ABSTRACTS

"HYPERVENTILATION AGAIN" Wg. Cdr H. H. S. BROWN AFC, MBBS, DPH.

Air Clues No 4 - January 1956

Due to fear and nervousness pilots under training, especially during conversion on new types of aircraft are known to breathe three or four times the normal rate without realising. This "over breathing" or hyperventilation upsets nature's balance of oxygen and carbon dioxide in the blood, which gives rise to dizziness and mental confusion resulting in loss of control and may result in mystifying accidents. Hyperventilation is a suspected "killer" of pilots in many Jet aircraft accidents.

Brown reports two cases of pilots who developed certain symptoms resulting from hyperventilation, while they were flying at altitudes of 20,000 ft. One of the pilots was under mental tension while engaged in Q. G. H. exercises. The other was concerned over the proper functioning of the oxygen equipment and increased the depth of breathing with the mistaken idea that it would improve his absorption of oxygen. Both the pilots experienced symptoms of tingling sensation in fingers and difficulty in concentration. One of the pilots also experienced spasms of the muscles of hands, numbness of legs and diminished visual fields. The symptoms of these pilots were attributed by the squadron medical officer to hyperventilation at altitude. Confirmatory evidence for this was obtained when the pilots while instructed to hyperventilate at a simulated altitude of 20,000 ft developed symptoms similar to those they had experienced in the air.

Brown stresses the need for explaining the significance of hyperventilation to all the aircrews. Normal controlled breathing can save lives. Even holding the breath for a brief moment may help.

"FLIGHT TIME LIMITATIONS"—THE AEROPLANE, JANUARY 7, 1955.

British Air Line Pilots' Association have put forward their suggestions to the Ministry of Transport and Civil Aviation, regarding the pilots' duty and flight-time limitations.

Suggestions are based on the experience of a number of pilots. These pilots maintain that tiredness is not the result of the length of time in the air, but of the number of take-off and landings being made, and the fundamental factors inducing fatigue is the length of time on duty, rather than the length of time in the air. Transient stops are not considered to provide a real opportunity for relaxation and thus are included in the duty time. In those operations in which there are two "commercial status" pilots, the time spent in resting by one pilot may be considered as off-duty period. The duty day should be considered to commence from the time of reporting at base or, when away from base, of pick up at hotel and to end at the time of clearing the airport after last landing of the day.

The maximum duty and time hours and the sleep period have been worked out for different types of operations. For short-haul operations, the maximum duty period recommended is 10 hours for day and 7 hours for night flying, minimum period of 8 hours for sleep and a maximum flying time of 100 hours in one month, 255 hours in one quarter and 935 hours in one year. For medium-haul operations which are characterised by average flight stage of 3 to 4 hours and two pilots on board, the maximum duty period recommended is 12 hours for day and 10 hours by night. The maximum duty time in 7 consecutive days is 50 hours for short and medium hauls. For long haul operations with an average flight of more than 4 hours and with "two pilot crew" the duty period is 16 hours by day and 13 hours by night with a maximum period of 8 hours of sleep between 2200 and 0800 hrs and maximum flying time of 120 hours in one month, 300 hours in one quarter and 1000 hrs in one year. With long haul operations in which there is "three pilot crew", the maximum duty period can be extended to 22 hours by day and 19 hours by night with a 48 hours rest between two successive days.

"Ejectable Cockpit Capsule" - from paper read by George W. Hoover at the 27th Annual Meeting of the Aero-Medical Association - "Predictions for the Future"

The United States Navy has developed a standard ejectable capsule which has the advantages of efficient operation, wide mission capability, adequate escape and survival and economy. The unit is interchangeable between trainer, fighter, attack, bomber and reconnaissance aircraft. It is provided with single or two-place cockpit which can be used with a variety of combinations of wing, engine, armament, fuel tanks etc.

The unit could be used as a briefing trainer as well as an operational flight trainer. Thus it would serve a very useful purpose in briefing a pilot on the various flight missions while on the ground. Another advantage of the standard detachable cockpit is that the cockpit of atomic powered aircraft may be removed and stored separately from the power plant to prevent contamination.

The ejection sequence following the jettisoning of the capsule is automatic. On jettisoning, stabilising fins are extended, the drag chute is activated and finally the main parachute is opened. The capsule is capable of floating after landing on water.
