The point which must be made clear is that I have not, as Mr ROWE implies, set an economic target which is unreasonably low On the contrary, my target cost is just about the highest which can be tolerated commercially for any sort of scheduled passenger operation

Fuel Reserves seem always to be a subject of controversy in any discussion about scheduled helicopter operations Everybody who thinks about this problem feels instinctively that there is something wrong when one has to carry round large quantities of fuel which are seldom used in a vehicle whose economics are dependent on every pound of weight which can be saved

Economically undesirable as fuel reserves are—for the aeroplane as well as the helicopter—they are, I am afraid, an operational necessity which is likely to be with all forms of air transport for a very long time The fact that the transport helicopter will not require a runway for landing and may be able to hover motionless at a fixed height will not make a great deal of difference (Actually hovering is not likely to be a practical holding manoeuvre because of the higher fuel consumption which would result)

Mr SHAPIRO advances the usual suggestion which is made to avoid carrying reserve fuel This is that the helicopter should sit down at an alighting point outside the built-up area and wait its turn to go into the city there instead of holding in the air The obvious objection to such a procedure is that there will come a time when you will have to hold in the air while waiting your turn to get down at the " ground holding point " ! In other words fuel reserves are a necessity for any aircraft to get out of the air safely and reliably in low visibilities—particularly at night—wherever the landing point is situated If the traffic density is low in relation to the number of available alighting points in a given area then fuel reserves can certainly be reduced, but they are not likely to be cut in I F R conditions much below the 45 minutes B E A has asked for in the Large Helicopter Specification The objection to having larger numbers of alternative alighting points in a given traffic area than are required as normal traffic stops is that they will be extremely costly A rotorstation for all-weather day and night operation will require similar radio aids and an important part of the lighting found at airports To suggest that a large helicopter can put down just anywhere in safety in poor visibility or at night is fallacious

The result of all this will be that to reduce the cost of these ground installations and to meet the requirements of satisfactory Air Traffic Control routeing once helicopter traffic begins to get fairly heavy, fuel reserves will be required as they are to-day with fixed-wing aircraft We shall be wise to face this fact right from the start

Such are a few comments on the major points raised in the discussion I am grateful for the kindly thoughts expressed in the contributions which, as I have already remarked, vary only in their approach to the same objective, the economic commercial transport helicopter of the future

The Design Studies now submitted to the B E A Requirement will, I am sure, advance our thinking materially on the subject I am much encouraged from a preliminary review of them The next stage must now be tackled with judgment, vigour and courage Either we go forward with determination or we must resign the lead to the U S A " Get on or get out " There can be no compromise

OBITUARY

Members will regret to hear of the death on February 2nd, 1953, of MR JUAN DE LA CIERVA, JR, son of the Autogiro Pioneer MR JUAN DE LA CIERVA was an Honorary Member of our Association