

leads the true philosopher, in Sir John Herschel's words, "to hope all things not impossible and to believe all things not unreasonable."

The scientific mood, aim, and method are described by Prof. Thomson and illustrated by apt quotation from the works of active investigators. The relations of science to philosophy, art, religion, and practical life are dealt with; and the classification of the sciences forms the subject of a particularly valuable chapter. As is appropriate in a "Home University Library," the readers are assumed to come to the university with a certain foundation of preliminary knowledge; otherwise such a reference as that to "Bode's law of the relations of the planets, or Mendeléeff's 'periodic law' of the relations of the atomic weights of the chemical elements" would be unintelligible. Given this acquaintance with the broad principles of science, we can conceive no better first survey of the significance of scientific work than that which Prof. Thomson provides.

(2) Mr. Hinks has produced a volume which is decidedly superior to most popular books on astronomy, inasmuch as it is not merely a descriptive catalogue of the characteristics of celestial bodies, but a statement of leading results and a critical analysis of conclusions. The book breathes the spirit of the practical astronomer who can form his own opinion as to the value of observations and hypotheses. It suffers by comparison with some other volumes on account of the absence of illustrations; nevertheless, it is decidedly original in substance, and the most readable and informative little book on modern astronomy we have seen for a long time.

*Physikalische Chemie der Zelle und der Gewebe.* By Prof. Rudolf Höber. Dritte Auflage. Pp. xv+671. (Leipzig: W. Engelmann, 1911.) Price 17.25 marks.

THIS third edition of Dr. Höber's well-known work on the physical chemistry of the cell and tissues is widely different, both in extent and quality, from the modest little volume which first appeared in 1902, and interested physiological chemists as the evangel of the new lipid theory of cell permeability promulgated by Overton and Hans Meyer.

Since that time the chemistry of colloids and of the relationships of colloids and crystalloids has made enormous strides, and the new edition is now in reality an interesting and fairly well up-to-date textbook of this domain of knowledge. It still shows, however, on account of the way the lipid theory keeps cropping up everywhere, manifest traces of its origin, and the author is still an earnest and whole-hearted believer in an ingenious theory which has not stood the test of advance of time and growth of knowledge.

Even this sturdiest champion of the lipid theory is driven now to admit that the experimental findings can only be explained by following Nathansohn's postulations of a mosaic cell-membrane, in which the small stones represent the lipoids and the interstitial material, a protoplasmic cement which allows a varying degree of permeability to the ions. This is accordingly a kind of dual Maxwell's demon membrane, with one kind of demon at one kind of gate letting through the lipid-soluble bodies, and a different class of demon at a different sort of gate letting through the water-soluble bodies, and those who desire salvation for the lipid-theory by leaving it in possession of these two demons may be congratulated on having placed it where it is well-nigh unassailable, unless, indeed, someone discovers a substance which is soluble neither in water nor lipoids and yet can contrive to get into cells.

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The portions of the book which do not treat of cell permeability are well and clearly written, and give a full presentation of the subject, which may be recommended for study to those interested in the confines of physical and bio-chemistry who possess already some acquaintance with both subjects. It is not by any means a book for beginners.

BENJAMIN MOORE.

*Geologische Ausflüge in der Mark Brandenburg.* By K. Hücke. Pp. 155. (Leipzig: Quelle und Meyer, 1911.) Price 3.20 marks.

THIS guide for the geological student and tourist, printed in the popular black-letter type of northern Germany, should find a ready appreciation among those who travel round Berlin. The descriptions of the various excursions are clear, and there is a touch of Walther's vividness here and there, as in the account (p. 13) of the general landscape on the withdrawal of the "inland ice." Not enough is made, perhaps, of the probability that large areas of this ice stagnated in the plain, and that the withdrawal, which deposited the ground-moraine, was mainly in a vertical direction.

The index does not always guide us to the attractive generalisations which the book contains, such as the origin of the numerous lakelets and the ancient courses of the streams (p. 107). When the visitor, however, reaches a critical district he is encouraged to look beyond the immediate landscape. Formations concealed at the surface are sought in quarries underground. An interesting account is given (p. 121) of the interglacial bed of red ochre near Dahnsdorf, resulting from the oxidation of dark green iron carbonates and humates. These were deposited by water, and were subsequently preserved by boulder-clay, as a stratum 30 metres thick. The dry channels known as Rummeln (p. 136) in the elevated region of the Fläming south of Berlin are attributed to torrents from the melting ice. A new interest is thus given to these pleasant features of a land that often seems monotonous. We are told that the horizontal sheep-tracks along their sides (Fig. 55) have been regarded as river-terraces.

In the gloom of the level forest-covered regions the huge Scandinavian erratics form features of themselves (Fig. 32). The numerous photographs that illustrate this handy volume are mostly provided by the author, who has certainly shown the wide variety of deposits that may be studied in the Mark of Brandenburg.

G. A. J. C.

*Playbooks of Science: Chemistry and Chemical Magic.*

Pp. 150. *Mechanics and Some of its Mysteries.* Pp. 120. *Flying and Some of its Mysteries.* Pp. 138. All by V. E. Johnson. (London: Henry Frowde, Hodder and Stoughton, 1912.) Price 1s. 6d. each.

Boys who are thoroughly interested in a well-chosen hobby are the cause of much less anxiety to their parents and teachers than those who are content to idle away leisure hours. The author of these little books has for his primary aim the provision of intelligent amusement, and on the whole he has made a successful appeal to the desire young people have "to try things." "Never be content merely to read about an experiment" is the advice offered at the beginning of each book, and it is probable that many boys will be led from the performance of the tricks described to the serious study of the phenomena observed.

The two books named first are almost wholly devoted to experiments, while the third is largely a descriptive account of the various attempts to evolve the perfect flying-machine.