MEDICAL ASPECTS OF AVIATION

Authoritative Views on Some Current Problems in Civil and Military Flying

NOW that air travel is becoming so universally popular, whilst at the same time the scope of military flying is ever enlarging, the need for a full understanding of the medical problems associated with flight becomes increasingly great. That those professionally concerned are very much alive to this fact is apparent from recent literature. A series of authoritative articles has lately appeared in two journals of the medical profession, and in the following pages we have summarized a number of the views therein expressed. In order to make the matter easily understood by the layman, medical terms have so far as possible been omitted.


The remaining five sections, by the authors named under each heading, are all digests of articles which appeared in a recent issue of The Medical Press devoted mainly to aviation medicine. For permission to make all these summaries we are indebted to the two journals concerned.

AIR-TRAVEL PHYSIOLOGY

EARS AND SINUSES: Air locked in the middle ears at ground level is able gradually to escape down the Eustachian tubes as external pressure decreases with altitude; on descending, however, this process does not take place automatically, but can normally be hastened by yawning, swallowing, or blowing out the nose with the mouth closed. A danger that is not so well recognized, however, is that if this artificial clearance is left too late, so that a pressure differential in excess of 80-90 mm Hg is set up, no amount of effort will suffice to open the offending Eustachian tubes. Relief can only then be obtained by a return to altitude—which may or may not be possible.

The condition caused by failure to equalize pressure on either side of the ear drums is called otitic barotrauma. It may cause acute ear-ache, deafness and even vertigo: damage to the ear may include temporary distention, haemorrhage or, in extreme cases, rupture of the drum-head. Young children automatically avoid so opening the Eustachian tubes. It is suggested that babies be trained early to keep their ears open, and that before air travel they be given inhaler sprays. If enough frequencies are affected, appreciation of speech may be seriously disturbed. A series of very high-frequency sounds may be. Sinus troubles are of much rarer occurrence than those described above: they are at their severest during descent, when sudden, severe pain may occur, starting above the eyes and working down towards the upper teeth. Crying, and discharge of blood through the nose, usually take place.

Noise in aircraft can be harmful to the ear over a long period of time. The average human ear can hear sounds within the 32-20,000 c.p.s. frequency range. Prolonged noise in excess of 90 decibels (the intensity of very heavy traffic, or blaring indoor radio) may affect the reception of sounds of certain frequencies. The effect is initially temporary, but continued exposure makes it permanent. If enough frequencies are affected, appreciation of speech may become difficult. Ear wardens or helmets are effective in keeping noise and vibration from heterophoria to some slight degree, but those with pronounced characteristics are unsuitable as pilots, not because of potential landing difficulties, but because the wrong alignment of the eyes makes them prone to eyestrain, which is likely adversely to affect their general flying.

Inadequate colour vision is a familiar sore point with many would-be aircraft crews. Very few people are actually colour-blind, but a considerable number are unable to pass the strict tests laid down, such as that of the well-known Ishihara pseudo-isochromatic plates. Standards, incidentally, were lower in the war than in peace-time—and, it may be added, many pilots whose colour vision was only up to war-time standards fought with considerable success.

Optical illusions can easily occur in flight, involving apparent movements of objects, and may easily have serious results. Such illusions can result, among other causes, from changes in direction of flight, and from gazing too long at a dim external source of light.

Anoxia at altitude has an adverse effect on night vision, which it may reduce by as much as 50 per cent at 17,000 ft. Colour sense and stereoscopic vision are not affected, but focusing power may be.

DECOMPRESSION SICKNESS

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DECOMPRESSION SICKNESS is the condition brought about by exposure to low pressure, either at great altitudes or in a decompression chamber. Various symptoms may be exhibited.