



NEW OXYGEN MASK

Oxygen, on which the high altitude flier's life depends, can be supplied by this mask which Dr. Alvan L. Barach and Dr. Morris Eckman, of Columbia University College of Physicians and Surgeons, devised for airplane pilots and for heart disease or pneumonia patients. Advantages of the mask reported by Dr. Barach to the Aero Medical Association are: 1. Easier breathing because the carbon dioxide content is one-tenth that in masks with rebreathing bags; 2. Provision of constant oxygen percentage in the inspired air.

PHYSIOLOGY—AERONAUTICS

Signs of Heart Damage From Oxygen Lack at 5,000 Feet

Significant Changes in Electrocardiograms Noted at 5,000 Feet Becoming Greater at Higher Altitudes

HEART tests on officers and men of the U. S. Army Air Corps show that signs of heart damage due to oxygen lack may appear at altitudes as low as 5,000 feet, Captain M. S. White, U. S. A., assistant director of the School of Aviation Medicine at Randolph Field, Texas, revealed at the meeting of the Aero Medical Association in Memphis.

The tests were made by taking electrocardiograms of the men at ground level and in actual flight at succeeding levels of altitude. They were made on 45 healthy volunteers from officers and enlisted men of the U. S. Army Air and Medical Corps who flew without oxygen in routine flights of U. S. Air Corps bombers and transport planes. The flights were to 20,000 feet with various

rates of ascent and to an altitude of, and remaining at, 15,000 feet for two hours.

"Significant changes were noted in the electrocardiograms" of the kind sometimes seen in certain forms of heart disease, Captain White reported. These changes were first noted at 5,000 feet and became progressively greater with increasing altitudes. Slower ascents gave slightly lessened changes than more rapid ones.

In continued flight at 15,000 feet for two hours, signs of compensating mechanisms in the heart appeared.

Giving oxygen reversed all the changes back to normal.

Oxygen should be used in flights as low as 5,000 feet, rather than at 10,000

feet and above as is now done, Captain White advised. He said that the changes revealed by the electrocardiograms suggest that lessened supply of oxygen to the heart through the blood is the cause of the heart damage.

"At the present time, until further investigation and engineering skill could overcome the technical difficulties for proper oxygen administration (pressure cabins)," he said, "use of oxygen at a minimum level of 7,500 feet would be a more practical measure."

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MEDICINE

Diet Experiments May Add To Knowledge of Cancer

A NEW clue from diet experiments to help solve the problem of cancer of the liver was presented by Dr. Julius White, National Cancer Institute chemist, to the American Chemical Society meeting in Detroit.

Cystine, an essential sulfur-containing diet ingredient, played an important role in the experiments Dr. White reported. This chemical which is a constituent of protein is a diet requirement of both normal and cancer tissues, Dr. White discovered.

In the experiments reported, the liver cancers were caused by a dye commonly known as butter yellow because of its appearance, though it has nothing to do with butter. With a diet lacking cystine, cancer failed to develop in rats getting butter yellow, although liver damage resulted from the effect of the dye. With an adequate diet containing plenty of cystine plus butter yellow, enormous liver cancers developed.

The explanation, Dr. White believes, is that the butter yellow acts as a poison, destroying the liver cells. The cystine in the diet, however, neutralizes this toxic effect of the dye and helps the damaged liver to regenerate by growing new cells. But this new growth, called regeneration, is a wild, uncontrolled growth that becomes cancer. Experiments are now under way to determine whether by adjusting the amounts of butter yellow and cystine the latter can prevent cancer from developing.

Butter yellow is not present in any foodstuff, Dr. White explained. The object of his research is to learn more about the behavior of cancer and its diet requirements, in the hope of finding better ways of fighting cancer.

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Severe cold last winter killed about half of *Finland's* fruit trees.