References to "concentrated fertilizers" are apt to confuse the reader unless he understands the difference between those based upon ammonium phosphate, like the German 'Nitrophoskas' and the English 'Concentrated Complete Fertilizers' (C.C.F.'s) that were first marketed in 1926 and 1930 respectively, and the projected new concentrated fertilizers that are based upon superphosphate. The authors' sweeping statement that "in the early trials the concentrated fertilizers were found less efficient than the compound manures, and their use began to decline after a few years" needs correction. Apart from a few isolated failures, mainly with the American 'Ammophos' and with 'Nitrophoska' in the United States about ten years ago, the early trials, conducted on strictly scientific lines, were very successful. Sales of Nitrophoska increased spectacularly until the world depression in 1931, when they fell, but have gone ahead since, whilst sales of C.C.F.'s have increased continuously and markedly from the start.

Few of those who know the requirements of British crops and soils will dispute the authors' opinion that there is still scope for the greater use of fertilizers, but the suggestion that the fertilizer industry, and in particular the superphosphate industry, should be better represented in Parliament opens up, by implication, a vista of trade representation and commercial flag-waving in that august assembly which would be entirely foreign to its honoured traditions.

THE STEAM ENGINE AND ITS DEVELOPMENT

A Short History of the Steam Engine

By H. W. Dickinson. Pp. xvi + 255 + 11 plates. (Cambridge: At the University Press, 1939.) 15*s*. net.

THIS is the most important work on the history of steam engines published since 1908, when Dr. C. Matschoss's "Die Entwicklung der Dampfmaschine" appeared under the auspices of the Verein Deutscher Ingenieure. But whereas Dr. Matschoss's work ran to two volumes each of more than 700 pages, and dealt with all types of engines, including locomotives and marine engines, Dr. Dickinson's book is on a much smaller scale, and is devoted entirely to stationary engines.

As is well known, Dr. Dickinson spent some thirty years as a keeper at the Science Museum, London, and the catalogue of stationary engines, containing information about more than five hundred exhibits, was prepared by him. But he is no dry-as-dust compiler and is as interested in the lives of inventors and in industrial progress as he is in the machines themselves. In this volume he has therefore been able to incorporate the results of the researches of such as Mr. Rhys Jenkins into the early history of heat engines, the results of his own inquiries into the lives of Boulton, Watt, Trevithick and others, and a general review of boilers, engines and turbines since the steam engine began to revolutionize industry in all its ramifications.

There are fourteen chapters in the book, of which five deal with the work done in the seventeenth and eighteenth centuries, four with the progress of boilers and the reciprocating steam engines during the nineteenth century, and four with modern boilers and steam turbines. There is also a chapter on the philosophy of the steam engine. In addition, there is a reproduction of a synopsis of events in the history of the steam engine exhibited at the Science Museum, and a good index.

Though in a brief notice it is not possible to touch upon the many interesting developments in steam machinery set out in the book, many readers, we think, will find entertainment in the excellent account given by Dr. Dickinson of the Newcomen engine, which proved of such outstanding value and importance. Belidor, the celebrated French engineer and architect, said in 1739 of this engine that it was the most marvellous of all engines: "Heat is its principle of movement; in its various pipes it creates a circulation like that of blood in the veins, having valves which open and shut opportunely; it feeds itself; it discharges itself at regulated times and draws from its own work all that it needs to subsist". No less marvellous are the boilers and turbines found in the power houses of to-day, and the end is not yet.

To all the developments of the last 200 years a whole host of ingenious men have contributed, and in his well-balanced, impartial and authoritative review, Dr. Dickinson has endeavoured to do justice to all those who made contributions of outstanding merit. The portraits given in the book are those of Papin, Smeaton, Watt, Evans, Trevithick, de Laval, Rateau, Parsons, Curtis and Ljungström. These were the pioneers of the reciprocating engine and of the turbine; but between these groups of pioneers were scores of notable inventors to whose labours attention is directed in the text. Altogether this history should prove a most useful book.