

recent attempts to evade recognition of our relationship to the giant apes. The admission of the real affinities of the Piltdown man would make the adoption of such a scheme of human ancestry impossible.

*The Journal of the Institute of Metals.* Vol. 39. Edited by G. Shaw Scott. Pp. xii + 814 + 63 plates. (London: Institute of Metals, 1928.) 31s. 6d. net.

THE president's address, with which the present volume opens, is devoted to the subject of the 'thermal equilibrium diagram,' in order to show that such diagrams, which may appear to be of merely academic interest, have great practical value for the foundryman and the worker in metals. Several alloy systems are described in illustration, and a further example is afforded by a paper describing the changes in standard silver which are brought about by heat treatment. It is of interest that this alloy may be made to develop structures which under the microscope closely resemble those of hardened steel by quenching under different conditions. Several systems of alloys containing that very reactive metal, zirconium, have been prepared with the aid of a high-frequency induction furnace working in a high vacuum, but owing to the very limited range of solid solubility of the intermetallic compounds which are formed, the alloys do not promise to be of technical value.

Other papers deal with hot and cold working, and an investigation which has great practical consequences has now been published, dealing with the deterioration of lead cable sheathing by cracking. The difficulty is found to be due to the low fatigue limit of lead, and it has been overcome by alloying with cadmium and either tin or antimony. The May lecture has as its subject the chemical properties of crystals, and the volume contains the usual extensive section of abstracts, the net having been cast so wide that few papers of interest to metallurgists can have escaped inclusion.

*Einführung in die theoretische Physik.* Von Prof. Dr. Max Planck. Band 4: *Einführung in die theoretische Optik; zum Gebrauch bei Vorträgen, sowie zum Selbstunterricht.* Pp. vii + 184. (Leipzig: S. Hirzel, 1927.) 6 gold marks.

THIS "Introduction to Theoretical Optics" concludes appropriately the series of four volumes on "Theoretical Physics" by Dr. Max Planck. General mechanics, the mechanics of deformable bodies, and the theory of electricity and magnetism are the subjects of the three earlier volumes.

According to the author, his object has been to present and interpret, chiefly by word, the more important general principles, rather than to elucidate them mathematically. Fundamental formulæ have necessarily been freely employed. Space, however, has not been sacrificed to their development. From the large amount of material available, only a limited selection has been possible. The treatment is based almost entirely upon the electromagnetic wave theory. It is only in the last chapter, devoted to the geometrical optics

of non-homogeneous bodies, and particularly to dispersion, that use is made of quanta mechanics or the principles of relativity.

The discussion of the optical questions dealt with is simple and lucid. The book will certainly appeal not only to the lecturers and students for whom it is intended, but also to a much wider circle of general scientific readers. J. W. F.

*Der Werdegang einer Eruptivmasse: Geologisch-petrographische Analyse der Intrusionstektonik im Schwarzwalde.* Von S. von Bubnoff. (Fort-schritte der Geologie und Paläontologie, herausgegeben von Prof. Dr. W. Soergel, Band 7, Heft 20.) Pp. viii + 239 + 6 Tafeln. (Berlin: Gebrüder Borntraeger, 1928.) 20 gold marks.

PROF. SERGIUS VON BUBNOFF is well known, especially from his "Geology of Europe." In this monograph he gives a detailed account of the south-western margin of the Black Forest, with special reference to its contact phenomena and intrusion-tectonics, a term familiar from its use by Prof. F. E. Suess for the mountains to the east. Prof. von Bubnoff holds that the schists and gneiss of the Black Forest are older than the granitic intrusions. He rejects the view that the metamorphic rocks were formed in Upper Palæozoic times, and expresses doubts as to this age for those in the Variscan Mountains. The book is illustrated with excellent maps and plates, and is an important contribution to the geology of south-western Germany.

*The Philosophical Bases of Education.* By Dr. Robert R. Rusk. Pp. 205. (London: University of London Press, Ltd., 1928.) 5s. net.

THE title of this book would have been better chosen as the "Idealistic Philosophical Basis of Education." The author has no particular use for either the naturalistic or pragmatic philosophies, and concentrates all his attention on idealism. He gives quite a good account of naturalism and pragmatism in education, with his bias towards idealism showing through, and then presents the case from the idealistic point of view. The book is well written and the subject matter well arranged. The author's account of the historical development of idealism from the days of Socrates, through Rousseau, Kant, and Fichte, to the modern idealism, is good.

*Temperament: a Survey of Psychological Theories.* By Constance Bloor. Pp. iv + 202. (London: Methuen and Co., Ltd., 1928.) 5s. net.

IN this book the author has made a brave attempt to solve the various problems presented by a consideration of the word temperament. After a discussion of the various contributions made by the older writers, we are introduced to five temperaments, the sanguine, the choleric, the phlegmatic, the melancholic, and the cautious. The author appears to be impressed by the physiological basis of temperaments provided by the glands of internal secretion and by their inter-relationship with the sympathetic and para-sympathetic nervous systems. Probably time will show that this is the correct view to be taken.