SESSION 1910-1911

President : Sir David Gill, K.C.B., F.R.S., etc.

Reply to Discussion on an Experimental Study of an Oil Engine.

By Mr. F. J. KEAN, B.Sc. (Member).

Mr. F. J. Kean, B.Sc. : Replying to the remarks made by Mr. Cummins upon my paper on "An Experimental Study of an Oil Engine." The weight of the reciprocating parts of the engine under test was only 100 lb. and not 170 lb., as assumed by Mr. Cummins for the purpose of his calculation ; hence it is quite clear the brasses *were* on their pins at the end of the stroke since the compression pressure was nearly 50 lb. per sq. in., and the curious thing is that with pre-ignition there is much more likelihood of their being kept on their pins, due to the very rapid rise of pressure as combustion takes place. I put the metallic knocking down entirely to the sound report of the very violent explosions. Dealing with the percentage of heat carried away in the exhaust products it must not be forgotten that only a *simple* analysis of the exhaust gases was made, and that unburnt hydrocarbons were ignored ; if the quantity of unburnt oil present in the exhaust gases had been determined by analysis the discrepancy with previous published tests would no doubt disappear.

Mr. Cummins' own paper on "The Internal Combustion Engine for Marine Use" is one of exceptional interest. His remarks upon cushioning cannot but leave a deep impression on those who read them, and one naturally asks oneself why present-day internal combustion engines are not cushioned when steam engines are, especially high revolution engines.

There can be little doubt but that the greatest development with direct coupled internal combustion engines for marine use is likely to occur with multiple cylinder two-stroke engines using some such fuel as crude oil which cannot be exploded, and does not give off explosive vapours at atmospheric pressures and temperatures. The Diesel type will give place to the vapouriser type on account of the reversing and starting difficulty; and undoubtedly the two-stroke engine with combined compressed air and cushioning cylinders, as outlined by Mr. Cummins, will provide all that is necessary in the way of manoeuvring and reversing.