and L. K. Rothen; "Benzodioxanes" (16 pages) by R. C. Elderfield; "Sulfur analogs of dioxanes" (26 pages) by R. C. Elderfield; "Pyridazines" (35 pages) by T. L. Jacobs; "Cinnolines" (40 pages) by T. L. Jacobs; "Phthalazines" (48 pages) by R. C. Elderfield and S. L. Wythe; "Pyrimidines" (70 pages) by G. W. Kenner and A. Todd; "Quinazolines" (53 pages) by T. A. Williamson; "Pyrazines and piperazines" (78 pages) by Y. T. Pratt; "Quinoxalines" (41 pages) by Y. T. Pratt; "Monocyclic oxazines" (68 pages) by N. H. Cromwell; "Benzoxazines" (37 pages) by R. C. Elderfield, W. H. Todd, and S. Gerber; "Thiazines and benzothiazines" (23 pages) by R. C. Elderfield and E. E. Harris; and "Phenazines, phenoxazines, and phenothiazines" (103 pages) by D. E. Pearson.

Each heterocycle is treated systematically; nomenclature, numbering, syntheses, and reactions are given. The literature is covered very well. The citations have been selected with care and attention to their importance. The chapters are well written, and the selection of authors is excellent. To assist the reader, each chapter has a complete table of contents, and a good index is provided.

This treatise is a great timesaver for all research chemists in the fields of organic chemistry and biochemistry. Parts of it will be of value to scientists in the fields of chemotherapy and pharmacology, since the authors have mentioned biological activity of important compounds. The book is well printed and edited.

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Water for Industry. A symposium presented 29 Dec. 1953 at the Boston meeting of the American Association for the Advancement of Science. AAAS publ. No. 45. Jack B. Graham and Meredith F. Burrill, Eds. Washington, D.C., 1956. 131 pp. Illus. $3.25, members; $3.75, nonmembers.

This timely little symposium volume contains nine papers by 12 authors who are experts on many of the broader problems of water and water supply. The volume does not cover the complete field of "water for industry," but the included papers fairly sample the kinds of water problems that are confronting industry now and those that are sure to arise in the future. These problems are much broader than those of industry alone. The whole field of water use is involved, because industrial water problems directly or indirectly affect all phases of our national economy. Here are a few of the more significant points made in the symposium papers.

The rapidly closing gap between water supply and demand in many places and the conflicts of interest in water supplies between states, between individuals, and between whole groups of users are forcing increased attention to water supply and water conservation on the part of Government agencies at all levels and of private organizations and citizens' groups. For example, optimum ultimate development of all recoverable water in the United States will be necessary for the national welfare, including national defense. Realistic forecasts of future urban and industrial developments, area by area, must be developed, and water must be reserved or otherwise provided for their supply. The market for farm products is not growing rapidly. Hence, wholesale expansion of agriculture is not the way to expand the national economy. Many thousands of people are drawn yearly from agricultural areas by employment opportunities in industrial centers. Some western areas are promoting local industrial development for purposes of diversifying their economy and holding their population. Many agricultural regions, however, are the very areas which are short of water or have low ceilings on their supplies. In some instances, practically all the water is committed for existing uses, chiefly agricultural. How, then, to supply industry?

Already the economy of certain industrial areas is precarious because of agricultural domination. Lack of planning for industrial and urban development 10 to 50 years hence is one of the greatest deficiencies in river-basin planning. Estimates have been made of urban and industrial requirements up to the year 1975. However, most of these are on a nation-wide or large-region scale and are not tied to specific areas or to river basins. They should be.

In the present stage of our development, water is a compelling influence in all our activities; within the near future it may become a controlling factor. Our national history is the history of a Horatio Alger among nations. We may yet face disaster if we fail to use the knowledge and skill that are now available to provide for optimum harnessing of this prime natural resource, water.

Several papers in the symposium merit special attention. The first, on "The available water supply," was prepared by C. G. Paulsen, retired chief hydraulic engineer, U.S. Geological Survey. In somewhat philosophic vein it analyzes and gives examples of the nation-wide water situation, the causes of varied water problems, and various approaches to their solution, thus establishing an appropriate background for succeeding papers on more specific topics.

Francis A. Pitkin's "Correction of a fluviatile delinquent: the Schuylkill River" is a dramatic historical sketch of the abuse of a watershed by mining, the 200-year deterioration of the watershed and the river, and their recent rehabilitation. One can only comment that man, not the river, was delinquent.

J. R. Whittaker's paper on "Water in the future" is outstanding and is probably one of the best recently published summaries, in simple, everyday language, of present and foreseeable water problems in the United States. The paper also sounds several encouraging notes of optimism. If intelligent planning is done and vigorous action is taken, the next generation may be spared a national problem. Too many problems have already been bequeathed to posterity.

This volume deserves wide reading and study. The analyses of the water problems are scientifically sound but are couched in readily understood, straightforward language.

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Advances in Virus Research. vol. IV. Kenneth M. Smith and Max A. Lauffer, Eds. Academic Press, New York, 1957. 339 pp. $8.

As in previous volumes of this series, the nine articles that comprise volume IV deal with various aspects of virology at a basic level, with considerable emphasis on information derived from application of the methods of physics and chemistry. It is not surprising, therefore, that three of the articles are concerned with plant viruses and two, mainly with bacteriophage, because the nature of these agents has allowed more precise physicochemical studies of the host-virus system in these cases than is possible for other viruses. Two of the articles deal entirely with animal viruses, and two others, with general subjects.

One of the latter, "Factors in virus evolution," by C. H. Andrewes, is a unique attempt to visualize, from accumulated information, the ways in which viruses may have evolved and in which they continue to adapt themselves to changes in their host populations. The question of an arthropod origin of many of the known viruses is raised, and the evidence is examined. Obviously, much of the material presented is highly speculative, but it is based on broad knowledge and experience and contributes to an area that has been largely neglected, that of orienting the viruses in the field of biology as a whole.

Andrewes includes in his discussion the selective effects of the immune state in host populations. An expansion of this theme is included in the article by Keith E. Jensen, "The nature of sero-