Book Reviews

Steric Effects in Organic Chemistry. Melvin S. Newman, Ed. Wiley, New York; Chapman and Hall, London, 1956. 709 pp. Illus. $12.50.

In accounting for differences in reactivities between organic molecules containing the same functional groups, organic chemists have found it necessary, under the present state of knowledge of molecular structure, to distinguish between the polar, resonance, and steric effects of groups influencing the reacting center. The last of these effects has been brought to a position of relative respectability only in the last decade or so, for within my own experience there was a time when "steric hindrance" tended to be regarded as a poor excuse for an experimental failure.

Here, then, is a collection of the personalized outpourings of some of the more productive and critical contemporary American organic chemists on the subject of steric effects on chemical reactivity, as revealed by kinetic and equilibrium studies. Wisely, as a group, the authors have refused to be restrained, by the title, to a consideration of only steric or bulk effects. In fact, one early detects an insistent note to the effect that reliance upon any one of the separated factors—polar, resonant, or steric—is unlikely to provide an understanding of reactivity, and an impressive proof that consideration of all three is necessary and can be fruitful comprises the last chapter of the work.

Limitations of space preclude evaluation of separate chapters, but the authors, as a group, are to be congratulated for the balance struck between extensive discussions of fine differences in reactivity and recognition of overwhelming modifications of the course of reactions by steric effects.

The order of the chapters is noteworthy. It would seem logical to have placed all those chapters concerned with the establishment of the separate existence of steric factors and efforts to calculate their magnitude earlier in the work, as a general, physical basis for the subsequent discussions of specific reactions. Had this been done, however, the editorially stated purpose of the work—to bring the importance of steric effects to the attention of organic chemists—would not have been so readily achieved. Some of the chapters in question are rather formidable for the less mathematically inclined organic chemist.

The bibliography is extensive and as up to date as possible in such a rapidly changing field. The work presents a comprehensive introduction to organic chemical reactivity and should be read by all serious students of organic chemistry.

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Medical Effects of the Atomic Bomb in Japan. Ashley W. Oughterson and Shields Warren, Eds. McGraw-Hill, New York, 1956. 477 pp. Illus. $8.

This long-awaited volume is based on the report of the Joint Commission for the Investigation of the Effects of the Atomic Bomb in Japan, and represents a compilation of the clinical and pathological data collected by that group in Hiroshima and Nagasaki in the period immediately following the detonation of the atomic bombs.

The volume is organized in seven chapters, beginning with a concise four-page summary of the essential factors and findings in the two cities. This is followed by chapters on background of the medical study, use of the weapon, general damage and effects on medical facilities, casualty studies, and clinical, hematologic, and pathologic findings. These are followed by six appendixes, which give the personnel engaged in the collection, analysis, and support of the study; details of material and methods; reports of Japanese scientists consulted; population data; survey and collection techniques; and tabulations of supplementary data on clinical findings.

This volume does not conform, in some respects, to the standards of a textbook. Perhaps it should not be expected to do so. On some occasions the terminology approaches the ambiguous, as in the entire summary statement regarding lymphoid tissue: "Even after 3 days there was atrophy of the lymphoid tissue."

There is some suggestion that this volume presents data related to a past period, as indicated by dependence on such publications as *The Effects of Atomic Weapons,* while still presuming to speak authoritatively on such matters as evacuation policy, and the like. It need only be pointed out that the areas under discussion in Hiroshima and Nagasaki might, under more recent circumstances, be entirely within the fireball. Even within the concepts of this report, certain statements may be somewhat less than conclusive—for example, "evasive action impossible in a period of three seconds."

The chapter on hematology is perhaps the weakest of this report. It is my opinion that the amount of conjecture and theory of development seriously detracts from what should be a factual report of findings. The data deserve more support than the illustrations in this section offer. This is potentially one of the most valuable sections and perhaps the one referred to most frequently. The relative scarcity of good serial hematologic data is rightly stressed, and it is difficult to say to what extent single counts from a probably nonhomogeneous group will represent serial change. I take issue with the tacit acceptance of the significance of cell count data on marrow (cells per cubic millimeter of aspirate). Brief reference is made in this section to recent reports of Lange and of Maloney on later leukemogenic effect.

The chapter on pathology is essentially the report published by Liebow, Warren, and DeCoursey, "Pathology of atomic bomb casualties" [*Am. J. Pathol.* **25**, 853 (1949)], with identical plates. A list of pertinent references to 1952 is included.

Although certain of the foregoing points represent limitations in the basic material, the authors have made a sound and important contribution in making these data available in the present form. There is no comparable set of data in existence. The extent of this report is evidence of the outstanding accomplishment of this group in what was essentially a short field study, made under difficult circumstances.

These data have been in the hands of a limited number of individuals and libraries through an AEC technical report but have been in frequent demand by workers in the radiation field. This should prove to be a useful volume, for reference purposes, for many in the radiobiology field and for those concerned with any aspect of mass casualty and civil-defense medical planning. It is an essential volume for those interested in the problems of irradiation of human beings.

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