the planets: to conform with the figure, line 3 should read "between *d* and *e*" and line 6 "from backwards to forwards" (or alternatively broken arrows should be shown between *b* and *c*).

This masterly introduction to Newton will be welcomed by all interested in the history of science, not only as a penetrating study of Newton himself, but also for the insight it affords into many matters affecting Newton's life and work.

N. H. DE V. HEATHCOTE

EARTHQUAKE GEOGRAPHY

Seismicity of the Earth and Associated Phenomena

By B. Gutenberg and C. F. Richter. Second edition. Pp. x+310. (Princeton, N.J.: Princeton University Press; London: Oxford University Press, 1954.) 80*s*. net.

THIS work on earthquake geography by two well-known seismologists, Prof. B. Gutenberg and Prof. C. F. Richter, now working in Pasadena, may be considered to be the modern counterpart of the work of such giants of the past as Count R. de Montessus de Ballore and Dr. C. Davison, and is an extremely important work.

In a young and vigorous subject, such as this relatively is, in which the recording apparatus and hypotheses are changing and in which the data are accumulating so rapidly, it is indeed a pleasure to note that a second edition of this book is required so soon. This contingency has enabled the authors to bring the work up to date to the end of 1952, and in order to save additional printing costs this has been done in a manner so as to cause as little disturbance as possible to the original printing. With regard to the tables numbered 14, 15, 16, which are lists of earthquakes arranged according to depth of focus and location, these have been extended chronologically, and it must be remembered that they are selective within the limits set by the authors. Profs. Gutenberg and Richter do not intend them to supplant the more complete records of the International Seismological Summary, the authors of which are now working on the 1946–47 reductions. Tables 4 (largest earthquakes) and 6 (annual energy release in earthquakes in ergs), being small, have been brought up to date and rearranged where necessary without difficulty. Tables 17, 18 and 19 (regional lists) have had their additions put at the end, and references to new literature have been added. Where major additions have been required, these have been collected together, beginning on p. 104.

Better seismographs such as those constructed recently by Prof. W. Hiller, of Stuttgart, and better timekeeping (now in many seismological observatories measured correct to 0·1 sec.) have given better data, and hence it is now possible to determine the velocities of seismic waves at various depths in the earth with greatly increased accuracy. Moreover, data from new stations such as those at Kiruna (north Sweden), Tamanrasset (West Africa) and Lwiro (Belgian Congo) assist in the elucidation of local deep structure. Lateral and vertical variations in earth structure are not confined to the difference between continents and oceans and to mountainous regions. In this connexion, explosion seismology has been increasingly used in attempts to solve academic problems concerning earth structure, as well as in the search for minerals.

Though not always found at exactly the same depth, the Mohorovičić discontinuity (p. 26, etc.) has been found to be present under all continents and under the Atlantic and Indian Oceans (depth 37 km. under the Canadian Shield and 45 km. under Japan). The velocities of primary waves above it approximate to 6·5 km./sec. and those below it to 8 km./sec. The generalized word for the layer immediately under the sedimentary rocks, namely the "granitic layer", is gradually being discontinued for various reasons, and in this new edition has been replaced to some extent.

Prof. Gutenberg believes that above the Mohorovičić discontinuity there exists at least one layer having low wave velocity and presumably relatively low strength. The consequences of this hypothesis and the comparison of these consequences with those of other hypotheses are still being considered.

The book is essential for students of geophysics, geology, geography, civil engineering and earthquake insurance, and its value has been enhanced in this new edition by the additions and amendments.

ERNEST TILLOTSON

TEACHING OF M.K.S. UNITS

The Teaching of Electricity, with special reference to the Use of M.K.S. Units

(A Report of a Sub-Committee of the Science Masters' Association.) Pp. xii+135. (London: John Murray (Publishers), Ltd., 1954.) 10*s*. 6*d*. net.

THE teaching of electricity is a matter of great importance to schools, technical institutions and universities, and this book on the subject, sponsored by the Science Masters' Association, is one which should be very carefully considered. It is really an attempt to present a case for the teaching and use in Britain of the rationalized M.K.S. system of units in schools, and it can be said at once that the committee of the Association charged with the task has done it well. Now, it is not the province of a reviewer to present an opposing point of view, although in passing he may mention that in his teaching and, still more in his researches, he has never found the traditional units to fail him; and he is of the opinion that the rush to popularize M.K.S. units in certain quarters is ill-conceived and likely to be of relatively short duration, except for those workers who are fundamentally interested in and continuously working in electromagnetic theory.

The book is divided into seven main parts: the recommendations of the committee, the syllabus intended for advanced and scholarship levels in the General Certificate Examination and notes thereon, definitions of units, theoretical proofs, experiments and, finally, two appendixes on experimental details and additional experiments which may be used to support the syllabus. They are all worthy of careful perusal. Some of the experiments are highly ingenious; for example, it is interesting to find a description of a form of the Lorenz rotating-disk method for the absolute determination of the ohm adapted for use in schools.

But, among the recommendations of the committee, one finds the omission of quantitative magnetism, "because we now know that an isolated pole is an impossibility and that a magnet with permanently disposed poles is an impossibility". So too is a permanent electric current. A sixth-form pupil is asked to accept without question $\varepsilon_0 = 1/\mu_0 c^2$; but he may not be asked to imagine that a sheet of surface magnetism may be pictured as made up of free poles!