tion than of expansion" and "natural choice has been made of those papers prepared by the authors' close associates", rather than by authors working in other countries. This explains why practically all the design descriptions reflect only British and American development. German, Japanese, and other designs are hardly mentioned at all. If I had to express a wish at all I would propose that the authors reissue the book in an enlarged edition where they can take care of the many items that have been barely touched upon in the present little volume.

Atomic Age Physics. By Henry Semat and Harvey E. White. 230 pp. Rinehart & Co., Inc., New York, 1959. Paperbound $2.00. *Reviewed by Norman Feather, University of Edinburgh.*

ALTHOUGH we read daily of new peaceful uses for atomic and nuclear energy, scientists themselves admit they are still on the threshold of significant discoveries"—so states the fourth sentence of the Foreword to this book. The sentence is sadly characteristic of the book as a whole: banal and a non sequitur to boot!

From that point, the authors (for they, sober scientists, not their publicity men, are responsible for the Foreword) plunge straight, in equally exaggerated terms, into politics, or, at least, into sociology. After the launching of Sputnik I, they say, "In this country the response was instantaneous. The interest in science . . . became even more intense. . . . The demand for physicists . . . spread as never before through colleges, universities, research organizations, and even industry. . . . The National Broadcasting Company . . . announced plans to help meet this need."

The book under review was produced as home reading for those who followed the second half of the course of television lectures which the NBC offered, on a nation-wide basis, in *Continental Classroom* in the winter of 1958, as first fruit of these plans. Its authors make the claim that it is also "an easy guide . . . that should prove useful to any student, irrespective of his level of familiarity with the subject." A reviewer in *Physics Today* will have fulfilled his duty if he examines this claim, ignoring wider issues.

Consider first the student with no previous knowledge of the subject—no more than that of the average television viewer to whom the original lectures were addressed. Such a student, it might be thought, makes the least exacting demands on our authors. But does he? Effective popularization of science is notoriously difficult. It is overwhelmingly important to get the feel of the thing right, from the beginning. Why, then, is the innocent learner told on page 1, "The earliest awareness of a concept of atoms dates from Democritus (b. 460 B.C.) who imagined these particles to be indivisible and to be the constituents of all matter"? Why, rather, is he not told, "Democritus was probably the first person to hold the view that ordinary matter cannot be subdivided without limit; ultimately,

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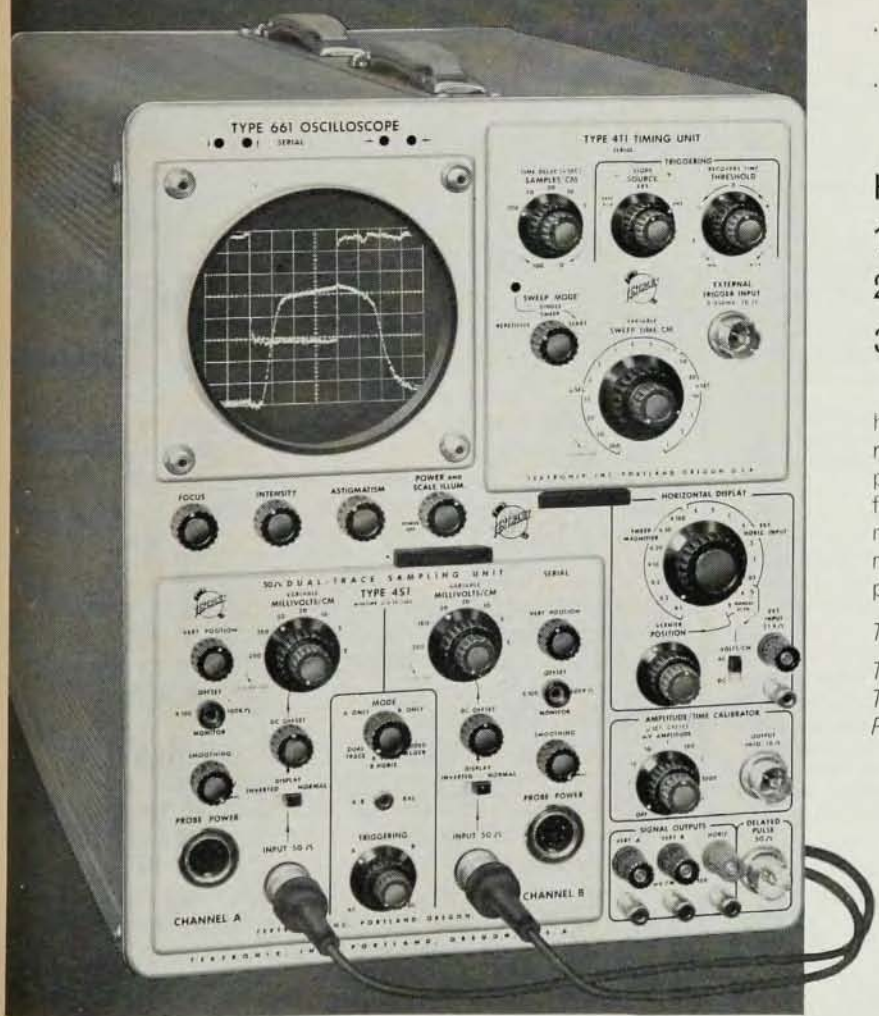

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in thought at least, one comes to the *atoms*, and further subdivision is impossible"? That is what happens on page 1—and throughout the book a similar perversion of emphasis spoils the story for our innocent learner. No, the book will do him no lasting good. What, for example, if he stops to think philosophically, will he make of the statement (p. 11), "Every study [after 1897] showed that cathode rays and electrons were the same thing"? Or, if he retains his critical awareness as far as p. 179, of the statement "a nucleus may be considered to behave like a drop of liquid which has a *surface tension* [authors' italics] capable of producing forces that lock the nucleons inside"? And, if he doesn't think critically, is he any the better if he commits this statement to memory, so that he can impress his friends with it?

At the other extreme, there is a graduate student preparing for his written examination. The seventeen chapter headings of this book, from "Atoms and Electrons", through "Fusion and Fission", to "New Adventures in Physics", will certainly pinpoint topics to which he will do well to devote attention. The running text will do something to break down these topics for him, saving him trouble, perhaps, in organizing his thought. Let him hope to find anything more solid in it, however, and he will be disappointed. His supervisor, maybe, might assign him a chapter, now and again, to rewrite as an exercise, correcting the facts of history and of physics (is it incorrect, or only misleading, to state (p. 13) that J. J. Thomson "was the first to separate the isotopes of nonradioactive elements"?), and redressing the emphasis in favor of experiment throughout.

What, then, of the authors' claim? One reader, at least, finds it altogether too optimistic. But, let it be repeated, to make a success of a book of the aims of this one must be an onerous undertaking. Perhaps the most likely person to succeed is someone who has taught atomic and nuclear physics to undergraduates, over many years, as a branch of *experimental* physics—not as a branch of theory.

Transmission of Information. A Statistical Theory of Communications. By Robert M. Fano. 389 pp. The MIT Press and John Wiley & Sons, Inc., New York, 1961. $7.50. *Reviewed by W. T. Wintringham, Bell Telephone Laboratories.*

IT is a pleasure indeed to read a well-written text by an acknowledged authority in his field. As the author states in his preface: "The book is specifically directed to graduate students and engineers interested in electrical communications. It emphasizes the points of view and methods of analysis which are likely to prove most useful to them in their future work." To which this reviewer can add only that Professor Fano has fulfilled this promise in a very able fashion.

Particularly in the fields of communication and of information theory, where these words mean different things to different groups, a reader may find it neces-