problems. In particular he devotes a good part of the article to a discussion of the problem of hyperbolic velocities. This problem bears upon the origin and history of the meteors in space, and is also difficult to analyze because it is impossible to know all the perturbations which a swarm may have experienced over a long time.

The fourth chapter deals with the mathematics of smoothing and filtering. In geophysical problems generally, much statistical work is done, and various sorts of averages are computed. The ways that such procedures can distort the interpretation of data are well brought out. The importance of these procedures is great, and the chapter should be carefully read, not only by experimental geophysicists in all the disciplines thereof, but also by experimental physicists generally.

The last section deals with earth tides. The quite interesting deflections in the solid earth are well reviewed, both theoretically and experimentally. All in all, the volume is an excellent one which should be on the bookshelf of every geophysicist.

Basic Science Series: *Mechanics* by A. Efron, 112 pp., $1.50; *Heat* by A. Efron, 105 pp., $1.50; *Sound* by A. Efron, 72 pp., $1.25; *Energy* by Sir Oliver Lodge, 54 pp., $1.25. John F. Rider Publisher, Inc., New York, 1958. Paperbound. *Reviewed by Manuel Sandoval Vallarta, University of Mexico.*

Mechanics, Heat, and *Sound* are three carefully written booklets of a basic science series at high-school level. The treatment is deliberately very elementary, but interest is added by frequent references to up-to-date machines and common household gadgets. Enough standard problems are worked out in the text to give the student a good lead, and numerous questions and problems are then added at the end of each chapter. The text on mechanics is conventionally divided into vectors, torques, kinematics, dynamics, energy, and power; that on heat into basic concepts, heat measurement, transfer, change of state, and heat engines; finally, that on sound into an introduction which fills up almost a third of the whole, hearing, and sound waves.

At the risk of being guilty of pedantry, this reviewer must confess that he was surprised to find on page 65 of the text on mechanics the underscored statement that no external force can change the total momentum of a system. There are some slips in the logical development of the subjects treated. For instance, the Kelvin temperature scale is used in figure 1-1 on page 2 of the heat text, but is not defined until page 13, figure 1-12. And why spell fahrenheit with a small letter? Is not Fahrenheit entitled to a capital as much as his colleagues Kelvin and Rankine? Joseph Louis Gay-Lussac and Jacques Charles seem to be the only physicists mentioned by their full names, but then only to make their scientific association quite unclear. Other similar minutiae could be picked out.

Altogether three valuable textbooks which may help

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a good deal to arouse the interest of high-school students in the study of physics, at a time when interest in this science from early school years is most desirable and indeed indispensable.

Energy is a reprint of the well-known popular lectures by Sir Oliver Lodge, which first appeared in book form in 1929, with a half-hearted attempt at bringing them up to date and the addition of some figures by way of illustration.

Advances in Biological and Medical Physics, Vol. 5. Edited by John H. Lawrence and Cornelius A. Tobias. 488 pp. Academic Press Inc., New York, 1957. $12.00. *Reviewed by Joseph G. Hoffman, University of Buffalo.*

The topics reviewed in this volume of *Advances* show again various new applications of physical techniques to the study of biological systems. The Geiger counter dominates the field this year: of eleven chapters the last four tell about radioactivity measurements. For example, W. F. Bale and I. L. Spar give a substantial discussion of antigen-antibody work in: "Studies Directed Toward the Use of Antibodies as Carriers of Radioactivity for Therapy". This idea has been speculated upon for at least fifteen years, and the sound discussion of it by Bale and Spar is both timely and highly commendable.

Also timely and pertinent in these days of fall-out worry are the chapters, The Development and Applications of Low Level Counting by E. C. Anderson and W. F. Libby and Radioactivity of the Human Body by F. W. Spiers and P. R. J. Burch. Both chapters constitute required reading for all students in the natural sciences at least until the fall-out problem is resolved. The Anderson and Libby report is an informative account of low-level radioactivity literally everywhere and is notable for its fresh style of presentation. Spiers and Burch give the facts about radioactivity in humans and bring up to date a subject which started about thirty years ago as a remote scientific curiosity and has now become a matter of concern even for the average layman.

Cytogeneticists will be interested in the provocative review on "The Genetics of Somatic Mammalian Cells" by Theodore T. Puck. Here I can only point out two details for comment. On page 83 the growth curve given for a single cell is really an average curve which the text fails to mention. It is highly improbable that a single cell will grow into a clone along such a smooth semilog course as shown. The second point is the author's emphasis on 10^{-12} calories per cell as being an extremely small amount of energy absorbed on exposure to 96R. This energy can be shown to be 2.6×10^7 electron-volts, which corresponds roughly to at least a million excitation processes per cell. Hence, the relative magnitude of 96R depends on one's point of view, the range of view varying by a factor of 10^{18}.

Three relatively new procedures in biophysics are described in, "Paramagnetic Resonance and Biology" by Sogo and Tolbert, "Television Techniques in Biology