

### Compression-Ignition Engines

*High Speed Diesel Engines, with Special Reference to Automobile and Aircraft Types: an Elementary Textbook for Engineers, Students and Operators.* By Arthur W. Judge. Pp. viii + 248 + 35 plates. (London: Chapman and Hall, Ltd., 1933.) 10s. 6d. net.

MR. JUDGE set himself a difficult task when he decided to compress into less than 250 pages an account of high-speed Diesel engines, which (as he hopes in the preface) will be equally suitable for engineers, students and operators. The needs of the second and third of these groups, if not almost mutually exclusive, are at least difficult to harmonise: the operator must think chiefly of details whilst the student's essential need is to grasp general principles and view the subject as an articulated whole. Nonetheless, the author has achieved his aim in a remarkable degree, and no one who professes, or desires to profess, a close acquaintanceship with this type of engine can afford to ignore Mr. Judge's contribution. The title chosen for the book may be questioned, though the author makes some defence of his choice in urging that the name Diesel engine is more readily recognisable than compression-ignition engine. There we think he is wrong; the latter name is already well enough known to those for whom he writes even if not to the world of the "Press and General Public" to suit which his choice of title was, he admits, mainly selected.

One of the chief uses of this engine is found in road transport. In the sixteen different makes on the road there are very varying standards of performance, but it is understood that more than one hundred motor vehicles using one of these engines are now on the road in London alone, and any criticism of their performance arises not because of failure in thermodynamic efficiency but mainly because, owing to the youthfulness of design, maintenance troubles loom rather large.

Another important field is that of aviation. Here the great potential gains are the lessening of fire risk on crash, and the elimination of radio interference from ignition gear. Both of these are of first-rate importance and the former can scarcely be over-emphasised, especially for civil air transport.

On p. 196, the author gives an illustration of the rather complex Jumo engine which is a

triumph of the illustrator's art: the credit for this he gives to our contemporary, the *Mechanical World*. The illustrating work throughout is of a high level, and we think the author is to be congratulated upon the care he has taken to attain a high level in this regard. Furthermore, his book gives the best short account we have seen of the various cylinder combustion-heads which have been tried, and of the important aim and purpose which lies behind them. We have no hesitation in recommending this book as a valuable addition to any engineer's library.

### Problems in Mental Deficiency

*Stoke Park Monographs on Mental Deficiency and other Problems of the Human Brain and Mind.* No. 1: *The Burden Memorial Volume.* Dedicated to the Memory of the late Rev. Harold Nelson Burden. Edited on behalf of the Medical and Consultant Staff of Stoke Park Colony, Stapleton, Bristol, by Dr. Richard J. A. Berry. Pp. xix + 249 + 29 plates. (London: Macmillan and Co., Ltd., 1933.) 10s. 6d. net.

IN this volume there is collected together a series of papers, dealing with the problems of mental deficiency, by a variety of authors, most of whom are members of the medical staff of Stoke Park Colony. Two thirds of the articles have been previously published though they appear in this collection in slightly modified form.

The first paper, which is the longest in the series, concerns the detection of potential 'social inefficiency' by physical and mental measurements, and was originally published in 1920. It contains a comprehensive table giving norms of the brain capacity of Australian children, calculated by one of Lee's formulæ. The writer of the article, Prof. R. J. A. Berry, holds that there is a fairly constant relationship between head volume and intelligence, and he applies this hypothesis to the diagnosis of mental subnormality. He attributes the relatively small size of the heads of some delinquent and defective children to the incomplete development of the cerebral cortex. The proportion of mentally subnormal individuals who have head measurements which do not deviate significantly from the normal is not indicated and without this knowledge it is difficult to see how cranial capacity can be of much diagnostic importance in a given case. The diagram shown on p. 26, apparently showing the