

engineers, Christopher Polhem and Martin Triewald respectively, and three are by French writers and relate to Marc Séguin and the early railways of France, whilst some notes on the first steam engine in America were also read at one of the meetings but have not been printed. The contributions from Sweden must be especially emphasised, for their subjects should certainly be better known in Great Britain, and they throw a good deal of light on some of the engineering problems of the early eighteenth century and the way they were attacked. Particularly interesting to us is the connexion of Triewald with England and the new information his 'life' supplies on the early days of the New-comen steam engine.

Other papers that must be mentioned are the presidential address of Mr. Rhys Jenkins, which passes in review very clearly the rise and progress of manufacturing industry in England up to the eighteenth century, and incidentally dispels the widely held idea that this country was particularly backward industrially in Elizabethan times; an interesting account of early lead mining and smelting in west Yorkshire; and some illuminating notes on Trevithick and his single-acting expansive engine, with special reference to certain MSS. recently discovered. A further instalment of the analytical bibliography of the history of engineering and applied science, containing about 400 entries, is also included. It is noteworthy that in the compilation of these bibliographies the Society is co-operating with the German engineering society and that an exchange of bibliographical material on technological history takes place between them, for inclusion in their respective publications.

The volume is excellently produced and printed and is well illustrated, and should be on the shelves of all engineers.

Grass in Orchards.

The English Grass Orchard, and the Principles of Fruit Growing: an Account of the Cultivation of Cherries, Apples, and Plums on the Grass Orchard Principle. By A. H. Hoare. Pp. 227. (London: Ernest Benn, Ltd., 1928.) 32s. 6d. net.

NOT everyone will agree with the suggestion in the author's preface that "the value of this book, if any, is due to the attempt that has been made to include the latest results of scientific research work". Such results have already been included in the various leaflets and reports published by the Ministry of Agriculture and by the

research institutions, and must surely be familiar to all serious students of fruit growing. For these the value of the book will lie in the chapters dealing with grass orchard management. This is a field which has not yet been thoroughly explored by the research workers, and the present-day planter must therefore depend for guidance upon empirical knowledge.

Mr. Hoare's admirable description of the orchard practice prevailing in the cherry districts of north-east Kent gives just the details which are most useful and at the same time most difficult to obtain. How far the author is right in recommending the planting of permanent fruit orchards must depend upon what are the optimum conditions for the production of high quality fruit. So far as cherries are concerned, there appears to be little doubt, from such evidence as exists, that high quality in the fruit is intimately bound up with well-managed grass, and Mr. Hoare is undoubtedly on safe ground in recommending the establishment of grass cherry orchards where conditions are favourable.

In the cherry districts of Kent, however, a comparatively low rainfall and high rate of evaporation tend to produce a short herbage which is at once the envy and the despair of visitors from other parts. Nor must it be forgotten that the magnificent flocks of Romney Marsh sheep which are to be seen grazing, ten to the acre, on the lawn-like cherry orchards, are the peculiar pride of a race of farmers whose hereditary traditions have linked sheep farming with cherry growing for hundreds of years, and that the local custom of wintering these flocks on marshland pastures has largely solved for them the awkward problem of winter keep. In how many of the twenty-two counties mentioned on page 41 will be found such a happy combination of soil and climatic conditions with local farming practice?

Apart from cherry growing, the case for grass orchards as a means of producing high quality fruit in the most economical manner has yet to be proved. Large acreages of plums are grown on cultivated ground both in the Vale of Evesham and in Kent, and there are those who maintain that high quality apples are most economically produced from low bush trees.

Whatever the truth of the matter may be, Mr. Hoare has stated his case with marked conviction and clearness, although exception might possibly be taken to his figure of £300 an acre as an index to the economic position of the English grass orchard.