allied to radioactivity are sketchily treated. Heat production by radioactive decay in the earth is well discussed by Professor Birch, a recognized authority. A related fascinating subject, which seems somewhat sadly to have less applicability than earlier thought, is radiation damage to natural crystal lattices over geologic time. Zircons with density sixteen percent below normal, and the light such lattices can emit upon laboratory heating, will impress physicists, even reactor specialists. That the energy storage of such minerals can become important—even to the explanation of volcanism—seems unlikely. All the authors who treat the earth's energy appear to the reviewer to neglect seismic release of gravitational and elastic energy as an important contributor to earth heat.

The hopeful theory that alpha-activity caused the condensation of petroleum from bombarded simple hydrocarbons is pretty well killed with a careful study by Dr. Whitehead, who summarizes a decade of work with the verdict "low by a factor of a hundred".

The longest section is devoted to absolute age determinations, by the use of lead isotopes, of helium, of ionium and radium, of rubidium, of argon-40, and of carbon-14. This is an excellent, full review by half a dozen authorities. A twenty-page table of reliable mineral age measurements is given, which will become raw material for much definitive work. No collation into a geologic time scale is, unfortunately, included, because the editor thought it "premature" in April 1954. The subject is far more subtle than the textbook summary we physicists have been accepting for a long time. The complexity of the polycrystalline rocks, with their long series of chemico-physical changes and their bewildering chemistry, taxes the full resources of chemistry and solid-state physics even today. The ages are stored in the rocks all right, but in a code very hard to crack. Diffusion and inhomogeneity, serial deposition, and cycles of heating, all these spoil the simple pictures of steady decay.

The editor contributes a witty preface, with an amusing picture of a galloping prospector who picks up rocks, but, unlike the people to whom the book is dedicated, plainly does not stop to think. Dr. Faul admits what seems the main defect of this worthwhile book: it is too thin. A third more authors promised to contribute, but did not. They are missed, but the work of the others will stand, one hopes, as a gentle reproach to their busy colleagues.

Relativity for the Layman. By James A. Coleman. 131 pp. The William-Frederick Press, New York, 1954. $2.75. *Reviewed by Erich M. Harth, Duke University.*

Here is another popularization of this branch of physics which has from its inception captured the imagination of the general public. The problem of *understanding* relativity at the level of no formal training in physics is a ticklish one. It is often difficult to draw the line between imparting an understanding and satisfying someone's curiosity. In this sense the author's contention that "the theory of relativity has been considered difficult to understand, but only because its predictions are difficult to believe" appears to be oversimplifying the problem.

The book does, however, fill a definite need because of the wide, genuine interest in relativity, and it does so with a great deal of competence. There is a very lucid historical account of the measurement of the velocity of light, the evolution and decline of the ether theory, and the reasoning that led Einstein to formulate the special and general theory. Unfortunately, a misstatement of the principle of equivalence leads to the erroneous conclusion that no distinction can be made between gravitational and inertial fields.

The experimental verifications of both special and general theory are treated with skill and clarity and make fascinating reading, but the frequent reference to A- and H-bombs in connection with relativity is somewhat distracting. Two final chapters are devoted to cosmology and general field theory.

The book should be of interest also to the student of physics who is likely to miss in his formal training such items as Fresnel's theory of ether drag and the original formulation of the Lorentz-Fitzgerald contraction hypothesis. The book achieves its greatest merit in conveying the continuity of physical thought.

Automatic Feedback Control System Synthesis. By John G. Truxal. 675 pp. McGraw-Hill Book Company, Inc., New York, 1955. $12.50. *Reviewed by L. Weinberg, Hughes Research and Development Laboratories.*

In the past two decades the design of networks has changed from an empirical craft to a sophisticated science. An embarrassing richness of procedures has been developed to solve the problems of the practicing engineer. This science is called network synthesis. To anyone familiar with the simple yet elegant methods of synthesis, methods which are often optimum, it is distressing to observe some of the crude, time-consuming, trial-and-error techniques still being used to design circuits in many of our industrial laboratories.

Professor Truxal, the author of *Automatic Feedback Control System Synthesis*, is thoroughly familiar with modern synthesis, and has probably been distressed along with the rest of us. In his book he has attempted to instill the type of thinking and some of the techniques of synthesis into the design of servomechanisms. The attempt is eminently successful.

The book is a long one, and this review can only begin to suggest its contents. The author begins with an introductory chapter on the mathematics of servomechanism design. This is not the usual cut-and-dry formal presentation of the Laplace transform and complex function theory found in many texts, but a discussion that continually emphasizes the time- and frequency-domain relationships inherent in the Laplace