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# PRACTICAL MECHANICS

Owing to the paper shortage "The Cyclist," "Practical Motorist," and "Home Movings" are temporarily incorporated.

Editor : F. J. CAMM

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## Space Rockets

I AM interested in the development of the liquid fuel rocket, and hope to carry out some experiments in my workshop.

Can you answer the following queries on the subject ?

(1) Of what material are the combustion chambers constructed ?

(2) The fuel which I believe consists of liquid oxygen and hydrogen discharged from separate jets has to be mixed in certain proportions—can you tell me what these are, and also if the fuels

ignite on contact with each other, or if they are started burning by some other means ?

(3) How can I calculate the lift provided by a given combustion chamber and expansion nozzle ?

(4) Can you recommend any books on the subject of Astronautics, and also give the address of British Interplanetary Society.—R. W. Boggio (Walton-on-Thames).

(1 and 2) Very few so-called space rockets have ever been actually constructed. Those which have been made experimentally have had cases of light steel or of aluminium, the combustion chambers being made of either of these metals, usually the former.

It has usually been proposed to propel such rockets by means of successive charges of a suitable rocket powder of the gunpowder type. At times, however, it has also been proposed to employ liquid air (or oxygen) as a propellant merely by the rapid gasification of these liquids and their consequent expansion. Liquid hydrogen has not been used, although it has been suggested as a means of increasing a rocket's energy of flight.

(3) You cannot calculate the lift which would be given to a rocket merely from a consideration of the dimensions of its combustion chamber and expansion nozzle. The entire design, dimensions and weight of the rocket profoundly modify its "lift" and until all these factors have been taken into consideration, any calculation of the nature you require is more or less out of the question.

(4) The entire subject of interplanetary communication is very nebulous at the present moment. The British Interplanetary Society has, we believe, disbanded (at least temporarily), and there are no practical formulae relating to the design of rockets on the lines you require. A few books on the proposed interplanetary travel have been published, the more serious and thoughtful ones in America. If you will write to Messrs. W. & G. Foyle, Ltd., Booksellers, Charing Cross Road, London, W.C.2, they will, we think, be pleased to give you the titles and prices of any such books which may still be available.

They will also advise you if they happen to have any second-hand books on this subject in stock. You should also refer to your local Librarian and inquire as to whether any such volumes can be procured on your behalf.