

published, not too infrequently, varying estimates of the degree of damage to human chromosomes produced by ionizing radiation. Consequently, in recent years a controversy has developed over how reliable the data from differing laboratories might be.

This conference was thus originated to bring the workers in the field together to discuss, informally, the ramifications of the peripheral-lymphocyte culture technique and what effect they might have on the quantitative data. Such a conference was desirable, but it is perhaps unfortunate that its culmination should be a formal publication of some of the topics under discussion—unfortunate in that, as a cursory glance at the list of invited participants reveals, there are glaring omissions of contributors to the field, as well as absentees among those invited, and the publication, without scientific review, includes some outdated and inadequate papers.

Perhaps the absence of some of the invited participants can be attributed to the timing of the conference. It was held three months after the International Congress of Radiation Research at Cortina d'Ampezzo and would have necessitated two trips abroad within a two-to-four-month period for many individuals. It would have been better to hold the conference as a satellite meeting of the Cortina meetings, as that would have enabled many more interested workers to participate.

With respect to the published contributions, it becomes quite obvious that the major disagreement on the assessment of the chromosomal aberrations is between the British and American workers. Evans pointed out that the coefficients of aberration production reported by the "American workers" are lower than those found by himself and his colleagues. He argues that this is most likely due to the Americans' having selected 72 hours, a time at which the cultures are purported to consist predominantly of cells at the second post-irradiation mitosis, as a time to collect metaphase figures. Evans himself has selected 50 to 54 hours, a time when, he argues, the cells are at first post-irradiation mitosis. An interesting point is that Norman reports, in the same conference, that the coefficients he obtains at a 50-hour sampling time are the same as those found by Bender and his colleagues at 72 hours and are significantly lower than those reported by Evans. It appears there are more complications that affect observed

aberration yields than merely the point in the life of the culture when samples are collected.

If I had been asked by a journal to review these articles for publication I would have advised not publishing a large number of them. One paper, for example, discusses the effect of sampling time in the history of culture on the yield of aberrations. A total of 19 sampling times at two doses were examined. At seven of these sampling times 25 or fewer cells were analyzed, and at one point there was only one cell analyzed (a standard error is also given). On the other hand, there were quite interesting presentations concerning relatively new areas of study and recent insights into old problems. Nowell's short paper dealing with the immunological memory of circulating lymphocytes was found to be very interesting, as was the work of Buckton *et al.* on estimating dose-response relationships following irradiation *in vivo*. These are areas of obvious importance in our understanding of and ability to evaluate the data obtained from laboratory-designed and accidental exposures of human cells to ionizing radiations.

The published proceedings make one point very clear: there are many unknown factors involved in the initially apparently simple peripheral-lymphocyte culture system that make interpretation of the data difficult. Furthermore, it is evident that the time has arrived for a concerted effort by all groups to have an "informal" meeting to attempt to glean some value from an obviously important field.

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Photoreactions

Preparative Organic Photochemistry. ALEXANDER SCHÖNBERG, in cooperation with Günther Otto Schenck and Otto-Albrecht Neumüller. Second edition. Springer-Verlag, New York, 1968. xxiv + 608 pp., illus. \$37.

This volume appears ten years after the first edition (which was written in German). The sizable expansion of material in the second edition (which is in English) reflects the explosion of photochemical papers that has occurred since 1958. The new edition consists of

45 chapters of photoreactions classified by reaction type. A 46th chapter, by G. O. Schenck, reviews light sources and filters for use in preparative organic photochemistry. A comprehensive bibliography of previous published reviews of photochemistry is also included. Finally, there is a thorough index of the book's contents according to author, reaction, sensitizer, and compound. The literature is covered up to the end of 1965.

The guiding principle of this volume is to provide a detailed survey of preparative photoreactions for the organic chemist. Only preparative aspects of organic photochemistry are included, so that other monographs must be consulted for theory.

The author has provided chemists with a splendid, comprehensive source of organic photoreactions. Many preparations are described in detail as examples of various reactions. The size of the book, unfortunately, demands a high price. Nevertheless, every worker in the field will want this important reference source in his library.

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Trees

Gehölzphysiologie. HORST LYR, HANS POLSTER, HANS-JOACHIM FIEDLER, *et al.* Fischer, Jena, 1967 (distributed in the U.S. by Abel, Portland, Ore.). 444 pp., illus. \$12.90.

There are very few textbooks of tree physiology. The last major work was that of Büsgen and Münch, which appeared in German in the late 1920's and was also made available in English. It is very unlikely that Büsgen and Münch's book will be replaced as a whole, because it contains a great deal of descriptive information on growth habits and growth form which is still valid. Modern writers can therefore concentrate on those topics about which our knowledge has changed and substantially increased. To write a physiology text about a specific group of plants has its problems. First of all, the question arises of to whom the book is directed. Will the readers be mostly students who take it as their only plant physiology text, or will basic plant physiology be a prerequisite? In other words, how broad or how specialized should a tree physiology text be?

The authors of the present volume chose the specialized approach, though somewhat halfheartedly; functional photosynthesis and respiration are still covered on the first 20 pages. This is a waste of space, because the student who has taken a course in these topics will not need the 20 pages, and for the student who has not learned about these topics they are too short a summary to be useful.

Gehölzphysiologie was written by ten contributors, all noted East German ecological physiologists. It covers a wide range of topics, from inorganic and organic natural products of trees through photosynthesis and respiration (dry-matter production) to various aspects of tree growth. It is not easy to make such a book comprehensive and readable at the same time. There are many tables in which such information as transpiration rates for various species is given, and other passages in which principles are explained. Thus some parts of the book can be read, and others will be used more to look up items of information. We can say that the volume is a remarkable achievement and will be very useful to the American reader interested in ecological physiology. For him, it has only two drawbacks: it is written in German, and its coverage concerns primarily European species.

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Biological Substances

Prostaglandins. U. S. VON EULER and RUNE ELIASSON. Academic Press, New York, 1967. x + 164 pp., illus. \$9. Medicinal Chemistry, vol. 8.

When von Euler and Goldblatt independently discovered the prostaglandins in the 1930's, they opened up a new line of inquiry from which many wonderful and exciting discoveries are now emerging. These unsaturated hydroxy carboxylic acids, which contain a substituted cyclopentane ring, are present in so many parts of the body and have such a wide spectrum of pharmacological activity that they are comparable with the steroids; however, in contrast, they are highly flexible structures and have not yet been proved necessary for life. All attempts to define their role, by feeding rats on

diets deficient in the $\omega 6$ C₂₀ polyenoic precursors, such as arachidonic acid, have not been successful. The piquancy of the situation is heightened by the remarkable action of the prostaglandins on blood pressure, lipolysis, gastric secretion, platelet adhesiveness, and other biological phenomena. Indeed it is their wide range of both location and activity which is luring workers to the hypothesis that the richly varied responses to the prostaglandins result from interaction with a basic regulatory process common to most tissues, such as the adenylyl cyclase system.

This book is a good survey (for a definitive review see S. Bergström, L. A. Carlsson, and J. R. Weeks, *Pharmacol. Reviews*, 1968), in that a large number of well-chosen figures are included. Work on reproduction is treated fully, and this section, which reflects Eliasson's interest in the subject, is a very useful and timely contribution. In contrast, the lack of enthusiasm for the renal prostaglandins and their effects is evident.

The authors have eschewed speculation on or even a discussion of the possible physiological role of the prostaglandins, perhaps wisely, since these compounds are of interest for so many reasons to so many people. To the synthetic chemist, the number of isomers of the prostaglandin E series offers a challenge which has not yet been met with convincing answers. To the drug industry, which has so far-sightedly supported much of the work, the prostaglandins serve as model compounds for developing inhibitors of platelet adhesiveness and antihypertensive agents. Recently the potential for prostaglandins in the treatment of gastric ulcers and nasal decongestion has become apparent.

When a book by an originator of a field is published there is always added interest in seeing what insight is shown and how the original theme has developed. For von Euler, this book must represent a milestone, in that all the steps from his early work on extracts of seminal fluid, and the work of others on identification, biosynthesis, metabolism, and pharmacological characterization, are recorded. The fundamental role of the prostaglandins in reproduction, however, remains as elusive as it was three decades ago.

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Reactions in Plasmas

Plasma Chemistry in Electrical Discharges. F. K. McTAGGART. Elsevier, New York, 1967. xii + 246 pp., illus. \$17.50. Topics in Inorganic and General Chemistry, vol. 9.

This book is an up-to-date and detailed reference work on (i) methods of radio-frequency and microwave plasma generation and (ii) reactions of certain atoms and free radicals generated by electrical, photochemical, and thermal means.

McTaggart uses the major portions of two chapters to describe the power-generation apparatus required to establish electrodeless discharges. Low-pressure operation (0.1 to 10 mm) is emphasized; the space given to this subject certainly is one important reason for the author's omission of comments on the commercial processing potential of the technique. The arc mode of discharge operation is mentioned only briefly.

In discussing the nature of a plasma, the author focuses attention on the low-temperature or low-degree-of-ionization case. Such a plasma is then viewed as "merely the source of desired neutral but active species." In the ensuing discussion of the effect of energy transferred from the field to gaseous molecules, the inclusion of a potential-energy diagram showing a nonadiabatic transition between bonding and non-bonding states of a diatomic molecule would have been most informative.

Seven of the 12 chapters of this book are devoted to atoms and free radicals. The thorough job done on estimation and identification of these active species includes a clear description of electron spin resonance and its analytical application; mass spectrometer type and their applications are well delineated. Specific chemical reactions summarized include those of nitrogen, hydrogen, oxygen, and halogen atoms, as well as of a number of polyatomic radicals. Where ion-molecule reactions are discussed, in the final chapter, no mention is made of the ion-cyclotron resonance analytical technique.

A great deal of information has been assembled in this book. In general, the references cited should serve as valuable guides for more detailed studies.

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