

quicker and more satisfactory, that no space devoted to aids and checks would be wasted. Calculating machines other than the straight slide-rule are not mentioned, and tables are regarded as books to be read rather than as instruments to be handled. Lastly nomograms, theoretically interesting and practically most useful, are dismissed in a short paragraph.

We hope then that the authors will try again. They have aimed at writing a book that has long been needed, and their attempt is the best, because it is (so far as we know) the only one in the language. If they can make their execution equal to their design, if they will really justify their title, they will indeed deserve the thanks of all who desire reform in the teaching of physical science.

NORMAN R. CAMPBELL.

Our Bookshelf.

Technical Education: its Development and Aims. By C. T. Millis. Pp. vii + 183. (London: Edward Arnold and Co., 1925.) 6s. net.

ONE of the chief lessons we may learn from a study of the past is that society is neither "in rigid repose with certain . . . institutions rooted like oak-trees in the centre round which all group themselves as best they can," nor is it in such a fluid state that its institutions may ruthlessly be torn down. Roots there are, but they are not eternal, and, although they are not to be pulled up hastily or thoughtlessly, there are among them those which are removable when they no longer fit life's changing conditions.

Mr. Millis's book—and particularly that part of it which reminds us of the debt we owe to the pioneers of technical education—makes us realise this very clearly, and directs our attention to some of the causes which are gradually forcing all concerned with education to examine their theories and practices so that education shall not be divorced from life. Slowly we begin to understand that careers in industry and commerce are worthy of as careful preparation as are those in the "professions." In secondary schools the need of "modern" sides is being felt: enlightened employers, recognising the decay of the apprenticeship system, are seeing that the means of producing an intelligent and adaptable workman already exist within our system of technical education, and would therefore improve and extend that system.

That there is a national urge to examine these questions may be seen from the fact that they are already receiving attention by the Balfour Committee, the Board of Education's Consultative Committee, and the recent Committee set up by the Boards of Education and Trade. An unofficial committee under the chairmanship of the Right Hon. Lord Emmott is also examining the relationships between technical education and other forms of education and industry. In view of these signs of the times, whether one agrees with Mr. Millis's conclusions concerning technical education or not, his book is a distinct contribution to the discussion of questions which are bound to be much to the fore in the coming reconstruction of our ideas both educational and industrial.

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Grundfragen der vergleichenden Tektonik. Von Prof. Dr. H. Stille. Pp. vii + 443. (Berlin: Gebrüder Borntraeger, 1924.) 22.50 gold marks.

THE most valuable part of this important work is the very full account, occupying some 200 pages, of all the epochs of mountain-building since the close of the pre-Cambrian. A very clear picture of the geological structure of Europe is brought out, starting with the primeval Europe of the pre-Cambrian shields, and continuing through the main tectonic subdivisions built up by the successive phases of Caledonian, Hercynian, and Alpine movements. Altogether about twenty definite phases are recognised. Three of these are grouped as Caledonian (Ordovician to Lower Devonian); five as Variscan or Hercynian (Upper Devonian to Permo-Triassic), and the rest as Alpine (Kimeridgian to recent). The broad periodicity often referred to in text-books clearly cannot be accepted except for limited areas. Dr. Stille continues to hold the view that earth-movements are mainly due to the contraction of the outer crust, a theory that is at present subject to very severe criticism from various sources. But although the author says nothing of the possibility of expansion, and little about isostasy, he maintains, in opposition to Suess, that upward movements have occurred not only relatively to downward movements, but also with reference to the centre of the earth. It is a great pity that the details of igneous activity have not been included with those of earth-movements. The task of compiling all the information must have been a heavy one, but a little more work would have sufficed to make the book a storehouse of petrological data of the utmost value. As it is, we are indebted to Dr. Stille for the most complete account that has yet appeared of the earth-movements of Palæozoic and later times.

Electric Vehicles. By Charles W. Marshall. Pp. xii + 96 + 25 plates. (London: Chapman and Hall, Ltd., 1925.) 9s. 6d. net.

THE class of electric vehicle which has proved most successful in Britain up to the present time is the lorry of from 1 ton to 5 tons capacity. The author has had extensive experience of the working of electric battery vehicles belonging to the Glasgow Corporation, and he quotes test figures which are very interesting and instructive. He compares the cost for electric, petrol, and steam motors and shows that the electric vehicle is cheapest to run, provided that the load capacity lie between 2 and 5 tons. For loads of less than 2 tons, the petrol vehicle is the most economical. But electric vehicles are preferable in every way to horse-drawn vehicles. The average consumption of energy for a ten-mile run is generally about a unit. It is rightly pointed out that electric vehicle builders are greatly handicapped in their endeavours to induce private firms to use electric vehicles by the fact that most electricity authorities have no vehicles of this type themselves. It would pay the municipal electric authorities if all the city work at present being done by horses were done by electric vehicles. For each horse displaced a night load on their station of about one kilowatt for seven hours would be obtained. Valuable data are given which should enable engineers to come to a decision.