kind of vagueness is merely factual: "Rutherford . . . found that they [alpha particles] were absorbed very easily by sheets of metal a few hundredths of a millimeter thick, but that they could pentrate thin gold foil. (Gold is the most malleable substance known. It can be hammered or rolled extremely thin without tearing.)" Well, how thin? What is needed here is a number, not reassurance to the goldbeater. A more excusable and yet more damaging kind of imprecision is seen in the following: "He proposed that the plum-pudding model (which was only intuitive anyway) be replaced by a planetary or nuclear model. . . ." The word *intuitive* is probably meaningless here; but its connotations do injustice to Thomson's model, which was the outcome of a penetrating dynamical analysis. Finally, and least defensibly, we find logical fuzziness: ". . . to understand the large scattering angles through which some of the alpha particles were deflected, he [Rutherford] had to assume that they had encountered something small and relatively massive. . . ." Replace "some of the alpha particles" by "so many of the alpha particles" and the description becomes accurate. For Rutherford's problem was to distinguish between *single* scattering by centers concentrated in charge and mass (nuclei), and *multiple* scattering by less effective centers (electrons). If single scattering could have been assumed, the observation of only one large scattering would have been sufficient to disprove the pudding. Only a study of *distributions* could differentiate between the two mechanisms. The oversimplification just cited may be admissible in popular-science writing, but not in a text which has much earlier introduced and emphasized the notion of distribution.

To counteract the circumstance that it takes more space to say what is wrong about a book than what is right, let it be stated that *Physics of the Atom* is an understandable, stimulating, and wide-ranging introduction to modern physics.

A la Mémoire de Quinze Savants Français Lauréats de l'Institut Assassinés par les Allemands, 1940–1945. 148 pp. Gauthier-Villars, Paris, France, 1959. *Reviewed by L. Marton, National Bureau of Standards.*

MEMORIAL volumes of any kind are often hard to review, particularly when their contents cover a large variety of subjects. They usually are produced out of some sentimental reason, and one may have mixed feelings concerning the sentiment provoking the issuing of such a volume. This book is dedicated to the memory of fifteen French scientists, all of whom had been laureates of the French Academy. As the title indicates, all of them died during the war years; they were condemned to death by the Germans or put to death without legal procedures. There were three mathematicians, three chemists, four biologists, and five physicists. The physicists listed are Henri Abraham, Eugene Bloch, Georges Bruhat, Louis Cartan, and Fernand Holweck. Like their colleagues in the other branches of science, some of them were at the end of their very distinguished careers, others at the peak of production, and some were quite young and very promising. Their untimely disappearance was certainly a great loss to French science and science in general.

Although written about fifteen years after the war, the book is reminiscent in style of the writing of the immediate postwar years. While I agree in principle with the sentiments expressed by the twenty-one contributors, I felt somewhat uneasy about the timeliness of the publication and I wondered at first if it is right at this late date to evoke all these memories of the cruelties and inhumanities of the war years. Don't misunderstand me. I deplore as much as do the writers of this volume the facts presented there. I knew Fernand Holweck very well, and I had known several others in whose memory this volume had been written. But my first reaction was that maybe we ought to work for peace and try to bury some of these wartime memories in order to promote peaceful understanding between different nations.

Lately I became convinced that my first attitude was wrong. The cruelty and barbarism deplored by the writers of this volume still exist in humanity. They are merely dormant, and endless vigilance is needed to keep them dormant. In this respect, it is good to be reminded from time to time that such things as described in this volume can happen, and all of us must be alert to prevent these things from being repeated. I am sure that all honest people, independent of nationality or race or religion, will agree with this statement. Recent worldwide flare-ups of religious and racial troubles are but symptoms of a submerged sickness. It is in this spirit that publication of this memorial volume is probably a good thing.

As to the contents of the volume, they cannot be judged from a unified viewpoint. There is a great disparity in the presentation. Some of the memorials are purely reminiscences of the men with very little about their scientific contributions. Others make an attempt at a scientific evaluation. On the whole, I would have preferred to have more solid evaluation of the work of most of the men—they really merited it. Each biography is accompanied by a portrait, but the printing of these portraits is deplorable. While the volume has not been proofread too seriously, and while its binding is somewhat deficient, the type is clear.

A Guided Tour Through Space and Time. By Eva Fenyo. 181 pp. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1959. $3.50. *Reviewed by R. Bruce Lindsay, Brown University.*

POPULAR and semipopular presentations of the concepts of modern physics have appeared in large numbers and with various degrees of sophistication and reliability. The volume under review is another attempt in this direction. It is ambitious since the author has tried to crowd into less than 200 small pages

the whole gamut of contemporary theories from relativity to quantum theory, from the atomic nucleus to the cosmos. That she has not been wholly successful is not surprising, as the task is next to impossible. She endeavors to explain in a chatty style and with the use of many clever cartoons ideas which the average graduate student of physics has a sufficiently difficult time getting through his head and which even the experts are not wholly agreed on. The reader will at any rate be exposed to the key words and may catch some of the spirit of the undertaking, but if he is incautious he will come away with many misconceptions, for the volume abounds with loose and confusing statements, as well as inaccuracies of detail. The reviewer feels the author might have been more successful had she concentrated on the methods behind modern theorizing instead of the factual detail.

An Introduction to the Mechanics of Solids. Edited by Stephen H. Crandall and Norman C. Dahl. 444 pp. McGraw-Hill Book Co., Inc., New York, 1959. $8.50. *Reviewed by Ellis H. Dill, University of Washington.*

ORDINARILY a new text of sophomore level devoted to strength of materials would not be reviewed in a physics journal. Such a review of this book seems justified, however, for it is likely to have a profound effect upon the engineering undergraduate curriculum and therefore upon the physics courses for engineers.

In a few years, it will probably be difficult to understand how such a book could have been considered revolutionary. But one has only to compare it with current texts on the same subject to realize what a tremendous shift in emphasis the authors have effected. While most authors appear to be willing to go to almost any length to avoid unifying the various special topics through a general statement of the fundamental relations of the mechanics of continuous media, the present authors have achieved an explanation of the fundamental statical, geometrical, and stress-strain relations in three-dimensional elasticity and plasticity which can easily be read by sophomore students who have had introductory physics and calculus courses.

The lack of a discussion of the manner of energy storage in matter and the law of conservation of energy constitutes a serious omission which the reviewer hopes will be remedied in future editions.

As intended, this book forms an ideal text for a core course for all engineers in the mechanics of solids.

Advances in Space Science, Volume 1. Edited by Frederick I. Ordway, III. 412 pp. Academic Press Inc., New York, 1959. $12.00. *Reviewed by M. W. Friedlander, Washington University.*

UNTIL the Space Era commenced in October 1957, travel beyond the Earth's atmosphere, to the moon and further afield, in and perhaps beyond the solar system, seemed largely the domain of science fiction. With the impetus of the International Geophysical Year and major technological advances, extraterrestial travel has suddenly materialized; as this review is being written, signals are being received from a rocket more than a million miles from the Earth. Without the accelerated development of propulsion systems for military purposes, the present spectacular space enterprises would almost certainly not yet have been possible, and it is also questionable whether the large sums of money necessary would have been made available in the first instance to nonmilitary projects. The annual budget of the Army Ballistic Missile Agency alone, at which only a part of the development is done, runs at about twice what the Atomic Energy Commission has just requested for a 10-year period for basic nuclear research.

The present book has chapters on the following topics, each written by an authority in his own field: interplanetary rocket trajectories, interplanetary communications, power supplies for orbital and space vehicles, manned space cabin systems, radiation and man in space, and nutrition in space flight. With commendable foresight, there is an appendix on a decimal classification system for literature on astronautics.

The emphasis is entirely on the technological side of space travel. Perhaps a more appropriate title for this series would be "Advances in Space Technology"; the confusion of science and technology is already too widespread. The purely scientific reasons for wanting to get away from the Earth are usually covered in other publications.

This is a well-produced, well-documented guide to a rapidly expanding field where surveys are presently few and authoritative reviews like these will be invaluable. This book is recommended for inclusion in all space cabins.

Mechanical Properties of Intermetallic Compounds: Electrochem. Soc. Symp. Proc. (Philadelphia, Pa., May 1959). Edited by J. H. Westbrook. 435 pp. John Wiley & Sons, Inc., New York, 1960. $9.50. *Reviewed by Cyril Stanley Smith, Institute for the Study of Metals, The University of Chicago.*

HOW different this is from previous books on intermetallic compounds! The works of Giua and Desch were mainly concerned with those factors which made the compounds unpopular among nineteenth-century chemists who wished to believe in simple combining proportions and in the ordinary rules of valence. Intermetallic compounds are no longer useless brittle materials, but are compounds of highly special properties which must be used as ceramets and as semiconductors despite their mechanical intractability. This book contains an excellent review of the whole field by the editor, followed by a series of papers on divers aspects of strength and deformation, which reflects an important concern with structure. It has more coherence than do most symposia and is a welcome addition to the literature.