

Scientific Paradoxes and Problems and their Solutions ; Simultaneously Broadcast from 2LO. By A. S. E. Ackermann. Pp. viii+131. (London: The Old Westminster Press, 1925.) 5s. net.

MR. ACKERMANN is the author of a successful book on popular fallacies, now in its third edition. Early in 1925 he was engaged by the British Broadcasting Company to give a series of talks on popular fallacies connected with engineering and science. Listeners were invited to send such paradoxes to the speaker, and the pick of the matter received by him has been collected into the volume now noticed. Some of the problems, which seem trivial to a mind versed in science, are yet a source of constant perplexity to the general public.

A great number of people are attracted by arithmetical, geometrical, and mechanical puzzles, and the author found that a surprising variety of posers, many being of a very high quality, were sent to him by interested listeners. The solutions of some of the problems included will be obvious to many schoolboys. A few of them are mere verbal conundrums. From the more elusive questions discussed we select two, which are sufficient to indicate the scope of Mr. Ackermann's book. 1. (p. 70). Given two straight bars of steel identical in every respect with the exception that one of them is magnetised, in what way can it be determined which bar is magnetised? No third article of *any kind* is to be used. You may not even balance one or both bars on a finger or finger-nail, but you may hold the bars in your hands. 2. (p. 75). In going up a wide, steep road on a bicycle or other vehicle, does it make it any easier for the bicycle rider, horse, or engine of a car if a zigzag course be taken?

The solutions throughout are given in non-technical language and should appeal to any intelligent person without specialised training in science. We foresee a wide circulation for Mr. Ackermann's book: few readers will go through its pages without finding much to instruct them—and all of it presented in an entertaining way.

W. E. H. B.

Electrical Engineering. By Prof. L. A. Hazeltine. (Engineering Science Series.) Pp. xvi+625. (New York: The Macmillan Co., 1924.) 30s. net.

THE author of this volume is the professor of electrical engineering in the Stevens Institute of Technology. It is primarily intended for the students in his classes, but it will be of interest to many teachers of physics and engineering in Great Britain. The author writes clearly, his object being to explain the essential elements of electrical science and its applications. It will prove useful as a class-book, and we also think that it will be useful to the private student who has a sound knowledge of elementary physics. The rational system of units is employed, the permittivity of a vacuum being taken as $1/(4\pi)$. Some formulæ are simplified, but others are made slightly more complex. The "true" units and the "international" electric units are both given. Seeing that now testing laboratories can measure resistances, and so on, in true units with an accuracy far exceeding that required in industry, we think that the time has come when the "international" units can be regarded as obsolete. No instrument reads absolutely correctly, and the "tolerance" permissible, with a given type of instrument, is many

times greater than the possible error in calibrating the standard in true units. Mathematical proofs are always given when they can be understood by the average student, but advanced mathematical proofs are excluded. Many collections of problems are given throughout the book, and we were glad to see that the answers are given to them.

Practical Radio: including the Testing of Radio Receiving Sets. By James A. Moyer and John F. Wostrel. Pp. vii+249. (New York: McGraw-Hill Book Co., Inc.; London: McGraw-Hill Publishing Co., Ltd., 1924.) 8s. 9d. net.

RADIO broadcasting has greatly interested the public in radio science. There are many amateurs who have an excellent working knowledge of the art but lack that specialised knowledge of the science which alone can give them the confidence necessary for success. This book is clearly written and can be recommended to any one who wants to know standard modern practice and desires a simple introduction to elementary theory. A chapter is devoted to the future of radio, but the author rather confines himself to the history of past triumphs. A good description is given of the apparatus used for transmitting photographs over long telephone wires on a commercial scale; vacuum tube amplifiers, photo-electric cells and synchronising arrangements form an essential part of the method. It is therefore an adaptation of devices developed in connexion with radio communication, telegraphy and telephony. Future improvements in radio reception will probably consist of replacing storage batteries and dry cells by devices which can be connected with the electric supply; for example, a suitable thermocouple. As amplifiers become more sensitive a large antenna becomes unnecessary. Many sets operate with a loop at present, but in the future this loop will probably be very small. The elimination of static disturbances by directive reception is also mentioned.

Faune de France. 9: Amphipodes. Par Ed. Chevreux et Louis Fage. (Fédération Française des Sociétés de Sciences Naturelles: Office Central de Faunistique.) Pp. 488. (Paris: Paul Lechevalier, 1925.) 60 francs.

THE volume opens with a short statement of the characters of the order Amphipoda and of its three suborders, followed by an account of the habitats in which Amphipoda occur, the methods by which specimens may be obtained, studied, and preserved, and by a useful description of the external morphology and internal structure. Tabular keys are provided to the families, genera, and species—some 320 of the latter being considered. Under each species is given a concise statement of its characters—illustrated by clear line drawings, for the most part original—and of the distribution of the species in France, with a note of the neighbouring countries from which it has been recorded. Appended is a list of works on Amphipoda and there is an adequate index.

The present volume, like its predecessors in the same series, will receive a warm welcome in Great Britain, and will be of great service to those interested in the order of which it treats.

ERRATUM.—Page 461 of issue of September 26, col. 1, line 26, for "Microscopic Reactions" read "Macroscopic Reactions."