

bearing upon points concerning which fuller information was desired. The address takes the form of a general survey of the present position and outlook of education in this country, and of the part that co-education may be expected to play in its development.

The author defines education as the training of life, for life, by life. We must think of the child as a living organism with immense and varied possibilities. The purpose is to give these possibilities the fullest opportunity of development quite irrespective of the child's future vocation, and concerned only with the point of view of his position as an actual and potential member of the community. Mr. Badley's contention is, as a result of twenty years' experience at the Bedales residential school for both sexes, that the full value of education in its widest aspect cannot be attained for either sex unless both be taught together during the whole period of school and student life with such differentiation as physical and psychical conditions demand. It is a carefully reasoned statement worthy of the serious attention of all educators. We are face to face with the making of a new world, in the fashioning of which men and women will share equally, and in the common educational training of both sexes the problem will find its most effective solution. Such is the view of the author of this most inspiring address.

*A Text-book of Electrical Engineering. Translated from the German of Dr. Adolf Thomälen.* By Prof. George W. O. Howe. Fifth English edition. Pp. xi+482. (London: Edward Arnold, 1920.) Price 28s. net.

A NUMBER of minor alterations which have been introduced into this edition increase its value. For instance, the symbols have been modified, when necessary, so as to bring them into line with the recommendations of the International Electrotechnical Commission, and descriptions of obsolete machines have been omitted. The theory of the single-phase commutator motor has been extended, and students will find the theorems given simple and instructive. We can recommend the book to those who want a general survey of the whole elementary theory of electrical machinery.

It is assumed throughout that the alternating-current waves follow the harmonic law; this greatly simplifies the analysis. We should like the author to have laid greater stress on the limitations of the theory due to the assumptions which have been made. Owing to hysteresis, for instance, the waves do not follow the harmonic law, and although the error introduced by the assumption may be small, it makes it difficult—if not impossible—to judge of the relative merits of some of the alternative diagrams given, as they are all affected to varying extents.

We notice that the translator defines the slip of an induction motor as the difference between the number of revolutions per second of the stator

magnetic field and of the rotor. It is more customary now to define it as the ratio of this difference to the revolutions per second of the stator field. Defined in this way, the slip is a pure number, and the mathematical equations of the induction motor are simplified.

*Governors and the Governing of Prime Movers.* By Prof. W. Trinks. Pp. xviii+236. (London: Constable and Co., Ltd., 1920.) Price 22s. 6d. net.

THIS book is probably the only one in the English language which deals exclusively with governing, the subject being usually dealt with in text-books on prime movers. The author's aim has been to produce a book of essentials and principles, put in a form which will enable the reader to judge existing and future types of governors; there are no catalogue pictures. The author does not pretend to have covered the whole field of governing; thus the mathematical side has been restricted to the usual undergraduate standard; and he projects a further volume for the use of engineers who have to make governing a life study.

Among the other subjects treated in the volume will be found discussions on the governor as a motor and as a measuring instrument, promptness and traversing time, adjustment of equilibrium speed, shaft governors, natural period of vibration of governors, interaction of the governor and the prime mover, rate-of-flow, pressure and relay governors, governor troubles and remedies. There is also a very useful chapter on discarded types of governors. In all these the treatment is clear, and there is a large number of line drawings, which will be of assistance to the student. Since there are no makers' illustrations, the book is equally suitable for British and American students, and we can recommend it with confidence.

*Portraits of Scientists.* 11 in. by 14 in. + margin. (The Class-room Portrait Gallery, 7 Queen Square, W.C.1.) Price 6s. 6d. each, or 30s. the set of five.

THESE collotype portraits have been produced with the view of meeting the need for instructive decoration in classrooms, lecture halls, and laboratories. The publishers hope that, while helping to create an atmosphere of culture, the portraits will also supply a background for much solid instruction woven around the lives of great men.

The difficulties met with, at present, in the choice and provision of artistic, decorative, and educational pictures for secondary schools and other institutions are such that any attempt at improvement in this direction is welcome. However, the paper of the present issue and the artistic effect of the portraits leave much to be desired. The series includes Galileo, Sir Isaac Newton, Michael Faraday, J. Clerk-Maxwell, and Lord Kelvin; and it is proposed to prepare a further series, including chemists and other men of science of to-day.