comes infinitesimal as n increases indefinitely; and it should have been stated explicitly that i is a *definite* symbol obeying the law $i^2 = -1$, together with the usual laws of operation, and that if a is positive $\sqrt{-a}$ is understood to mean $\sqrt{a} \odot i$. If these last precautions are not taken, it cannot be proved, for instance, that $\sqrt{-a} \times \sqrt{-b} = -\sqrt{ab}$, and, in fact, the authors' treatment of this identity is defective. Then such problems as "factor $a + b$" are perfectly unmeaning, especially after chapters on surds and complex numbers; probably the answer intended is $(\sqrt{a} + i\sqrt{b})\ (\sqrt{a} - i\sqrt{b})$, but any number of others might be constructed, for instance $(\sqrt{a} + \sqrt{b} + \sqrt[4]{4ab})\ (\sqrt{a} + \sqrt{b} - \sqrt[4]{4ab})$, and so on. It ought to be unnecessary to say that all questions on factors should be put in a perfectly definite way.

It is a pity that the elementary theory of graphs has not been included; every teacher who has tried the experiment must have realised the value of plotting off the graphs of even the simplest functions such as x, x^2, $x/(1-x)$, and so on. Another remarkable fact is that not a single word is said about partial fractions: this is a serious omission, and, in fact, a whole chapter on rational functions might be added with advantage.

This volume ends with a chapter on the binomial theorem for a positive integral exponent. The examples are very numerous, and appear to be well graded: they are intended to provide teachers with alternative sets for different years. The student should on no account try to work them out *seriatim*. G. B. M.

Distribution de l'énergie par courants polyphasés. By J. Rodet. Pp. 338. (Paris: Gauthier-Villars, 1898.)

THE present work is perhaps, in point of thoroughness of treatment, the best on this subject we have yet seen. It is written, not as an introduction to a hitherto unknown subject, but as an account of a well-established branch of engineering.

In this country, the comparative absence of water-power near our industrial centres, and the resulting small demand for long-distance power-transmission, has led to a relative indifference to this important subject. What limited field for such transmissions does exist, seems at present to arise rather from the vastness of our towns, than from the existence of available water-power.

The economy in electrical transmissions of energy, which accompanies the employment of high-pressure currents, has led to the use of the readily-transformed alternating current. And while, as M. Rodet remarks, electric lighting can be carried out equally well with single-phase currents as with polyphase, yet, for purposes of motive power, the absence of a good motor to run on single-phase circuits, and the excellence of the rotary field motor, necessitates the use of polyphase currents by which alone the rotary magnetic field can be produced.

Starting with an historical summary, M. Rodet deals successively with generator, line, and motor. While keeping the essentially practical aspect of his subject in view, and citing from time to time, by way of illustration, the conditions of actual installations, the author, nevertheless, does not hesitate to launch into ample theoretical investigations where he deems these called for. At the conclusion of the main part, a short but interesting chapter on meters for polyphase currents is given.

Of more general interest, however, are the descriptions of installations. These form a most interesting conclusion to the work. We observe that just one quarter of the examples selected by the author as types for description are two-phase transmissions; the rest are three-phase installations, and these include several of importance in south-west France.

The illustrations are for the most part simple and clear. English readers will feel the lack of an alphabetical index, and would prefer to have titles to the illustrations. The work should, however, prove of great value to engineers who wish to make a special study of polyphase current machinery. D. K. M.

My Horse; My Love. By Sarah Buckman-Linard. Pp. xii + 227. (London: T. Fisher Unwin, 1898.)

IT is a little difficult to classify Mrs. Buckman-Linard's book. It is not a treatise, nor a text-book, nor a story. It is written in a conversational style not always easily followed. Here is a sentence which demands exceptional powers of perception:—"In some the odour is perceptible to themselves only, while in others it is such a powerful means of defence as to make the pursuing victim wish he had never been born, which floods cannot drown nor fires quench, if any part escape, and only six feet of earth can extinguish" (p. 22). The book is divided into chapters, but the title of the chapter is little indication of its contents; *e.g.* Chapter ii. is headed "Facilities for Breeding in America," and after a few generalisations on the subject mentioned in the title the following questions are dealt with:—Is it possible that human beings have the same diseases as horses? Are the symptons easily recognised (reference is made to the symptons of glanders)? Is it possible to mend a broken leg? Chapters are also included on jockeys, the Derby day, and training. At the same time there is a quantity of information about the horse, scattered here and there in the volume; and if it had been systematically arranged in half the compass, it might have proved useful.

Matter, Energy, Force and Work. By Silas W. Holman. Pp. xiv + 257. (New York: The Macmillan Company, 1898.)

PROF. HOLMAN here addresses students and teachers of physics and chemistry on the concepts and definitions of physical science. Some knowledge of the experimental side of the subject and its phenomena and laws is assumed, and the logical expression and sequence of the ideas put forward should prove of great value to engineers, and others who have to apply physical and chemical knowledge, in enabling them to think clearly when dealing with the fundamental ideas on which all successful practice must be based. The book is divided into two parts: the first is concerned with a consideration of matter, motion, energy, force and work; the second with the kinetic theory of gases, Le Sage's theory of gravitation, the vortex-atom theory, and the nature of energy and matter. Prof. Holman describes the first part as "a sporadic attempt at clear, consecutive setting forth of individual thought," the second as intended "to give more concreteness to the concepts than could properly be introduced into the first part." The volume deserves to be widely read.

The Way the World Went Then. By Isabella Barclay Pp. xiv + 153. (London: Edward Stanford, 1898.)

THE author of this volume did not live to see it through the press, and the MS. has been edited by two lady friends, who contribute the preface and a summary of three pages, in which they state what they think the author would have included in the second part of her work had she lived. It would be unkind to subject a volume produced under these conditions to severe criticism, and we will merely say that, although the book affords evidence of a fervent desire to present the earth's history in a simple and interesting manner, it is seriously misleading in many matters of fact, and unequal in treatment. The volume is daintily bound, and has some attractive illustrations.