was his ability in research, it was more than equaled by his skill in teaching, and that, as always, was owed to wisdom and kindliness. In his own being he combined the ethical insight and scientific intelligence on which, taken together, he based his faith, declared at Brown University in 1947, "that the control of evil is possible. I am sure," he said in that address, "that humanity will continue to encounter great troubles, but I do not think that civilization will destroy itself. To surmount our troubles, we shall need courage, and patience, and clarity of thought, and sincerity in the advocacy of fair and reasonable courses of action. For these virtues we may pray, each in his own fashion."

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Book Reviews

Cancer, I, Hérédité, hormones, substances cancérigenès. J. Maisin. Paris: Casterman, Tournai-Paris, 1948. Pp. 248. 84 fr.

In the Introduction the author states that he has written this book for intellectuals not specialized in the cancer problem, although he hopes that the physician and even the cancerologist may draw some benefit from reading it. This statement alone suffices to explain the high qualities of the book. For if an intellectual from a field writes for another intellectual from another field, he will, naturally, maintain his subject on a plane high enough while avoiding tedious detail and an excess of technicalities. On the other hand, since he can rely on the receptiveness of mind of his reader and his general background, he will try to go to the essence of the facts and the biological problems therein involved. By doing so, these problems detach themselves from the strict branch of science from which they have emerged and become universal biological problems. Dr. Maisin has fully succeeded in making himself understood by another intellectual, and his hope of capturing the interest of the specialist has been fulfilled.

Whatever should be known of the work done on cancer in order to understand future developments is succinctly given in the first pages of the book together with pertinent historical data. The author then goes into a complete survey of the three main subjects of this volume: the relation of cancer to, first, heredity; second, hormones; and third, certain chemical substances called carcinogens. This he does brilliantly.

We are all aware of the appalling number of significant contributions to these subjects during the last 20 years. All of them are reviewed by the author, and the references are appended in an orderly fashion. The author does not list these coldly, leaving to the reader the task of drawing his own conclusions on the basis of the raw material displayed. The reader is constantly helped in this task by the author, who selects the facts, uses the right adjectives to qualify them, and often gives his own opinions on the problems, to many of which the School of Louvain has actively contributed.

One notes in the book the predominance of American literature, especially during the last 8 or 10 years. Interesting contributions from Europe have appeared, however, even during the war, and those from France and Belgium are not generally known among American cancerologists. Inclusion of these still further enhances the value of the book.

In several ways Maisin's book reminds one of that written by Charles Oberling and published in 1942. This book, which was translated into English, has been avidly read and has had a decided influence on many minds. The same should be done with Maisin's book following publication of the second volume.

F. DURAN-REYNALS
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Outlines of physical chemistry. Farrington Daniels. New York: John Wiley; London: Chapman & Hall, 1948. Pp. viii + 713. (Illustrated). $5.00.

As Prof. Daniels states in his preface, *Outlines of physical chemistry* is to be regarded as the first edition of a new book. The high standards set by Getman and by Getman and Daniels in their previous well-known and widely used texts on physical chemistry have been maintained, but progress in research in physical chemistry required a rewriting rather than merely a revision.

The author's point of view is perhaps best presented by quoting a statement from the introductory chapter: "Usually science progresses by inductive reasoning from a few facts, follows with deductive reasoning based on the hypotheses, and, finally, tests by experimental measurements designed to prove or disprove the theoretical deduction. Many hypotheses are destined to be discarded when new facts and more precise data are obtained, but they fulfil a very necessary function in the development of science. A successful hypothesis is not necessarily a permanent hypothesis, but it is one which stimulates additional research, opens up new fields, or explains and coordinates previously unrelated facts. The scientist needs imagination in creating new hypotheses, but he needs also ingenuity and skill in devising experiments to test them and critical judgment in evaluating the results."

The general field of physical chemistry is covered quite completely, and it seems pointless to list the titles of the chapters. It should, however, be mentioned that in addition to the traditional topics, excellent chapters on

colloids, quantum theory, photochemistry, and nucleonics are included. Emphasis is placed on the structure of matter, and not until this fundamental groundwork has been treated is the student exposed to the more abstract thermodynamic development of the subject. Practically all the necessary mathematical derivations are given in detail in the text; only a few are relegated to an appendix for the ambitious student. The annoying tendency of many writers to overwork the phrases "it can be shown" and "obviously" does not appear.

One of the best features of this text, from the pedagogical point of view, is the liberal use of numerical examples and problems. Furthermore, these are not hypothetical cases which fail to give the student any contact with reality, but are mainly based on actual data from the literature. It is the sort of training which will best prepare the student for research work later. These problems cover the whole range of practical work from calculation of atomic weights from gas densities to determination of the rate of transmutation in an atomic pile. Another commendable feature of the book is the bibliography: references to up-to-date literature are given, and, in addition, each chapter concludes with a series of cross-references to other books for supplementary reading. It is a pleasure to recommend *Outlines of physical chemistry*, and Prof. Daniels is to be congratulated for a fine piece of work.

RAYMOND M. FUOSS

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North American trees (exclusive of Mexico and tropical United States). Richard J. Preston, Jr. Ames, Ia.: Iowa State College Press, 1948. Pp. lv + 371. (Illustrated.) $4.00.

Setting as his triple target the nontechnical public, students, and scientists, the author should be credited with a near miss. For the nontechnical public and for beginning students of dendrology, this compilation of illustrations and almost telegraphic descriptions of the important trees of the United States and Canada should prove very helpful. Certainly, it will save the time of those who, in the past, have had to consult five or six important works for various geographic regions. But the scientist will wish to digest for himself the authoritative source material which the author has assimilated but failed to cite in any list of references in this volume.

Eleven pages, packed full of technical terminology and diagrams, are devoted to a *nontechnical* explanation of the "Natural Relationship of Trees" and to descriptions of the "Forest Regions of North America" and "Tree Characters." Had the frontispiece map been slightly modified to coincide with the groupings of the forest regions in the text, this subject of regions and forest types would have been even more useful.

The Keys to the Genera—the keys to the species of the genera among the gymnosperms and to those of the genera among the angiosperms—will, with the liberal use of the 9-page glossary, prove very useful indeed. However, the chief value of the book would seem to lie in the compact presentation of drawings of foliage, twig, bud, fruit, and seed characteristics in a form convenient to take into the field for direct comparison. The small distribution maps are also helpful.

The volume is recommended to those who are frequently plagued with the question: "What's that tree?"

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Scientific Book Register

COURANT, R., and FRIEDRICHS, K. O. *Supersonic flow and shock waves.* New York-London: Interscience, 1948. Pp. xvi + 464. (Illustrated.) $7.00.

HARRISON, GEORGE R., LORD, RICHARD C., and LOOFBOUROW, JOHN R. *Practical spectroscopy.* New York: Prentice-Hall, 1948. Pp. xiv + 605. (Illustrated.) $6.65.

MAYER, CLAUDIUS F. (Ed.) *Index-catalogue of the library of the Surgeon General's office, United States Army (Army Medical Library).* (Fourth Series, Vol. X, M-Mez.) Washington, D. C.: Superintendent of Documents, U. S. Govt. Printing Office, 1948. Pp. iv + 994. $4.25 (cloth).

POLLARD, ERNEST C., and STURTEVANT, JULIAN M. *Microwaves and radar electronics.* New York: John Wiley; London: Chapman & Hall, 1948. Pp. vii + 426. (Illustrated.) $5.00.

SCHMIDT, ALOIS X., and MARLIES, CHARLES A. *Principles of high-polymer theory and practice.* New York-London: McGraw-Hill, 1948. Pp. xii + 743. (Illustrated.) $7.50.

SEWELL, R. B. SEYMOUR. *The free-swimming planktonic Copepoda: geographical distribution.* (The John Murray Expedition, 1933–34; Sci. Rep., Vol. VIII, No. 3.) London: British Museum (Natural History), 1948. Pp. 318–592. (Illustrated.) 35/–.

SMITH, AUSTIN, and HERRICK, ARTHUR D. (Eds.) *Drug research and development.* New York: Revere, 1948. Pp. xi + 596. $10.00.

(*Continued from page 10.*)

agreement of our findings with the predicted theory of the ultrastructure of the chromosome. The unit particles observed by us were associated with individual chromonemata. Although the particles varied in shape and size from one band to another, they had a uniform character in any one band. Their size range and density make them comparable with virus and bacteriophage particles. They are identifiable with the substance of chromomeres well known to the light microscopist. There is no doubt but that this is nucleoprotein. In view of these conclusions, it seems reasonable to believe that the discrete particles we have seen are genes.