review should not have a real basis in Nature. No one pretends that the units written down by the organic chemist, or even used by him in syntheses under 'physiological conditions', are really present in the plant. All that is claimed is that the *equivalents* of these units are available. We are just now beginning to see the fruits of tracer experiments, which should do much to place 'biogenetic concepts' on an even firmer theoretical basis. There is no clash here between the organic chemist and his more biologically minded colleagues. Provided that constitutional arguments by 'biogenesis' are used as a stimulus to critical experimental work—not as a substitute therefor—the method has much to commend it.

This book can be thoroughly recommended to all mature organic chemists and others interested in the subject. It is a little unfortunate that a work which deserves to be read so widely should be so comparatively expensive. D. H. R. BARTON

CLASSICAL ELECTROMAGNETISM

Electromagnetic Theory

By Prof. V. C. A. Ferraro. Pp. viii+555. (London: The Athlone Press (University of London), 1954. Distributed by Constable and Co., Ltd.) 42*s*. net.

PROF. V. C. A. FERRARO'S book "has been written to meet the requirements of students reading for an Honours degree course in Mathematics . . . it should also be of use to physicists and electrical engineers". Four-fifths of the book is devoted to the steady state (including steady currents and their magnetic fields); this part contains chapters devoted to special topics such as systems of conductors, images and inversion, steady-current networks and boundary-value problems in potential theory. After the introduction of electromagnetic induction and the development of Maxwell's equations comes a chapter on alternating-current theory and two chapters on electromagnetic waves. The book closes with a chapter on the motion of charged particles in steady electric and magnetic fields. There are an extensive collection of examples at the end of each chapter and a number of worked examples in the text.

The balance of emphasis between static and varying fields, and the necessarily brief account given of the applications of the theory, suggest that the book should be appraised primarily as an exposition of the fundamental principles of electromagnetic theory. For this exposition the author adopts the traditional method, proceeding from the electromagnetic field in free space to the properties of dielectrics considered as regions of distributed polarization, and then to the magnetic fields of permanent magnets and magnetic materials. The theory of the magnetic fields of steady currents is developed from the properties of the circulation integral, and the connexion between electromagnetic induction and the conservation of energy is explained.

This approach to electromagnetic theory undoubtedly has many advantages. It enables the student to obtain a firm grasp of the physical significance of the electric and magnetic field-strength and induction vectors by studying their simplest manifestations; and this familiarity with the basic concepts facilitates the understanding of their rather complicated interconnexions in Maxwell's equations. On the whole, the author has exploited well the advantages of his choice of method, and the result is a readable and lucid text-book of classical electromagnetic theory. The book is open to criticism, however, on important points of detail. For example: the introduction of the displacement current is based on an apparently arbitrary preference by Maxwell for closed currents; the treatment of the energy density of the magnetic field, on which the deduction of the law of electromagnetic induction depends, proceeds by unjustified generalization, from a formula developed for permanent magnets in free space, to systems containing permeable media and electric currents; the proof of an important formula for the energy of a distributed current system is based on the statement, which is several times repeated in other contexts, that the stream lines in a solenoidal field are closed curves; and even in a theoretical text-book one does not expect to find such statements as that "molecules become electric dipoles only through the action of the inducing electric field", and that in iron the intensity of magnetization is directly proportional to the magnetic field. E. WILD

BRITISH MOSSES AND LIVERWORTS

British Mosses and Liverworts

An Introductory Work, with Full Descriptions and Figures of over 200 Species, and Keys for the Identification of all except the Very Rare Species. Written and Illustrated by Dr. E. Vernon Watson. Pp. xvi+419+18 plates. (Cambridge: At the University Press, 1955.) 45*s*. net.

THE need for a simple flora dealing with the British bryophytes has been felt for a long time. It is true that the identification of the British species is well provided for by the handbooks of Dixon and MacVicar; but the comprehensive detailed treatment which makes these works so valuable is apt to be confusing and even somewhat forbidding to the beginner. Dr. E. Vernon Watson has now produced a clear and attractive introductory flora, which should be a great asset to anyone commencing the study of British mosses and liverworts. It has naturally not been possible to include all the British species in this shortened account; but, by omitting the rarities, identification of the commoner species has been greatly facilitated.

The principal morphological features of mosses and liverworts are simply and clearly described in the introduction and glossary, which should enable the book to be used successfully even by those with little previous knowledge of the bryophytes. Although full descriptions and drawings are given for only 154 species of mosses and 55 species of liverworts, the keys and notes provide in all for the identification of 310 mosses and 136 liverworts. Several practical trials have shown that the keys are easy to follow and are based on readily determined characters. A few numbers have evidently been omitted accidentally from the key on p. 59, but any such errors should give little difficulty and are not easy to avoid in the first edition of a book of this type. The detachable field-key is an innovation of doubtful value. Since only the commonest species are included, its use is sure to lead to disappointment on many occasions.