

on them. A discussion of heterogeneous chemical reactions occupies about ten pages, but the electrical properties of surfaces are not considered.

Although both books cover nominally the same subject matter, the differences in treatment and even in the choice of topics make it desirable for every student in this field to read both books. Rideal's book is more comprehensive and gives the better general survey, but Adam's book is unsurpassed in those fields in which he has specialised.

I. LANGMUIR.

Our Bookshelf.

L'Appareillage électrique : le petit appareillage, le gros appareillage basse tension, l'appareillage haute tension, tableaux de distribution, postes de transformations ruraux ; construction, applications. Par Louis Lagron. (Nouvelle Encyclopédie Électromécanique, No. 3.) Pp. 587. (Paris : Albert Blanchard, 1930.) 36 francs.

This is the third volume of a useful electro-mechanical encyclopædia. The author classifies electric apparatus into four groups. First, there is small apparatus, that is, apparatus for use at low voltages and that does not take a current greater than twenty-five amperes ; next he deals with large low voltage apparatus which takes currents greater than twenty-five amperes. The third class consists of high voltage apparatus, the pressure not exceeding 33,000 volts but the current being of any value. The fourth class consists of very high voltage apparatus, the pressure exceeding 33,000 volts. We learn that the French Minister of Public Works standardised the voltage of supply at 230 in July 1925. The pressure of supply of all work completed after that date is to be 115, 230, or 460 for direct current supply, and 115 or 230 for all systems of supply installed after that date. The frequency also is to be 50. Like England, however, it will take a long time before all the pressures of supply are standardised.

Tables are given of sparking distances, and amongst the constants given for insulating materials are their electric strengths. The formulæ given for fuses and for the heating of cables are only roughly approximate. The laws of the convection of heat from bodies cooling in air are now well known and more accurate formulæ could have been given. English engineers will be interested in the information given for wooden poles, cement poles, and lattice towers.

Cours de mécanique professé à l'École Polytechnique.

Par Prof. Paul Painlevé. Tome 1. Pp. vi + 664. (Paris : Gauthier-Villars et Cie, 1930.) 100 francs.

FOR many years now the underlying principles of mechanics have been the subject of critical revision. In an elementary treatment of these principles from the point of view of teaching, however, it is quite impossible to approach the subject except largely from the classical point of view, if not because of the essential difficulties of the relativistic

outlook, at least because a knowledge of classical mechanics appears to be essential for a true understanding of relativity.

M. Paul Painlevé seems to have found time from his political activities to produce in this "Cours de mécanique" a complete treatment of the first stages of this subject, as they have been expounded by him in his course at the École Polytechnique between 1905 and 1924. The course bears all the marks of a thorough and careful teacher, and the consistent striving after rigorous presentation is typically French in its precision. The earlier part of the course covers most of the material which is normally dealt with in English colleges under the heading of "motion of a particle and of a system of particles", with astronomical applications to planets and comets. In the later part the author goes on to discuss Lagrange's equations, D'Alembert's principle and its various extensions, the equilibrium of strings, and the nature of frictional forces.

Although the field has been well traversed in English books, nowhere has it been so carefully developed and so logically knit together as in this classic by a world-famous teacher.

The Conclusions of Modern Science. Plainly told by Walter Grierson ("The Enquiring Layman"). (The Outline Library, No. 10.) Pp. xviii + 198. (London : George Newnes, Ltd., n.d.) 2s. 6d. net.

In this little book, "The Enquiring Layman" has marshalled the majority of the most important facts and conceptions of modern science. A layman he might claim to be, yet he cannot be a real visitor to the subject of science. He shows a definitely intelligent attitude towards it and presents his findings in a distinctly palatable style.

Astronomy, natural philosophy, biology, and the other conventional branches of science receive consideration, yet the author—quite unconsciously perhaps—has performed one important feat in showing that this conventional subdivision of science is essentially artificial. Of all the subjects dealt with, the most abstract, man the interpreter, is probably the author's *pièce de résistance*.

It is evident that "The Enquiring Layman" is keenly interested in the subject, and he has presented it in such a manner as will infuse a similar interest into his readers.

Practical Plant Biochemistry. By Muriel Wheldale Onslow. Third edition. Pp. vii + 206. (Cambridge : At the University Press, 1929.) 12s. 6d. net.

MRS. ONSLOW'S book fills a decided gap in botanical literature. Since its first appearance, it has been considerably extended by a chapter on the plant acids, as well as by shorter sections on the derivatives of these bodies, waxes, essential oils, and also nucleic acid. Serious changes of form are scarcely possible in a text-book of this character, but an additional chapter, in many ways the most interesting in the book, has now been added on the possible inter-relationships of the hexose sugars, the pentoses, and the pectic substances. The recent work on the oxidising systems of plants is also summarised in a convenient form.