinizes the thermodynamics of mixture models used to explain the anomalous behavior of water toward these solutes, and suggests some new approaches to understanding this anomalous behavior which is central to the concept of hydrophobic interactions.

The chapters by Ben-Naim and Stillinger, in which the authors present ideas on how to move beyond present clichés used in the study of aqueous systems, are the most interesting of the book. Argument over whether liquid water is a continuum or a mixture and use of nebulous terms like "structure-making" and "structure-breaking" to describe solutes in water are unlikely to lead to any advances in our understanding of water and its solutions. Unfortunately much of this book, like much of the work reported on aqueous systems, is couched in such terminology. There is little in the book to satisfy any expectations.

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Cancer Models

Plant Tumor Research. A. C. BRAUN, Ed. Karger, Basel, 1972 (U.S. distributor, Phiebig, White Plains, N.Y.). x, 236 pp., illus. $17.40. Progress in Experimental Tumor Research.

It is an axiom of research that one should pick simple systems to work out models for the solutions of complex problems. Almost every field of biology related to cancer research can trace its origin, or much of its early development, to work done on plants: The tobacco mosaic disease was among the first shown to have a viral etiology, and this virus was the first to have its chemical identity established. Hooke was looking at plant material when he coined the term "cell"; Mendel worked out the basic laws of genetics on the garden pea; Sumner crystallized the first enzyme from beans; and Braun showed almost two decades ago that the cancer state is reversible in tobacco plants. It is ironic that work on plant cancer is conducted by only a handful of investigators around the world, who have difficulty attracting either young recruits or grant support.

The new volume *Plant Tumor Research*, edited by the dean of plant cancer research, Armin C. Braun, is therefore a most welcome addition to the series Progress in Experimental Tumor Research. This volume devotes most of its space to the crown gall system, but there are in addition two excellent reviews on genetic tumors and on the wound tumor virus system, written by the senior investigators in these two areas, H. H. Smith and L. M. Black. The problematical topic of