**MEDICAL ASPECTS OF AVIATION...**

**Bends** are pains in the joints or muscles, which may be mild or excruciating. They are increased by movement, and unaffected by morphia. **Chokes** is the term applied to a condition of respiratory pain and difficulty that can lead to a collapse and collapse. It is a serious condition. **Collapse** can also take place by itself, accompanied by pallor, sweating, nausea and giddiness. Other symptoms include dizziness of vision associated with middle-aged, skin irritations, abdominal pain, interviews, and a general sense of unease with inability to concentrate.

In the vast number of cases, recompression will effect an immediate and permanent cure, but—invariably—there are a few who suffer from after-effects. These may be mild, but "post-decompression shock" can be severe or even fatal unless treated properly, i.e., as for normal shock.

The cause of the trouble is, at any rate largely, the development of bubbles within the blood vessels as a result of low external pressure. Nitrogen is normally in solution in the tissues and fluids of the body at a partial pressure corresponding to that of the atmosphere; when this external pressure drops, nitrogen bubbles form, notably in those regions where blood supply is least and nitrogen content greatest.

Onset of symptoms are affected by a number of factors. Below 25,000ft the condition is rare, above that the chances of it increasing rapidly at altitude is of more significance than actual altitude, within reason. Age has a pronounced effect, subjects in the 35-47 age-group having proved to be about five times more susceptible than those under 25. Fatness is another unfavourable characteristic, and it is generally of greater danger in those prone to the condition than it is for persons of ordinary build, provided that their general health is good. The intensity of the strain and the mental tension attendant on the type of work that the individual is engaged in play an important part in the incidence of the condition.

**Prevention of decompression sickness can be effected by pressurization, by selection of suitable aircrew, and by denitrogenation.** The latter, by breathing pure oxygen for two or three hours at ground level before take-off, thus forcing the nitrogen normally dissolved in the body to leak away via the lungs. The method has value for experimental pilots, but is impracticable for operational aircrew.

**PSYCHOLOGICAL ASPECTS OF COMBAT FLYING**

(Summarized from an article by W/Cdr. J. S. Howitt, A.F.C., M.R.C.S., L.R.C.P.)

The psychological load on a modern pilot is considerable, and is made up of the mental work done in the performance of the job in hand, together with the mental tension attendant on the results of that work. The subject—considered largely in the light of the experimental can be conveniently examined by dividing it into five sections.

**Weather Conditions and Instrument Flying.**—Bad weather has always imposed considerable fatigue on a pilot, who has to cope with all sorts of weather, from the sun down to complete darkness. The condition of the atmosphere can be achieved by breathing pure oxygen for two or three hours at ground level before take-off, thus forcing the nitrogen normally dissolved in the body to leak away via the lungs. The method has value for experimental pilots, but is impracticable for operational aircrew.

**Range, Fuel and Navigation.**—The jet fighter has a fair range but little endurance, which means that the pilot cannot afford to get lost, nor can he hang about for long in a landing or take-off strip at altitude. The equipment it is a relatively easy matter to pick a suitable aircrew member, but it is extremely difficult to estimate psychological make-up in the course of one or two short interviews. Sorting out those capable of accepting the risks of ordinary flying—who thus have a good chance to fly or otherwise participate well—it is not possible to be sure. The men that are so much in vogue do exhibit some success in rejecting potentially hopeless cases. When, however, it comes to selecting personnel who are so constituted psychologically that they can fly well and fly well at the same time, the difficulties really begin.

Statistics show that in World War II the omnipotent cause of neurosis caused by flying duties was fear; the task before the selectors, then, is to find personnel who have a high capacity to continue their task efficiently in spite of fear. No reliable method of selection has yet been found, and the best that has been done is the grossly impracticable one of following by others on the advice of the flying instructor in the early stages of train' in. Psychiatric interview is useful only if the psychiatrist is first-class and if the men rejected can be as useful employed in other less hazardous work.

**Training.**—The individual's response to the risks he meets can be modified by two means, and both these were employed in the last war. First, systems such as the Zero Reader, where a man is taught by reading the instructions in the after-effects of flying, radio and radar information and keep an eye on the rest of his division. Now, with a nearly all-weather Air Force and modern aircraft that occasion both high speed and rapid rate-of-change of altitude, the problem is much more complicated. In the last war a standard blancking panel can no longer be considered entirely satisfactory, and there seems to be a case for the introduction of a Zero Reader type of system. Formation flying in cloud is another factor which adds considerably to the total strain on a pilot under bad weather conditions.

**High Altitude.**—Flying an aircraft to its operational limit at great altitude, where the gap between critical Mach number and stalling speed is at its narrowest, is a tricky business. It is a simple matter to lose one's companions in a turn, and once this has happened it may be very difficult to regain formation. Another risk is that of pressurization failure, with all its attendant dangers, not the least of which is the fact that it will entail a substantial reduction of oxygen and oxygen will therefore be required continuously. [Ed.]

**High Speed.**—Speed as such has no adverse effect on the human body, nor does it directly create any very great psychological problem. Speeds are becoming so high, however, that for certain tasks it's a speed of the body. Interception of bombers at, say, 50,000ft by a fighter with a very high rate of climb is an obvious example, as is the brief time available for firing at the bomber when once it has been found.

**In Emergencies.**—The escort seat has noticeably lightened the psychological load on the pilot in this field; but, even so, getting away from the seat and operating the parachute have not always proved easy, and cases have occurred of pilots ejecting and making no obvious attempt to leave the area.

**HEALTH OF AIRLINE CREWS**

(Summarized from a paper by K. G. Bergin, M.A., M.D., D.P.H., A.F.R.Ae.S., Area Medical Superintendent, B.O.A.C.)

**THE medical supervision and care, in all its aspects, of the flying personnel of a civil airline presents many problems, which might not be apparent at first sight to those not fully acquainted with airline operations. The reason for this is that there is probably no class of person whose work is more closely bound up with, and influenced by, their physical, mental and psychological condition, and any impairment of function in these spheres is reflected in their flying efficiency, and consequently the safe and effective control of aircraft for which they are responsible.**

After potential candidates have been tentatively accepted by