

SIEBE, GORMAN & COMPANY LIMITED.

MR. DONALD MALCOLM CAMPBELL

ATTEMPT FOR WORLD RECORD SPEED ON WATER, 1954.

BREATHING EQUIPMENT.

In case "Bluebird" should nose - dive and sink, Mr. Donald Campbell is being provided with a pressure breathing apparatus based on the principle of the well-known and popular "Ess jee" Aqualung, which will allow him to breathe comfortably underwater, whilst freeing himself from the cockpit. Once free, he can rapidly disconnect himself from the Breathing Apparatus and float to the surface, using the buoyancy given by his special inflatable jacket. This life-jacket is in itself a development of the life-saving stole with which the crews of submarines are now equipped as one of their primary methods of escape. During his rise to the surface, the pilot will use the "Free Ascent" breathing technique recently demonstrated to members of the Press at H.M.S. Dolphin, Gosport.

Since, if an accident should occur, events will happen instantaneously, it is obvious that the pilot will not have time to don and adjust a breathing set, so it has been agreed that he will breathe from it during normal operation of the boat. The helmet and mask also contain the radio links with shore control. In addition to its emergency use, therefore, the apparatus is a contribution to the pilot's efficiency, protecting him from possible fouling of the cockpit air by fumes or smoke.

The equipment comprises:-

1. A 1200-litre cylinder of compressed air (charged to 120 atmospheres = 1800 lbs. per sq.in. pressure) located on the floor of the cockpit under the pilot's knees. This is connected by an air-line to:-
2. A pressure reducing valve attached to the right-hand side of the cockpit.

3. A flexible breathing-tube leads from the reducer over the pilot's shoulder to a Demand Valve, which delivers air according to the demand of the wearer's lungs through another tube to:-

4. A rubber Face-Mask covering the mouth and nose. This is a modified airman's oxygen mask and the one being used by Mr.Campbell is, in fact, that worn by Sqn.Leader Neville Duke when breaking the world's air speed record. A two-way cock at the bottom of the mask enables the wearer to breathe normal atmospheric air before switching over to the cylinder supply. A quick-release plug and socket connects the face-mask to the breathing tube so that the pilot can disengage himself in the minimum time.

5. A life-saving stole attached to an overall is held in intimate contact with the shoulders by a special harness. It is inflatable by a CO₂ cylinder operated by a quick acting pull off mechanism. This was made by the Dunlop Special Products Company Ltd.

In the event of sinking, the pilot is assured of an air supply under water. The quick-release arrangement on the face-mask enables him to disengage himself speedily, inflate his life belt and float to the surface. The air in his lungs being under pressure according to the depth of water, no artificial supply is necessary during the ascent. In fact, with the pressure lessening as he rises, he must vent the air from his lungs and not hold his breath, as has also always been stressed with those using the Davis Submerged Escape Apparatus.

In the demonstration today, Mr.Campbell will simulate this emergency action in a mock-up cockpit. He will enter the cockpit, plug in to his cylinder air supply and then be lowered to the bottom of the diving tank. He will then go through the procedure outlined above and come to the surface.

A diver will be standing by him throughout his demonstration wearing an "Ess jee" two-cylinder Aqualung, which apparatus will be available at the site of the attempt for normal underwater maintenance, for emergency or even for salvage.

12th October, 1954.