



BATTLE BLUE MOLD

Dr. F. R. Darkis of Duke University is demonstrating research on a serious foe of tobacco at the Columbus meetings.

PHYSIOLOGY—PSYCHOLOGY

Air Fighters Should Tank Up On Oxygen Before Ascents

Inhaling Gas Even During Sleep Will Prevent Development of Aeroembolism in Rapid Ascents

MILITARY pilots, especially those in interceptor squadrons, should keep themselves tanked up on oxygen, inhaling it even while they sleep, the American Association for the Advancement of Science was told at their meeting in Columbus. This will prevent the dangerous condition, aeroembolism, from developing during rapid ascents to high altitudes, Drs. W. Randolph Lovelace II and Walter M. Boothby and Captain O. Benson reported as the result of researches at the Mayo Clinic, Rochester, Minn.

Boring, gnawing pain about the joints, itching of the skin and eyelids, unconsciousness, convulsions, and paralysis, including paralysis of the breathing muscles, are among the symptoms of aeroembolism. Small blood vessels in the lungs may be plugged by emboli, thus cutting off the blood supply.

"It is easy to see what the result of such an attack would be to a pilot of a very fast and heavy airplane," the Mayo Clinic investigators point out.

The condition has been only recently discovered by Capt. Harry G. Armstrong, of the Medical Corps of the U. S. Army and director of the Aero Medical Research Laboratory at Wright Field, Dayton, Ohio. The disease, Captain Armstrong found, is produced by rapid decrease of atmospheric pressure below sea level conditions, such as may occur in flights to high altitudes. Nitrogen bubbles form in the blood and tissues. The symptoms of the disease depend primarily on where in the body these bubbles form and their size.

An altitude of 30,000 feet seems to be the critical point for development of aeroembolism. Symptoms appear at this altitude after a rate of ascent of only

200 feet per minute. Fat people are more susceptible than thin, muscular ones.

Recompression, that is, descent to a lower altitude where the atmospheric pressure is higher, is the treatment for the condition once it has occurred. This reduces the size of the nitrogen bubbles that are causing the trouble. At the same time, 100% oxygen should be inhaled.

But getting tanked up on oxygen while still on the ground prevents the condition. In the Mayo Clinic experiments, in which seasoned pilots of Northwest Airlines, Inc., took part, "ascents" to 40,000 feet at a rate of 4,000 feet per minute were safely made when the pilots had breathed pure oxygen for 30 minutes while walking two miles on a treadmill. These rapid experimental "ascents" were made in a low pressure chamber in which pressures of high altitudes could be produced. No plane now available, it is pointed out, can climb to 40,000 feet at a rate of 4,000 feet per minute.

Exercise speeds the tanking-up process. Military pilots who must be ready to take off at any moment might not have time for the preliminary exercise and oxygen inhalations, but they can tank up with no loss of time by breathing oxygen through a new type mask while they sleep.

Science News Letter, January 6, 1940

Key to Paralysis Prevention

THE KEY to infantile paralysis prevention may be held by either glands or diet, is the conclusion from the discovery announced at the meeting, that a natural barrier to passage of the disease-causing virus is induced by normal growth and maturing.

The virus barrier was reported by Dr. Albert Sabin, of the University of Cincinnati College of Medicine and the Children's Hospital Research Foundation, upon receiving the Theobald Smith award of the American Association for the Advancement of Science. Researches leading to discovery of the virus barrier were made by Dr. Sabin in association with Dr. Peter K. Olitsky at the Rockefeller Institute for Medical Research, New York City.

No way of creating the virus barrier which protects against attacks of infantile paralysis has been discovered yet, but gland and dietetic factors "are being investigated for their effect in accelerating or retarding the development of this resistance," Dr. Sabin told Science Service.

In his formal address he only described the virus barrier, stating that while "this mechanism may be only one among a number of others which operate in protecting the major portion of the animal and human population from disabling and fatal disease of the nervous system, it is especially interesting because it lends itself to the kind of experimental manipulation by which one may attempt to change susceptible individuals into resistant ones."

Only a very few of the people or animals that become infected with nerve-destroying viruses, such as those causing infantile paralysis or horse "sleeping sickness," for example, actually get sick. The majority, especially the older ones, are immune or resistant to the viruses. This resistance, Dr. Sabin explained, is not the kind you may get against germ diseases like tuberculosis, by frequent exposures to small doses of the germs. Neither is it dependent on development of disease germ-fighting antibodies in the blood. Instead, he and Dr. Olitsky have discovered, it depends "on the condition of some of the tissues which the virus must pass before the nervous system can become sufficiently involved to give rise to clinically apparent and fatal disease."

The resistance is probably due to changes in muscle cells and terminal nerve endings which set up barriers preventing the virus from invading the central nervous system (brain and spinal cord), where infantile paralysis and "sleeping sickness" viruses do their damage.

The barrier is found in most adult animals, but not in young ones. As mice grow older, Drs. Sabin and Olitsky found, they grow resistant to virus injected within the muscles, under the skin, within the abdomen, eyes or nose, but when the virus is injected directly into the brain, older mice are as likely as young ones to get the disease.

Since normal growth and maturation can induce the virus barriers in most animals, Dr. Sabin believes that the changes which naturally create the virus barriers are probably gradually brought about as a child or animal grows up by the action of his glands or by some factor in his diet.

Science News Letter, January 6, 1940

Cold Vaccine Getting Trial

SUCCESSFUL results from anti-cold vaccination in more than 3,000 persons were reported by Dr. Leonard J.

Piccoli, Fordham University College of Pharmacy, New York. Another 3,000, who did not get the vaccine, had about four times as many colds during any experimental year as those who had taken the vaccine.

Large-scale trials of the vaccine on hundreds of thousands of employees in industry have been going on for the past three years in addition to Dr. Piccoli's own investigations. Further conclusive evidence of the value of the vaccine is expected from results of this large-scale trial.

The vaccine is made to be taken by mouth, thus avoiding the necessity of frequent visits to a physician. It is taken every day, either before breakfast or before retiring at night.

The vaccine is made, not from the virus which has been identified as the cause of the common cold, but from other germs found in cold patients. Whether it acts to stimulate resistance to germs in general or to offset the effects of these secondary germs that cause many complications of colds is not exactly known. Many physicians have reported that such a vaccine reduces the number and severity of colds. Cold vaccines, of course, should not be taken without consulting a physician.

Science News Letter, January 6, 1940

Revives Depressed Hearts

ADRENALIN, gland product frequently used with dramatic success to revive failing hearts, in apparently dying patients, can counteract the depressing effect on the heart of heavy water, Dr. T. Cunliffe Barnes, of Yale University, reported.

No dying patient's heart, but turtle's heart, classical material for study of cardiac properties, was used in Dr. Barnes' studies. The turtle's heart has a prolonged survival time when removed from the body, he explained.

Hearts (turtles') which stopped beating in 60% and 99% heavy water were stimulated to beat again by one in 50,000,000 parts of adrenalin.

"The results are of interest," Dr. Barnes pointed out, "in connection with the work of Dr. H. G. Barbour (Yale) showing that in mammals (mice) one-fifth saturation with heavy water makes the animal live faster with a 20% increase in metabolism. This is probably due to the prolonged protecting action of heavy water on adrenalin which is normally destroyed in the body. This protecting action is effective over several

days in Dr. Barbour's experiments but is not evident in the two-hour experiments on the heart reported here."

Science News Letter, January 6, 1940

X-Rays Rescue CO Victims

X-RAY treatments may be "of critical value" in speeding recovery from carbon monoxide poisoning, Dr. John A. Cameron, of the University of Missouri, declared on the basis of results obtained with such treatment of monkeys and other animals, reported to the A.A.A.S.

Carbon monoxide is the odorless, colorless gas which takes many lives every winter when automobile engines are run in closed garages, or when defective gas and other heating appliances are used.

Monkeys exposed to concentrations of carbon monoxide that would otherwise have been fatal recovered rapidly when treated with moderate amounts of X-rays.

Young rats and rabbits, Dr. Cameron found, can withstand from six to 10 times as great exposures to carbon monoxide as adult animals. No such change of resistance with advancing age was found in such higher mammals as guinea pigs and monkeys.

Science News Letter, January 6, 1940

Ancient Man in Texas

NEW evidence that man lived in North America during the time of the mastodons and extinct American horses was reported by Dr. Elias H. Sellards, University of Texas geologist.

Excavating on the banks of Blanco Creek, in Bee County, Texas, Dr. Sellards found spearheads, scrapers, and other worked flints associated with the bones of extinct mammals fifteen feet below the present land surface. Similar fossils are found in comparable locations in this part of Texas, Dr. Sellards states.

At greater depths, in beds of Pliocene

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age, the time before the great ice ages, bones of extinct camels, horses, rhinoceroses and deer are found; along with mastodon bones, but no evidence of man.

Science News Letter, January 6, 1940

Neurotics May Be Geniuses

THE NEUROTIC person may be a potential genius who can reach far higher levels of achievement than can his more stable fellows if only his energies can be properly guided, Dr. Calvin S. Hall and Fred Y. Billingslea of Western Reserve University predicted.

In experiments with rats which by selection have been bred into families of emotionally unstable and emotionally stable animals, these investigators found that the unstable rats excelled in adjusting to all situations except those involving fear. In situations involving fear, the adjustment of the emotional rat is worse. This suggests that human neurotics have great potentialities.

Science News Letter, January 6, 1940

Paintings Work of Youth

WHEN you thrill to the beauty of the world's greatest oil paintings, you are looking at the work mostly of young men in their thirties.

A survey of great paintings as judged by the authors of more than sixty books on the best art works, conducted by Dr. Harvey C. Lehman, of Ohio University, revealed that the greatest number were created by men between the ages of 35 and 39.

Individual top-flight artists produced their masterpiece, their one best oil painting, between the time they were 30 and their 34th birthday, he told the meeting.

Best etchings are also produced mainly by men in this same age group, although the artists are somewhat older by the time their work is first exhibited or published.

Outstanding examples of architectural work are most frequently contributed by men between 40 and 44 years old, he found.

Dr. Lehman's survey was a surprise to those who may have believed that critics are agreed on which paintings constitute the world's greatest art treasury.

Only one painting, he found, was listed among the best by as many as 12 different authors. Many were listed only once or twice in more than sixty books.

Because the works of young men might outnumber those of older artists simply because more artists are alive at the younger ages, Dr. Lehman allowed statistically for varying lengths of life in reaching his conclusion regarding the peaks of productiveness in the lifetimes of artists.

Science News Letter, January 6, 1940

Nervousness Meter

A NERVOUSNESS meter for humans, something like the electric meters used to measure the consumption of electricity in a home or other building, was demonstrated by Dr. Edmund Jacobson, of the Laboratory for Clinical Physiology, Chicago.

The nervousness meter records a person's nervous state by measuring the electric impulses generated by nerve or muscle activity. The meter is simple to operate and gives highly accurate results in terms of millionths of a volt, Dr. Jacobson reported. Fine wires are inserted into the tissue. The instrument is turned on by closing a certain switch, and a button is pressed which initiates the measurement of electrical impulses as they pass from the subject through the circuit.

A salesman, quiet and phlegmatic in type, gave a low voltage record, Dr. Jacobson reported by way of illustrating the results obtained in nervousness meter readings. A research director of the type commonly called dynamic gave a relatively high voltage record. A doctor's wife suffering from insomnia, overfatigue and nervousness had a record showing marked failure to relax when she lies down. A young woman recently afflicted with epileptic spells had a very high, irregular record. An apparently placid elevator man gave a surprising

record, marked by very high voltages, when the nervousness meter reading was taken while he was reading a current magazine. The meter record shows, Dr. Jacobson said, that this man reads with great effort or inward activity.

Science News Letter, January 6, 1940

Folks Still Trust Parents

IN A WORLD torn by suspicion and lack of faith, scientists were told that people still put their trust in some things and in some people.

Men today trust their parents, Prof. A. S. Edwards of the University of Georgia, told the meeting. They trust friends, their physicians or their lawyers. They put faith in scientific inventions, laws and methods. They rely on their money.

Not so often do they trust religious objects, organizations of various kinds, government or civil laws.

Men, as compared with women, put their faith more in science and in government, Prof. Edwards found. Women trust religious objects.

With age some trusts are abandoned, some become weaker. New objects of trust are found. Many positive distrusts develop.

Science News Letter, January 6, 1940

A new and colorless asphalt product can be permanently dyed any color.

Tiny tarpon are rarely found, but some caught in Florida have been only a little over two inches long.

Prior to the war, Hamburg was a great shipping center for aquarium fish brought from many parts of the world.

● Earth Trembles

Information collected by Science Service from seismological observatories resulted in the location by the U. S. Coast and Geodetic Survey of the following preliminary epicenters:

Thursday, December 21, 3:54.7 a.m., and 11:44 p.m., EST

Off west coast of Costa Rica. Latitude 9 degrees north, longitude 85 degrees west. A strong shock.

Thursday, December 21, 4:00.5 p.m., EST

On or near Celebes. Latitude 2 degrees south, longitude 122 degrees east.

Tuesday, December 26, 6:57.6 p.m., EST

In Asia Minor, about 100 miles southwest of the Turkish Black Sea port of Trebizond, almost directly under the large town of Erzincan. Latitude, 39 degrees north. Longitude, 39 degrees east. Severe shock resulting in thousands of deaths.

For stations cooperating with Science Service, the Coast and Geodetic Survey, and the Jesuit Seismological Association in reporting earthquakes recorded on their seismographs, see SNL Oct. 28, 1939.

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