like a zipper that cannot be pulled up the last inch. In "Mutations of Science" he attempts to close this gap (the last century of science) by picking a vital spot for microscopic examination that will reveal the character of the period. Chosen for examination is Roentgen's discovery that "split open the world of physics"; but the curious error of *N* rays is also recounted. The intent or conclusion of this chapter is less clear.

Physicists who heard Professor Price's prepublication presentation at the AAPT meeting in February seemed to find a wry satisfaction in his diagnosis of the "Diseases of Science", the most quantitative, forward-looking, and disturbing of the essays. Science in its youth is shown to benefit from an exponential law of growth, only to be strangled in its maturity by a saturation limit. Science's superabundance of literature, its manpower shortages, its increasing specialization, its tendency to deteriorate in quality are presented as symptoms of a general disease. That disease might be understood better through the efforts of historians of science: "Even if we could not control the crisis that is almost upon us, there would at least be some satisfaction in understanding what was hitting us."

Laboratories in the Classroom. New Horizons in Science Education. 96 pp. Science Materials Center, Inc., New York, 1960. Paperbound $1.45. *Reviewed by Ira M. Freeman, Rutgers University.*

IN the twenty-five short essays that make up the volume under review, prominent American science educators have attempted to answer the questions: "What are the basic aims of science and mathematics education?" "What plans are being made to develop new curricula?" "What new procedures and materials are being considered?"

Names of some of the authors will be familar to many physicists who are concerned with teaching—Paul Brandwein, Fletcher Watson, Morris Meister, Alfred Bender, and others. Most of the pieces have been written expressly for this book; a few have been adapted from earlier publications.

The individual contributions touch on a wide variety of problems connected with the teaching of science in the elementary and secondary schools. Some of the topics that receive attention are creativity in science teaching, the provisions of the National Defense Education Act, TV in science teaching, club programs in the schools, teacher training, summer programs, and mathematics education.

In spite of their brevity, most of the articles are stimulating and informative. The reader who may not actually be engaged in school science education will come away with a definite impression that this field is now beginning to receive the intensive and serious kind of rethinking that it has needed for so many years. There is, for one thing, the growing realization among science teachers, administrators, and even school boards of the necessity of planning a coordinated science program extending from kindergarten through the twelfth grade. It is hoped that increasing awareness of this need will enlist the interest and talents of people who are in a position to devise much-wanted substitutes for the haphazard, dull, and repetitious mishmash that still passes for a science program in many of our schools.

In this connection, Fletcher Watson points out a real danger. Under the pressure of immediate needs, the field may come under the influence of "numerous groups, largely composed of educational amateurs, who are concerned with only a small segment of the most able students", and in place of a workable program for the long run, we may be saddled with "improvisations dominated by the personal enthusiasms of a few people for a particular subject, approach, or portion of the student population". These remarks may remind some physics teachers of one recent effort that has succeeded in creating more than a mere ripple, thanks to the great sums of money placed at its disposal and the zeal of its originators.

An Introduction to Celestial Mechanics. By Theodore E. Sterne. Vol. 9 of Tracts on Physics and Astronomy, edited by R. E. Marshak. 206 pp. Interscience Publishers, Inc., New York, 1960. Clothbound $4.50, paperbound $2.50. *Reviewed by S. F. Singer, University of Maryland.*

OF a number of recent works that I have read which deal with celestial mechanics, this appears to be one of the very few which is suitable for teaching and self-education. But it has another virtue: it presents about all that is necessary and useful, e.g., to physicists who through no fault of their own have been "propelled into space" from nuclear physics, quantum field theory, and similar "classical" endeavors.

The author is not without a sense of humor. He recommends this book to a beginning graduate student who has concentrated in physics and "is presumed to know Newton's second law, but not Kepler's". In fact, however, the student should have had a course in mathematical physics and theoretical mechanics, at least up to the level of Hamiltonians, in order to absorb the material profitably.

The first half of the book is indeed written at a fairly elementary level. Astronomical notation is used throughout, and units are carefully defined. A particular feature is the addition of a large number of worked-out problems. It is easy to see that the author has a great deal of experience with the solution of satellite orbit problems and applies this experience to the writing of the book. A good example of the careful attention given to an important subject is the referencing of the information on the value of the astronomical unit.

The discussion is very concise. Most of the orbit problems which one faces in conventional space travel problems are compressed into twelve pages of text. The eighteen worked-out examples really illustrate how to use the information. This is important both for a student