MEDICINE

Test Pilots for "Blackout"

Sudden changes of position on the "tilt table" combined with electrocardiograph test of heart show what will happen to candidate in leveling off after dive.

➤ MEN WITH high blood pressure that has not been present long can stand dive-bombing better than those with a normal or low pulse pressure, Major Walter M. Bartlett, chief of the cardiovascular section at Lawson General Hospital, Atlanta, Ga., declared at the meeting of the Aero Medical Association in Indianapolis.

They are less likely to "blackout" or faint from sudden change of position because they have a stabilized high pulse pressure, he explained. "Blacking out" or fainting during dive-bombing can be predicted by the use of the Tilt-table Test in conjunction with electrocardiographic tests of the heart and frequent tests of the pulse rate and blood pressure.

This test "should be used routinely in the selection of flying personnel, whether they are to be trained as pilot, navigator or bombardier," Major Bartlett declared.

The Tilt-table Test induces a temporary pooling of the blood in the abdomen and legs similar to that which takes place when a dive-bomber suddenly levels off after a swift descent toward the earth, producing a centrifugal force amounting to several times the force of gravity. This pooling of the blood is what causes the "blacking out" because it depletes the blood supply to the brain. It also depletes the blood supply to the heart muscle and thus temporarily at least reduces the efficiency with which the heart pumps blood through the body.

In a person with heart and blood circulation already impaired, even so slightly that ordinary tests do not show the impairment, the further temporary impairment caused by pooling of blood after power dives may have disastrous results. For this reason the test is useful for selecting flying personnel. It also is of value in detecting heart disease such as angina pectoris before other tests show it.

Effort syndrome or neurocirculatory asthenia can be distinguished by this test, which gives objective evidence of the efficiency of blood circulation, from conditions with similar symptoms which are due to mental or personality illness.

The suitability of convalescent soldiers and officers for flying, combat or limited military service can also be determined by this test.

Science News Letter, September 19, 1942

Altitude Tolerance

➤ DETECTING a prospective pilot's ceiling can best be done by observing his emotional reactions in a low pressure chamber, Dr. Alvan L. Barach, of New York City, stated.

In a study of 16 normal men, who spent one and three-quarters hours two to four times a week for six to eight weeks in a decompression chamber with atmospheric pressure equivalent to an altitude of 15,000 feet, eight were found to have impairment of emotional control from the moderate oxygen lack.

The changes of behavior which indicated these eight could not stand a ceiling of 15,000 feet consisted in either depressed, sleepy states or unduly excited, euphoric, irritable or pugnacious moods.

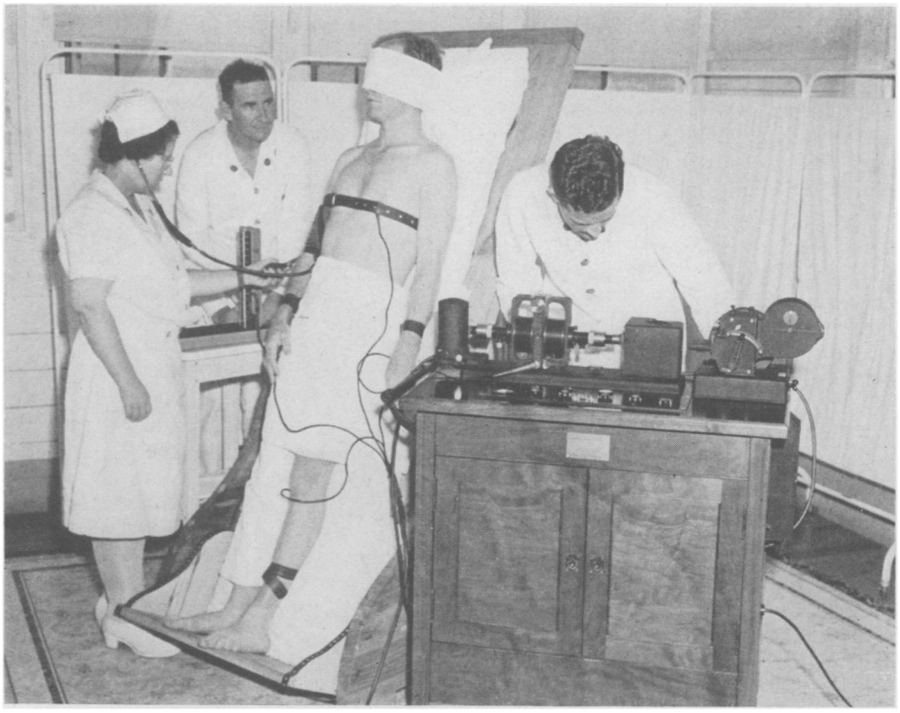
In two, Dr. Barach reported "the disturbance in emotional control was sufficiently marked as to raise serious doubt regarding their fitness for flying."

Tests of blood pressure, vital capacity, blind spot area, peg placing and other physiologic and psychometric tests were made but found less reliable than the emotional reaction to oxygen lack as an indication of the candidate's potential flying ability.

Science News Letter, September 19, 1942

Reducing Pilots' Errors

➤ REDUCTION in the number of aviation accidents and better selection of pilots may come within a "surprisingly short time" by a method proposed to the Aero Medical Association by Dr. A. J. Herbolsheimer, chief of the physical standards section, Civil Aeronautics Authority. (*Turn to next page*)



***THE TILT-TABLE TEST** shown in this official Army Signal Corps photograph, is used for detecting the ease with which a pilot "blacks out" in dive-bombing or vigorous aerobatic performances used in combat flying. An electrocardiogram is being taken together with the blood pressure and pulse, which aids in the diagnosis of heart disease and circulatory inefficiency.*

His method calls for as careful study of the pilots surviving aviation accidents as is now made of the wrecked planes. The study should be made by experts and as soon as possible after the accident, "while everyone is psychologically prepared to advance any information immediately connected with the accident or relating to the pilot's history."

Pilot error was assigned as a cause by the Safety Bureau of the Civil Aeronautics Board in just over 85% of accidents sustained by pilots with no physical defects as compared with just over 86% in the case of pilots with listed defects, Dr. Herbolsheimer said in reporting a special study of a small group of accidents occurring last year.

Accident proneness, found an important cause of industrial accidents, may be a large factor in aviation accidents now attributed to pilot error, Dr. Herbolsheimer believes. The accident proneness may result from physical defects, some of which may be undetected, or from personality defect. Just how many aviation accidents are due to accident proneness is not now known. But the enormous strides made in reduction of industrial accidents by attention to accident proneness of workers strongly suggests that equally good results in reducing aviation accidents may be possible by the same method.

Science News Letter, September 19, 1942

CHEMISTRY

Package Gives Protection

Most conventional of food containers, tin cans and glass jars, afford best insurance against spoilage by poison gas. Cellophane and tinfoil are good.

➤ IF NAZIS or Nips resort to polecat warfare and spray poison gases on the commissary stores, that doesn't necessarily mean that the troops will have to go hungry. Of course, mustard gas instead of mustard on your meat would make it unfit to eat—but if it is wrapped or packaged as well as most commodities are nowadays it will still be good to eat after the covering has been decontaminated and removed.

Do's and don'ts of anti-gas protection for foods were reviewed by Dr. Sidney H. Katz of the U. S. Chemical Warfare Service's main arsenal at Edgewood, Md., speaking before the American Chemical Society in Buffalo.

The most dangerous of so-called poison gases, from the food-contamination viewpoint, are not really gases at all but finely atomized liquid sprays, Dr. Katz explained. These cling to anything they touch, and unless decontaminated will remain dangerous for days. Decontamination is not a job for just anyone; it must be carried on under the direction of an officer trained for this particular job.

Best protection against chemical contamination, the speaker stated, is afforded by the most conventional of food packagings—tin cans and glass jars. Cellophane is very good for excluding the insidious poisons, especially when the package seams are well sealed. Tinfoil and aluminum foil wrappings also are effective, but only if tightly applied.

Simple paper or cloth bags are bad, but several layers of either paper or cloth give fair protection. Corrugated cardboard is good, especially if it has been given a glazed coating. Natural rubber is not as effective against war chemicals as some of the synthetic rubbers.

Science News Letter, September 19, 1942

FORESTRY

Have You a Cork Oak Tree In Your Neighborhood?

➤ IF THERE is a cork oak in your neighborhood, tell your state forester about it, or write to the Soil Conservation Service, Washington, D. C.

Cork has become one of our severe wartime lacks. The only places where cork oaks grow in real numbers are the uplands of Spain, Portugal and North Africa. And of course we can't get much from there, just now.

To avoid such an ill state of affairs in the future, the U. S. Department of Agriculture is trying to get stands of cork oaks, from whose bark cork is made, established in this country. But first, they have to learn where the trees will grow well. California is a known possibility, but there should be other places, too. That is why the scientists are asking any one who knows of a really authentic cork oak, or a source of cork-oak acorns, to write in about it.

Science News Letter, September 19, 1942

The high proportion of fat in *pork* keeps the lean meat from hardening during the curing process.

Scientists who are experimentally cultivating *jaboticaba* trees in central Florida hope that the grapelike fruits of the new Brazilian import will prove a profitable Southern crop.

WANTED FOR SERVICE—Keep your eyes open for this sort of tree. It is a cork oak tree, from the bark of which cork is made. If you find one growing in your neighborhood write to the Soil Conservation Service about it.