the world, which relate to the movement of the magnetic pole and to the relative movements of land masses over the surface of the globe. Blackett's conclusion is that, although much work is needed, preliminary results indicate that there is no doubt that polar wandering and continental drift have both occurred in geologic times.

In the second part of this chapter the various observations of reversed magnetism are discussed, and their possible support of field reversal is considered. It is Blackett's conclusion that at the present time there is not sufficient evidence to support the hypotheses that the earth's field has, or has not, reversed.

The three appendixes to the main part of the book are new contributions and are, therefore, more technical and of interest primarily to workers within the field. With D. J. Sutton, Blackett has developed equipment for vibrating a specimen between identical pickup coils so that measurements can be made of the magnetizations of materials under different conditions of temperature and magnetic field. By measuring the distance that small grains jump to a cubic magnet of known strength, he shows how rough quantitative determination can be made of the remanent magnetization and coercive force of small grains. In the third appendix Blackett presents a new theory, with experimental confirmation to explain the irreversible change with rising temperature of the sign of magnetization of natural materials composed of magnetically hard and soft components.

With this small book Blackett has filled a great need for an objective review of the status of rock magnetism and its application to the study of polar wandering and continental drift. Geologists and others interested in these problems will find his clear and candid discussion a bright spot in the mass of recent publications on this subject.

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Climate and Economic Development in the Tropics. Douglas H. K. Lee. Published for the Council on Foreign Relations. Harper, New York, 1957. 182 pp. $3.50.

This rambling, philosophizing, and poorly integrated little book seems to be more the amassed output of the whole study group of the Council on Foreign Relations than of its stated author, who acted as group *rapporteur*. Although ostensibly a scientific inquiry into its title subject, it is heavily larded throughout with obvious propagandizing for greater American support to underdeveloped tropical countries—the Point Four program of New Deal days. Douglas Lee greatly weakens his own contribution in the fields of animal and human adaptation to tropical climates by first castigating severely Ellsworth Huntington and his works on climatology and then stating, as his own summarized deductions, the very ideas Huntington had so ably presented and supported decades ago!

The book is divided into seven chapters: "Introduction," characterized chiefly by the author's uncertainty about whether to consider as tropical those countries lying within tropical latitudes or only those in the tropical lowlands of moist heat; "Tropical climates," in which his uncertainty persists; "Crop production," "Animal production," "Health and human efficiency," and "Industry," each with subsections on the "Effects of climate," "Circumventing the effects," "Complicating factors," "Required action," and "Preferential regions"; and "Prospect," which more or less summarizes the volume's contents and premises. The book carries no index, and textual references to works listed in the bibliography are at times vague and uncertain, except for those quoted in support of the author's main theses. Various types of data quoted in support of arguments that point up the need for American help to underdeveloped tropical lands are quite without scientific significance as presented.

After all his castigation of Huntington and the latter's "gospel of climatic determinism," Lee's final summations revert directly back to the central core of Huntington's theories on climatic dominance over human achievement: "When acclimatization is complete, there remains an increased disinclination for work which tends to reduce normal output. . . . Some reduction of mental initiative is probably the most important single direct result of tropical environments. Accuracy may be affected in poorly motivated persons, and the need for increased concentration may be felt as a strain."

The volume represents a frank attempt at scientific evaluation of its title subject for the Council on Foreign Relations, with its first major objective: ". . . to state the present position of our knowledge concerning the effects of climate upon tropical development, *so that policy makers, executives and scholars could be reliably informed*" (my italics). It is my considered opinion that Lee's "attempt to bring into focus some of the scattered fragments of information . . . ." fails to provide scientifically reliable evidence in support of his stated objective—"that policy makers, executives and scholars . . . be reliably informed."

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Some Principles of Energetics in Biochemical Reactions. Irving M. Klotz. Academic Press, New York, 1957. vii + 64 pp. Illus. $3.

The object of this small, 60-odd-page book is "to afford a reading knowledge of the language of thermodynamics" for the biologist who is without the mathematical background necessary for a study of the usual textbooks. One should say immediately that Irving Klotz has accomplished this in a very successful fashion.

After a brief introduction, the first two sections of the book are devoted to an exposition of the first and second laws of thermodynamics, with a minimum of mathematical treatment. In the next sections the concept of free energy is developed, and the relation between chemical potential and concentration is illustrated with a number of examples from the biochemical literature. The next section is concerned with the "high energy bond" so much talked of in contemporary biochemical circles. The final two sections are concerned with (i) a thermodynamic treatment of electrochemical reactions, osmotic pressure, and the ultracentrifugal measurement of particle weights and (ii) a brief consideration of some of the basic concepts of statistical thermodynamics.

The language is clear, the examples are apt, and the argument is logical. The book is recommended to the biologist who is without mathematics and to the medical student; it will serve as an admirable introduction to a more rigorous mathematical treatment of the subject.

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New Books

Economic Development. Theory, history, policy. Gerald M. Meier and Robert E. Baldwin. Wiley, New York; Chapman & Hall, London, 1957. 607 pp.

International Astronomical Union, Transactions, vol. IX. Ninth general assembly, Dublin, 29 Aug.–5 Sept. 1955. P. Th. Oosterhoff, Ed. Cambridge University Press, New York, 1957. 802 pp. $15.

An Introduction to Automatic Digital Computers. R. K. Livesley. Cambridge University Press, Cambridge, England, 1957. 61 pp. $1.75.

H. A. Lorentz, Impressions of His Life and Work. G. L. De Hass-Lorentz, Ed. North-Holland, Amsterdam, 1957. 172 pp. $3.

Microwave Measurements. Edward L. Ginzton. McGraw-Hill, New York, 1957. 532 pp. $12.

Studies on Hysteria. Josef Breuer and Sigmund Freud. Translated from the German and edited by James Strachey in collaboration with Anna Freud. Basic Books, New York, 1957. 366 pp. $5.50.