ate level. Some teachers lay major stress on experimental techniques; others on the systematization and codification of data; still others are primarily concerned with the (few) basic ideas required to understand most nuclear phenomena. Although these three approaches are usually regarded as representing, in the order stated, three levels of increasing sophistication, there appears to be a growing tendency, at least according to this reviewer's limited observations, in the direction of emphasizing the third approach even as far down as the senior undergraduate level.

However, most elementary textbooks on nuclear physics include, primarily, the first two approaches with some timid and frequently apologetic stabs at embracing some of the more fundamental concepts. Prof. Green's book, intended for a one-year course, departs from convention in the sense that it attempts to separate and to lay equal stress on all three approaches to the field.

The first five chapters are devoted to a more-or-less conventional, although conscientiously up-to-date, review of the history and the techniques. The next four chapters are on the systematics of nuclear reactions, with especial emphasis on the conclusions which may be drawn concerning the shape of the nuclear energy surface. The last five chapters develop a number of the most important aspects of nuclear theory.

Although the book covers practically all subjects which one would want to consider in an elementary course, there is a very large variation, sometimes out of proportion to their intrinsic interest or importance, in the thoroughness of the discussions of different aspects. Thus, the chapters on techniques appear to be rather more detailed than is necessary for a general course, and the discussions of emperical nuclear mass values assume a somewhat disproportionate importance in comparison to the rest of nuclear physics. This last reaction stems in great part from the author's tendency to avoid drawing general conclusions before all of the facts are in; many of the fairly simple and obvious generalizations, which can be drawn at an early stage, would be helpful to the student for following and motivating the more detailed arguments.

The more theoretical chapters, despite some tendency towards formalism, are generally both simple and lucid. The reviewer was especially impressed with the author's demonstration of the general accessibility of almost all aspects of nuclear decay theory (chapter 12).

The usefulness of this volume as a textbook is greatly enhanced by an excellent and varied assortment of problems, adequate references, and index.

Your Career in Physics. By Philip Pollack. 127 pp. E. P. Dutton & Co., Inc., New York, 1955. $2.75. *Reviewed by A. M. Thorndike, Brookhaven National Laboratory.*

There are not physicists enough today to cope with the many technical and scientific problems that require their special training. *Your Career in Physics* is an attempt "designed especially for boys and girls of high school age" to give some idea of the many types of activity involving physicists in our highly industrialized society. Since no prior knowledge of physics is assumed, past and future are brought in with descriptions of mechanical devices constructed by Archimedes and predictions concerning the imminence of interplanetary travel. The style is journalistic, if not downright promotional, and there is not much in the way of specific information on scholarship possibilities, courses of study, job placement procedures, or other steps on the way from high school to professional status. The emphasis is on government and industrial research; teaching physics is virtually unmentioned as a possible career. Despite these lacks *Your Career in Physics* should serve to awaken the interest of some future physicists, and will accomplish a most useful purpose if it does so.

200 Miles Up (2nd Edition). By J. Gordon Vaeth. 261 pp. The Ronald Press Co., New York, 1955. $5.00. *Reviewed by E. P. Martz, Jr., White Sands Proving Ground.*

The Second Edition of *200 Miles Up* appears at a very pertinent time, since it contains an interesting and provocative discussion of the recently announced Minimum Earth Satellite project. Primarily, the book reviews the work on firing and instrumentation of V-2, Viking, and Aerobee rockets for high-altitude atmospheric research. In the field of popular description of the high-altitude plastic "Skyhook" balloon it gives a wealth of information not generally known.

200 Miles Up starts with a thorough, and basic, description of the upper atmosphere, the different layers of "The Atmospheric Ocean", and the reasons for further exhaustive research to fill in the wide gaps in our knowledge of this thin layer between Earth and space. Several chapters are then devoted to a rather detailed discussion of certain types of air-born instruments employed in upper-atmosphere research and to a review of the different possible vehicles for carrying these instruments. These vehicles include conventional aircraft, high-altitude balloons, high-altitude rockets, and artificial earth satellites.

Three new chapters have been added: (1) "The Future and the Upper Air", discusses interesting possibilities for upper-atmosphere research in the near future employing high-altitude *manned* balloon flights to perhaps 100 000-feet altitude and the use of "Rockoon", vertical rocket firings from balloons, as well as "Rockair", vertical rocket firings from conventional aircraft. (2) "The Minimum Satellite", describes the principles of a small unmanned artificial earth satellite, specifically with regard to Fred Singer's "Mouse" proposal. In this chapter Vaeth includes a very worthwhile explanation of the anticipated research program of the International Geophysical Year (IGY), which has not to date received sufficient popularization. (3) "Beyond the Earth" is an interesting and provocative discussion of the many

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interesting problems of manned space travel. Vaeth clearly points out the requirement for fundamental step-by-step research and exploration of those problems and the extremely serious limitations on making a sudden "jump" from the present high-altitude rockets, jet aircraft, and proposed *unmanned* "minimum satellite" to full-fledged *manned* trip to the moon or further.

It should be pointed out that, though the Navy first employed the Aerobee rocket for high-altitude research, the extent of Aerobee firings and research programs by other agencies in the United States has been at least equal to those sponsored by the Navy. As of the present time nearly 140 Aerobees and Aerobee-Hi rockets have been launched for upper-atmosphere research. Of these, at least 60 firings have been by the Air Force and over 30 by the Army Signal Corps. Similarly, though the Office of Naval Research was responsible for the basic development of the Skyhook high-altitude plastic balloon, the very extensive Air Force programs of "Moby Dick" high-altitude balloon flights for upper-atmosphere and space-biology studies should be given more than passing notice.

In discussing the cause of the blue color of the sky the author states that this is due to "dust particles". Leonardo da Vinci first suggested that the blue of the sky was due to scattering by the gaseous molecules of the atmosphere, and since Lord Rayleigh's development of the inverse fourth power of the wavelength theory of atmospheric scattering of light there appears to be little opposition of the *gaseous molecular* explanation of the blue color of the normal sky. The reports of the observers in the Explorer I and II balloon flights to 72 000 feet, indicate that the sky was still *blue* 20° to 30° above the horizon, grading to very dark *blue*-black higher up. This observation appears to be consistent with gaseous molecular scattering theory.

In conclusion, Vaeth emphasizes the value of the international coordination and cooperation which should result from the International Geophysical Year and from the achievement of the artificial Minimum Earth Satellite. Certainly, from the viewpoint of scientific knowledge of the upper atmosphere, and as factors leading towards true space flight, these points will be invaluable. Can we hope that the items of international cooperation and of political "uncertainty" which will be interjected into the present international picture by the proposed artificial Minimum Earth Satellite will also give us a firm incentive towards world peace? *200 Miles Up* suggests that this may be so.

Determination of Organic Structures by Physical Methods. Edited by E. A. Braude and F. C. Nachod. 810 pp. Academic Press Inc., New York, 1955. $15.00. *Reviewed by Joseph G. Hoffman, Roswell Park Memorial Institute.*

The preface points out that applications of physical principles and chemical methods to the analysis of organic structures had not hitherto been collectively reviewed. The editors with the aid of twenty-two contributors have made a compilation of such methods of analysis. Many diverse and specialized aspects of physical chemistry bearing on organic structures are reviewed in sixteen chapters. The book is subdivided into three main sections, the first on molecular size, the second on molecular pattern, and the third on molecular fine structures. Its 810 pages make it a compendium essential for workers in the many different sciences such as physics, biophysics, biochemistry, and physical chemistry where knowledge of organic structures of molecules has almost become an everyday requirement.

Inasmuch as there is broad coverage of a wide range of highly technical subjects this review can only point out some of the typical contributors. Thus the chapter on Magnetic Susceptibilities reviews, by means of specific examples of compounds, magnetic analysis by means of static and alternating magnetic fields. The chapter on Dipole Moments is equally specific in that it shows what can be done with dipole moments and how to do it. Likewise the chapters on Dissociation Constants and Reaction Kinetics are filled with data accompanying remarkably clear discussions of structure problems. The last chapter on Wave Mechanical Theory provides a fine summary of theory pertinent to molecular structure.

Many workers in borderline fields such as biophysics or biochemistry will find here much useful and timely material. Indeed, many of the numerous examples discussed are compounds sometimes called biomolecules. The text is generously illustrated with appropriate figures and diagrams, and is supported by ample data. The very good author and subject indices serve the reader well in this broad and complex subject which crosses several different basic disciplines.

Harmonic Analysis and the Theory of Probability. By Salomon Bochner. 176 pp. University of California Press, Berkeley, Calif., 1955. $4.50. *Reviewed by T. Teichmann, Lockhead Aircraft Corporation.*

In recent years the boundary between mathematical probability theory and Fourier transform theory has all but vanished due to the extensive use of the characteristic functions (essentially Fourier transforms) of probability distributions in so many applications. While probability theory to some extent restricts the transform theory to positive definite functions, it also elicits in a natural way the deeper and more general concepts discussed in the latter portion of this book.

The first part of the book summarizes the basic properties of Fourier transforms and the more important underlying notions, such as approximations, additive set functions and summability. Poisson's summation formula is introduced in a very general and elegant way (though there is an obvious misprint in line 5, p. 31). Some of the basic properties of n-dimensional spherical harmonics are introduced very naturally in terms of n-dimensional Fourier transforms.

The next two chapters deal with closure properties and with Laplace and Mellin transforms. The treat-