OBSERVATIONS ON AIR-SICKNESS

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THE causation of air-sickness may be considered from three points of view—physiological, pathological and psychological, although the condition may be due to any combination of these three factors.

(1) *Physiological*

When one flies for the first time, whether as pilot, observer or passenger, the labyrinth is subjected to a series of new stimuli caused by the unaccustomed motion of the aircraft ; in a proportion of subjects the effect of these stimuli is to cause sweating, pallor, nausea and malaise, which may be followed by vomiting. Five to ten per cent. of those who fly for the first time vomit more than once during their first twelve hours in the air. In the vast majority of cases, however, a physiological adaptation occurs and air-sickness will then only recur if this adaptation is broken ; this may be caused by such factors as a spell of prolonged severe aerobatics, a change in the type of aircraft flown, or by an absence from flying for about six months ; again just as sea-sickness occurs in very rough weather amongst experienced sailors, air-sickness may occur in experienced personnel when prolonged flights are made in exceptionally bumpy conditions.

The incidence of air-sickness is influenced by what may be called the accessory factors, and the more important of these are :

(1) *The weather.*—Air-sickness is obviously more common in bumpy weather, and in peace-time the pilots of civil aircraft are instructed to fly in strata of calm air in order to prevent air-sickness.

(2) *Type of aircraft.*—Some types of aircraft have the reputation of causing air-sickness more readily than others. Variation of the wing loading is responsible for different types of movement and it is possible that the quick vertical movement associated with low wing loading is a potent factor.

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(3) *Noise and vibration.*—The presence of noise and vibration is an important factor, possibly because it predisposes to fatigue.

(4) *Ventilation.*—Aircraft which are not properly ventilated tend to be either draughty or stuffy, while the presence of an oily smell from the engines is conducive to air-sickness.

(5) *Comfort.*—Those travelling by air should be comfortable and not cramped. Room to move about the aircraft and clothing which is warm without constricting are essentials.

(6) *Diet.*—The quantity and quality of food taken before flying and while in the air must be reasonable ; small appetizing meals taken frequently are the most satisfactory.

(7) *Ocular stimuli.*—The unaccustomed disagreement between ocular sensations and those from the labyrinth associated with aircraft movement will cause air-sickness in some subjects. This is well seen in those type of aircraft where the navigator sits at a table and is constantly shifting his gaze from the horizon to his logbook. In bumpy weather he may be subjected to a wave of nausea as he bends his head forward over the table.

Other factors such as cold, anoxia and boredom predispose towards air-sickness.

(2) *Pathological*

The presence of any form of organic disease will increase liability to air-sickness. The more common conditions associated with it are sinusitis and otitis and when these have been cured air-sickness ceases.

(3) *Psychological*

If any of the 5 to 10 per cent. of people who have been air-sick during the first twelve hours of flying are subsequently placed in an environment to which they cannot adapt themselves air-sickness may recur as a psychological escape mechanism.

It is interesting to note that when a pilot is flying the aircraft himself he is very rarely sick. This is possibly due to two causes ; first, his attention is taken up below the levels of consciousness, and secondly, he is able instantly to counteract the movements of the aircraft by anticipation. That this anticipation of movement is an important factor is well shown by the fact that some pilots will become air-sick when flying

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with the automatic pilot, which anticipates the aircraft movement for them.

Treatment of Air-sickness

Drug therapy is limited by the fact that whatever drugs are used cortical function must not be depressed. Treatment, therefore, is directed mainly towards taking care of the accessory factors, which have already been discussed.

The subject must be reasonably fit, adequately fed and suitably clad. He requires protection from noise, and oxygen at oxygen heights. The aircraft must be properly heated, satisfactorily ventilated and made as comfortable as possible.

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