

the 'losses' in a machine we get, as a rule, a clear idea of the principle of its working, and we can then gradually build up a more accurate theory. This method is to be commended.

### Use of Electric Power.

*Electric Trains.* By R. E. Dickinson. Pp. xii + 292. (London: Edward Arnold and Co., 1927.) 16s. net.

THERE are few industries in such a rapid state of development as electric traction, and there are few in which the literature of the subject is, comparatively speaking, so small. Some of these books are quite out-of-date; others are too advanced, demanding a knowledge of mathematics that few possess; and others contain little beyond a great mass of statistics and data which, while useful to the specialist, are of little help to students and ordinary railway engineers. This book is specially written for the latter two classes and will prove helpful.

To meet the ever-growing competition of tramway and motor-bus traffic, it is necessary to speed up the trains on suburban lines. With steam-hauled trains the acceleration is rarely so great as "half a mile per hour" per second, whereas an acceleration of 1.5 m.p.h. per second can easily be obtained by electric traction. Slipping of the wheels takes place much more readily with steam-operated trains, owing to the pulsating nature of the tractive force. There is also much less wear of the rails when the trains are operated electrically.

The author's chapter on the mechanics of train movement can be readily understood by any one having an elementary knowledge of mechanics. The control systems and the methods of making rheostatic calculations are clearly described. Train resistance curves are given, so that even although this resistance varies considerably with local conditions, useful approximations can be made. It will be remembered that the Advisory Committee appointed by the British Ministry of Transport reported in favour of standardising the supply pressure at 1500 volts direct current. From the data given, it appears that in practice modern railway engineers prefer this system to the single-phase system.

*The Use of Power in Colliery Working: a Treatise on Mining Costs and Machinery Designs and Management.* By John Kersopp. Pp. xxviii + 580. (London: H. F. and G. Witherby, 1926.) 40s. net.

DURING the past twenty-five years, mining engineering has been revolutionised by the substitution of power for hand labour in the majority of the operations involved in the winning and working of collieries, and we seem to be within sight of the time when the pick and the shovel will have a place in the museum only. It is perhaps inevitable that the advent of machinery should have led to a slackening of physical effort on the part of the manual worker, so that the net result is that the output per man-shift has remained stationary. Some idea of the variety of machinery at the command of the miner is given by the book under

review, but it is by no means an exhaustive treatment of the subject. For example, little or no reference is made to compressed air (an important omission) or to ventilating machinery. Nor is any attempt made to describe banking out or screening arrangements at the surface, amongst which certain modern devices such as decking machinery are of great interest at the present time.

Little attempt is made to explain the mechanics of the machinery described. The chapter on winding engines would have had more value had moment diagrams been given for the principal types of winding engines, and the chapters on pumping would have been similarly improved had the characteristic curves of the different types of pumps been illustrated. In the descriptions of electrical plant there is no reference to the synchronous induction motor, or to the cascade, or A.C. commutator motor. The book indeed appears to be largely a collection of catalogue descriptions and illustrations of a medley of types of apparatus. It contains a considerable mass of useful information badly digested. The use of many photographs showing external details only, and the lack of diagrams illustrating important features, militates against its usefulness. Moreover, the invidious practice of singling out the names of certain firms for special mention is to be deprecated.

At the end is given supplementary information on the various chapters, but it is difficult to understand why these were not included in the chapters themselves. Appendices giving useful information as to fluctuations in costs of materials, wages, etc., are given, but their connexion with the subject matter of the book is not clear. The book contains useful information but will have a limited utility.

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### Miscellany.

*Organised Publication: a Connected Series of Proposals relating to the Publication and Record of Scientific and Technical Information.* By J. F. Pownall. Pp. 91. (London: Elliot Stock, 1926.) 5s. net.

MR. POWNALL'S work is a plea for the international standardisation of scientific literature in respect of page size, spacing of perforations of sheet or leaf, the definition of subject headings in terms of an international code, and the prefixing of the standardised subject headings to each article. Scientific literature, in short, is to be built up from standardised units to be circulated temporarily in volume form, but ultimately to be resolved into unit form and to be housed in temporary binders.

Within recent years some progress has been made in the direction of the standardisation of the pages of the higher class of scientific periodicals, both as regards the quarto and octavo sizes. As the movement appears to have slowed down, it is probable that scientific workers are content with the progress realised and that present methods of publishing the *Proceedings*, etc., of the learned societies are sufficient for economical filing. It is, of course, difficult to say precisely how far size standardisation should be pushed; but it is