and their cardinal number is denoted by a or by *Alef-zero*. Cantor's first great discovery was that the aggregate of all real algebraic numbers, that is, the real roots of algebraic equations with integral coefficients, is enumerable, but the aggregate of *all* real numbers (including non-algebraic irrationals such as π and e) is not. The cardinal number of the latter aggregate is called the *power of the continuum*, and is denoted by c. It corresponds to the infinite set of points in either a finite or infinite straight line, and, strange to say, also to those in a square or cube. The attempt to find cardinal numbers greater than c leads to the general theory of transfinite numbers.

Burali-Forti's discovery in 1897 (anticipated by Cantor in 1895) that the theory of transfinite ordinal numbers led to a paradox, started a controversy that is not yet settled. Some say, with Poincaré, "There is no actual infinity. The Cantorians have forgotten this and so have fallen into contradiction." Others, such as Zermelo, believe that Cantor's work, although defective as it stands, can be made sound by the explicit postulation of a suitable set of axioms, but no such set has yet been universally accepted. Many consider that some of Cantor's definitions, which do not tell us how to construct the entities in question, contain latent self-contradictions. Whatever view is taken on these questions, Cantor's more elementary ideas have become indispensable in the exact formulation of results in analysis and geometry. H. T. H. PIAGGIO.

Short Reviews

Physical Chemistry. By Prof. Dr. John Eggert. Translated by Dr. S. J. Gregg. A translation of the third edition of "Lehrbuch der physikalischen Chemie" revised in collaboration with Prof. Dr. Lothar Hock. Pp. xi+632. (London: Constable and Co., Ltd., 1932.) 24*s*. net.

THE third edition of Prof. Eggert's "Physical Chemistry" has been translated by Dr. Gregg, of King's College, London. The book is divided into three parts. The first part on "Atomics and Energetics" includes sections on classical chemical theory, thermodynamics, kinetic theory and quantum theory, all treated very briefly in about eighty pages. The second part, on "The Nature of Matter", occupying about 230 pages, is divided into three main sections, atoms, molecules and states of aggregation. The third part, on "Chemical Reactions" which occupies the remaining half of the book, has five main sections, on chemical equilibrium, thermochemistry, electrochemistry, chemical kinetics and photochemistry.

In general, Prof. Eggert's book deals only briefly with the topics which were taught under the name of physical chemistry during the pre-War period; but it describes much more fully the themes which have been developed during the subsequent years. There are thus ample references to electrons, isotopes, atomic and molecular spectra, crystal lattices, strong electrolytes, activity coefficients, active molecules and chain reactions, whilst the properties of dilute aqueous solutions and the theory of electrolytic dissociation no longer occupy the predominant position which was given to them in earlier textbooks. This change of emphasis corresponds with the liberation of physical chemistry from the limitations of the preceding decades; and the wide outlook of the present volume is an indication of the debt which chemists owe to an inrush of sound physics into their science.

The English version of Prof. Eggert's book may indeed be welcomed because it presents a readable and attractive account of the 'chemical physics' by which the rudimentary 'physical chemistry' of the preceding generation has now been so largely replaced.

A Textbook of Pharmacognosy. By J. W. Cooper and T. C. Denston; with Illustrations and Drawing Notes by M. Riley. Pp. x + 298. (London: Sir Isaac Pitman and Sons, Ltd., 1931.) 10*s*. 6*d*. net.

ALTHOUGH the title of this book is a little misleading—it should surely have been "A Textbook of Practical Pharmacognosy", according to the very principle laid down in the authors' preface—its use will probably extend well beyond the circle of students for whom it is primarily intended. In that sense, it may well act as a substitute for larger works of reference on the shelves of those who have only occasionally to tackle the description and identification of natural drugs.

For these, however, the purely haphazard arrangement of plant families, varying in the different sections (occasionally even two representatives of one family occur in different places in the same section), is a disadvantage only partly set off by a good index. Surely some standard arrangement, such as that of Bentham and Hooker, could have been used throughout. The drawings, on the other hand, should be of good service to users of the book, though a few that have been omitted might well be included (for example, *Chiretta*, for comparison with *Lobelia*).

The tests described are comprehensive and well explained, even if the advertisement of a particular brand of malt extract (p. 4) seems a little gratuitous; there are plenty of other diastatic extracts on the market. Print and binding are of the quality that a reference book needs—simple, clear and durable. A. L. B.