

PSYCHOLOGY

Preventing Air Sickness

Since air sickness, seasickness and other forms of motion sickness are so largely due to mental causes, you can learn to be sick and also learn to avoid it.

➤ AIR SICKNESS can be prevented or cured if you know how. So can seasickness and the other kinds of motion sickness that attack men lurching over battlefields in tanks and jeeps, or pitching and heaving in little assault barges or PC boats.

For although the basic cause of air sickness is the effect of certain types of motion on the balancing mechanism of your body, and no one with normal ears is entirely and permanently immune, most air sickness is due to psychological causes. You can learn to be chronically air sick. And you can learn to avoid it.

How to learn, yourself, to be air-worthy is told in a new bulletin just being issued to aviation students and others by the Civil Aeronautics Authority. It was prepared by Marjorie Van de Water, *Science Service* Psychology writer, from information obtained by Dr. G. R. Wendt, who has made a study of air sickness as member of the National Research Council's Committee on Selection and Training of Aircraft Pilots.

Many different things contribute to air sickness besides the motion of the plane itself, the Bulletin explains. Use of the eyes in instrument watching or in reading, noises, smells, constipation, temperature (high or low) and previous indiscretions of eating or drinking, are among the many factors that may contribute to motion sickness. A man has been made airsick while still standing on the ground in an airport, just by hearing the noise of the motor tuning up. It is possible to be airsick in perfectly calm weather; you can be seasick on a placid river.

Chief Cause in Ear

We carry the chief cause of motion sickness around in our own ears. Besides the hearing apparatus, the inner ear contains a mechanism that makes it possible to perceive motion of body from side to side, up and down, or backward and forward—to sense any tipping or turning of the body and restore its balance. The arrangement in each ear for doing this is a set of horseshoe-shaped tubes filled with fluid and attached to

a membranous sac. There is one set of three tubes for each ear, placed in three different planes, one horizontal and two vertical at right angles to one another, so that, whichever way the head moves, the fluid in at least one tube moves.

When the liquid is disturbed in these tubes by the rotational movement of the body, back pressures are set up which move nerve fibers in the junctions of the tubes. These, in turn, set up impulses which are transmitted to the brain.

There are also other nerve fibers in the inner ear which are weighted with tiny bony particles. When you move up and down in air bumps or in any straight-line direction, these weighted fibers are bent and send their messages to the brain.

It is by these means that we are able to maintain equilibrium. Continued disturbance of these organs causes sickness, because the nerve messages go not only to the part of the brain that tells you whether you are upright, but also to the

part of the brain that controls vomiting. The susceptible man's weakness, it is interesting to note, is not in his ears, as might be supposed. It is the vomiting mechanisms of his brain that are abnormally sensitive.

Jolts don't make you sick. You do not get seasick as you run or jump.

Only long movements cause sickness; violent motion without long phases does not cause it. Long and violent motion is worst.

In an airplane in ordinary straight flight, it is usually the up and down movements caused by bumpy air that produce air sickness.

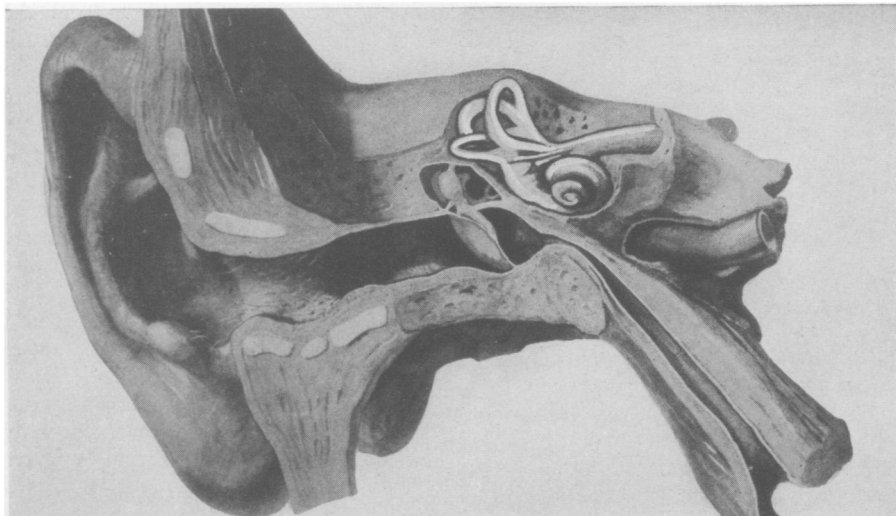
Combat Maneuvers Worst

In pilot training, however, the worst motions are not those caused by bumpy weather, but those encountered in the various acrobatic maneuvers — spins, stalls, spirals, slow rolls and so on. The cadet should be introduced to such motions carefully. A little caution at this point may prevent a complete washout on account of chronic airsickness later when a great deal of time and money have been invested in the man's training.

Alcoholic hangovers, constipation and



AIR SICK?—In rough flying weather, the passengers in an airplane, including parachute troopers and airborne infantry are more likely to be subject to air sickness than is the pilot. This makes the problem a serious one in modern warfare.



WHERE TROUBLE STARTS—It is in the balancing mechanism of the inner ear that air sickness has its beginnings. In turns, loops, and other combat maneuvers as well as in the "bumps" of rough weather, the fluid in the semicircular canals is disturbed. This, in turn, disturbs nerve fibers, which transmit impulses to brain areas which control vomiting.

bad colds are very important in inducing air sickness. Extreme fatigue, overeating or other physical upsets may contribute when they are present—anything which in itself would tend to produce nausea is aggravated in its effects when combined with the motion of an airplane or other vehicle. Altitude may bring on motion sickness.

But the part played by most of the host of other sights, sounds, smells, and feelings that bring on motion sickness is due, not so much to the nauseating qualities of the troublesome sensations themselves, as it is to their previous association with an attack of motion sickness.

Can Learn Resistance

The most encouraging thing about curing or preventing motion sickness is the fact that individuals can learn to be motion sick or can learn to be resistant to it.

The learning is of the simple, direct kind known to psychologists as conditioning—you may not even be aware of learning. But when you are violently nauseated, everything around you at that time and the things you were doing just previously become so linked with the nausea that they, too, get the power to make you ill.

If you are sick while you are drinking a cup of cocoa, the taste or odor of cocoa may nauseate you thereafter. If you have been sick in an airplane, just the sight of the interior of a plane, the

noise of the propellers, the smell of passengers' baggage, the view of the landscape below or any other seemingly irrelevant details may serve to make you queasy.

Most potent of all these acquired causes of motion sickness are, of course, the sight, sound and smell of sickness.

Memory Sets It Off

Another powerful trigger for setting off nausea is the memory of sickness. For this reason, any sort of bodily discomfort—heat or cold, improper ventilation, an over-full stomach—that draws the traveler's attention to his own body and how it feels may remind him of previous motion sickness and help to bring on an attack.

The expectation that you will be sick acts in a similar way. It is for this reason that it helps if you keep the mind diverted from how you feel.

A pretty hostess on an airliner, by talking to the male passengers, can do more good than would any medicine. On the other hand, a hardened traveler or a solicitous friend can talk a person into being sick. And you can talk yourself into it if you are apprehensive.

Motion may also induce sickness by this sort of learning. The person who has had experience with sickness in an airplane may then be nauseated in perfectly smooth flight because he has associated ordinarily harmless motions with his nausea.

Forgetting motion sickness is the cure for it.

This does not mean, entirely, taking the mind off it by diversion from body sensations, although that certainly helps. Mainly it means repeated travel, without experience of sickness, in the airplane, ship, or whatever vehicle causes the trouble.

Every trip made without sickness increases tolerance for motion. Every trip on which sickness is experienced makes the person more susceptible.

Rules for Prevention

Prevention and cure of motion sickness both depend on repetition of trips successfully made without nausea. To accomplish this: 1. Make short trips at first. 2. Make initial trips only in fine weather. 3. Don't try acrobatic maneuvers with an inexperienced flyer. 4. Until tolerance is established, don't fly when upset by hangovers, fatigue, constipation, unwise eating or minor illnesses.

As the individual's experience increases, his tolerance increases, so that he can expose himself to longer and rougher flights without illnesses. Eventually he may become capable of making flights under all sorts of operational conditions.

The student can help himself to build up tolerance to flight motions by getting used to similar motions on swings and various amusement park devices. He should always be careful not to continue the rides until he is made sick by them. He should do it for fun, not with a grim determination to grin and bear it.

Favorite remedies for preventing motion sickness may also be valuable because they lessen expectation of sickness. Many passengers have their own ideas about helpful measures, such as eating lemon or chewing gum, and each one is usually right about it for his particular individual case. The same pet remedy might not help another person.

Light Refreshment Helps

Taking a bit of food or drink may also help, largely because it is a pleasant practice. It helps especially if taken on the ground just before taking off or during a short trip.

Still another result of experience with the motions of any vehicle is that they are no longer unexpected. It becomes possible to anticipate the motions unconsciously and brace yourself or compensate for them more or less automatically.