

MEDICINE

Seek Airsickness Remedy For Pilots, Navigators

► AN AIRSICKNESS remedy that will be safe and effective for pilots and navigators is now being tested at the Randolph Field Laboratories of the Air Force School of Aviation Medicine, San Antonio, Tex.

Passengers can get relief from air or seasickness through antihistamines, such as Benadryl and Dramamine, and scopolamine hydrobromide, the old "twilight sleep" drug for women in childbirth which has lately been used by police as a "truth serum."

These are, however, likely to cause drowsiness, which makes them unsafe for pilots and navigators. Mixing them with a stimulant seems to be the answer to the problem. At present, a mixture of scopolamine and Benadryl with dextroamphetamine, or Dexedrine, is considered promising, but the search for a perfect airsickness remedy continues.

The research is being carried on by Dr. Herman I. Chinn, head of the department of pharmacology and biophysics, and Maj. Robert B. Payne, head of the department of experimental psychology. As Dr. Chinn develops new remedies, Maj. Payne tests their effects on reflexes, judgment and intellectual functioning.

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AERONAUTICS

Seaplane in Come-Back With Gas-Turbine Engine

► THE FLYING BOAT is making a "come-back" in the aviation field. New types, recently developed and now under order, are so designed that they can use gas turbine engines to give them the speed of the modern land-based aircraft that put them in the background during the past few years.

Orders have been placed by the U.S. Navy with the Glenn L. Martin Company of Baltimore for a new jet-powered seaplane. No details of its concept and design have been released but high speed is one of its possibilities. This new flying boat will be known as the Martin Model 275 Sea-Master.

Another speedy flying boat, also under order by the Navy, is the R3Y, product of the Consolidated-Vultee Aircraft Corporation, San Diego, Calif. It is not of the ordinary jet-propelled type. Its propulsion is by turboprop, a gas turbine engine driving conventional propellers. This type of propulsion gives speeds less than the turbojet, but considerably greater than provided by conventional engines and propellers.

Actually, this R3Y is a cargo-transport version of the Convair YP5Y-1, a long-range patrol flying boat, which made its initial flight two years ago. Its power-plant consists of four 5,500-horsepower Allison gas-turbines, each engine consisting of two

units paired and driving contra-rotating airscrews through a common gear box. In a test flight, it made a world record for a turboprop plane, remaining in the air for a little over eight hours.

For either turbojet or turboprop propulsion, seaplanes must be longer and narrower than ordinary flying boats. Their elongated fuselage requires special design to withstand wave action when they are on the surface of the ocean. Also special "belly" design is essential so that they have stability on the waves and an easier takeoff than the familiar bulky flying boat.

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PUBLIC SAFETY

Hugging Wall May Be Fatal in A-Bomb Blast

► IN CASE of an A-bomb blast, it may be safer to stay out in the open and cover your head with some cushioning material than to try to hug a wall.

Dr. Benedict Cassen of the University of California at Los Angeles' Atomic Energy Project makes this recommendation. His research has shown that a greater number of blast casualties occur among mice that were constrained against a barrier than among those that were unconstrained.

Such casualties were primarily caused by lung edema (swelling), apparently induced by a brain injury from the impact of the head against the barrier. Shielding the chest of the mice from the direct slap of the blast had no significant effect upon the lung swelling, but shielding the head reduced it considerably.

"Under certain conditions a wall or obstacle will furnish protection if it is between the body and the blast," pointed out Dr. Cassen. "But there is no reliable way of knowing the direction of the blast beforehand. So you might be less likely to become a casualty if you use the short interval between flash and blast to cushion your head rather than throwing yourself against a wall."

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PHYSICS

Gamma Ray Generator For Total-Body Radiation

See Front Cover

► CAPT. R. H. DRAEGER, head of the atomic medical division of the Navy's Medical Research Institute, explains the working of the Navy's new gamma ray generator to Hospital Corpsman N. J. Marbois of Brooklyn, N. Y., in the picture on the front cover of this week's SCIENCE NEWS LETTER.

One hundred capsules, each containing approximately 12 curies of radioactive cobalt-60, are housed in the 60 tubes of the generator's pneumatic transfer tube system. The generator is built to allow complete, total-body irradiation. (See SNL, Oct. 4, p. 217.)

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IN SCIENCE

PUBLIC SAFETY

Doctors Advised to Give Do-Not-Drive Warning

► DOCTORS SHOULD warn some of their patients that it is dangerous for them to drive automobiles.

This advice to doctors comes from an editorial in the *Journal of the American Medical Association* (Oct. 4).

The don't-drive-an-automobile warning, says the medical journal, is for patients with advanced heart disease, hardening of the arteries, high blood pressure, gross deficiencies of vision, and disorders of the nervous system. Certain drugs, particularly sedatives and stimulants, may also make driving dangerous. Less apparent factors that may cause accidents are degenerative changes in the eyes, color vision disturbances and loss of depth perception.

"Another factor to be considered is the 'mental make-up,' 'constitutional behavior' or, as some irritated drivers would say, 'the sheer cussedness' of those who persist in driving on the wrong side of the road, straddling white lines and otherwise ignoring even the simplest safety directions," the medical journal states.

"One cannot but wonder at times what such drivers think about—if they think at all. Or, is the fault purely physical and not readily apparent without close examination?"

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PHYSIOLOGY

Thick and Thin Nerve Fibers Are Discovered

► TWO TYPES of sensory nerve fibers exist—the thick type and the thin type—and each has a highly specialized function.

This is what research at the University of California at Los Angeles has indicated. It was performed by Dr. Y. Katsuki, visiting physiologist from Tokyo Dental-Medical University, and Dr. Theodore Bullock, professor of zoology.

The thick type of sensory nerve fiber is extremely discriminating as to the types of impulses it picks up. It gets tired easily and may cease to function temporarily.

The thin fiber, on the other hand, is a steady and tireless performer. It is the more sensitive of the two, detecting the least change in the degree of such sensations as pain and pressure.

Study of these fibers involves a very delicate technique of micro-surgery. Nerves consist of a cable-like structure of many fibers. Dr. Katsuki is one of the few people in the world who can whittle nerve cables down to submicroscopic single fibers.

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E FIELDS

PHYSICS

H-Bomb Element Used In Light Standard

► THE PRINCIPAL ingredient of the hydrogen bomb is now being used to make a light source that is almost constant, useful for standardizing phototubes and other optical instruments.

Tritium, the triple weight hydrogen, is believed to be essential to the H-bomb which probably will be tested this fall.

Dr. Irving A. Berstein and Earle Farmer, of Tracerlab, Boston, have incorporated radioactive tritium, made in the Oak Ridge atomic reactor, into stilbene. Tritium's beta rays, or electrons, given off constantly, cause the carbon-hydrogen compound to fluoresce. This light is something like that given off by radium-activated substances, but without danger to health.

Light from the tritiated stilbene is strongest in a region of the spectrum where the eye is least sensitive but where phototubes are most sensitive.

Self-luminescent materials more visible to the eye are in development to replace radium on watch dials, luminous markers and other such uses.

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TECHNOLOGY

Tiny Glass Balloons in Construction Material

► TINY GLASS balloons, about the size of grains of sand, are the basis of a new construction material to be used as a light-weight aggregate in concrete and plaster in place of ordinary sand or other fillers.

This new material, made by blowing up individual grains of clay in a special furnace, was developed at the Armour Research Foundation of the Illinois Institute of Technology in Chicago, under a project sponsored by the Kanium Corporation of the same city. It will be known as "Kanamite."

Concrete mixes using the new material in place of sand or other aggregates are very fluid, even though their water content is low, John Neff of the Foundation staff stated. This fluidity means that for the first time in building history, contractors can fill forms with concrete pumped through rubber hose. Construction costs can be lowered because of the virtual replacement of shovels and awkward metal hose now used.

Concrete, mortar and plaster made with the material have proved to be strong and light. They also have good insulating properties, he declared. The new aggregate permits thinner coatings of plaster to be used on inside walls, and also the manufac-

ture of thinner, lighter plaster board with strength equal to present types.

The process of making the glass-balloon material involves the feeding into the top of a vertical furnace ground and screened particles of clay. The individual grains of the raw material melt in the approximately 2,700 degrees Fahrenheit furnace temperature as they fall through a gas-air flame. Gases given off by the tiny melted blobs inflate them into hollow spheres. The spheres are collected at the bottom of the furnace.

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MEDICINE

Six Out of 10 Angina Patients Live Five Years

► A STUDY of 6,882 patients with the kind of heart disease called angina pectoris, associated with coronary sclerosis, shows that 58.4% of them survived five years, compared to the rate of 86.9% for the normal population.

The study, made on patients whose records go back at least five years and in some cases 23 years, is reported by Drs. William J. Block, Jr., Edgar L. Crumpacker and Thomas J. Dry and Robert P. Gage, statistician, of the Mayo Clinic and Foundation in the *Journal of the American Medical Association* (Sept. 27).

Said to be the longest and largest ever undertaken, the study showed that mortality was greatest in the first year after the heart attack, being 15% then and about 9% per year thereafter.

Patients who were very fat, or obese, as well as having angina pectoris, "interestingly enough" had the best prognosis in five-year survivals. Since this contradicts other observations, the Mayo group plans to investigate this point further.

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PHYSIOLOGY

Blowing Whistle Helps Children in Operation

► "BLOW THE whistle" can now replace the "Breathe deeply" command when small children are given an anesthetic before operations.

A whistle that fits into the exhalation side of a circle-absorption gas anesthetic machine has been devised by Roy Anderson of the Ohio Chemical and Surgical Equipment Company and is now in use at the Mayo Clinic, Rochester, Minn., Dr. Thomas H. Seldon of the section of anesthesiology reports.

No sound is made during inhalation, but the harder the youngster works to expire air through the machine, the higher is the note of the whistle. After a demonstration of how the whistle works, children become interested and, instead of struggling, fall asleep while blowing the whistle. Once the patient has lost consciousness, the whistle can be silenced by a plastic cap.

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PHYSIOLOGY

Death From Fright Possible but Rare

► IT IS possible really to be scared to death although death from fright is rare, Drs. W. Proctor Harvey of Washington and Samuel A. Levine of Boston declare in a report to the *Journal of the American Medical Association* (Oct. 4).

They explain the probable mechanism of death from fright briefly as follows:

A nervous pathway from the hypothalamus at the base of the brain, often called the seat of the emotions, to the heart has been shown in animals. Presumably this also exists in humans. Severe fright, as is well known, can make the heart beat very fast. If the fright is bad enough, this palpitation could turn into the rapid, disorganized heart beat, called ventricular fibrillation, that may end in death.

"Voodoo" death or "hexing" to death might follow the same general mechanism, it is suggested, although the process would be more gradual.

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CHEMISTRY

Industrial Explosives Big Business in the U. S.

► THERE IS a lot more "bang" in industry in the United States than is generally appreciated: over 700,000,000 pounds of explosives are manufactured each year to supply the "bang."

Armies consume great quantities of explosives in wartime, but industry employs them at all times. Meeting this industrial demand is the big part of the work of the chemical manufacturers who turn out explosives from gunpowder to trinitrotoluene.

Each year the use of industrial explosives seems to be increasing. During 1951, a total of 753,820,583 pounds were consumed, according to the U. S. Bureau of Mines, a 5% increase over 1950.

About 39% of the total goes for coal mining operations, while other types of mining use a very large percentage.

A considerable portion of industrial explosives is used for construction work and for other activities, from ditch digging to stump removal. Metal mining and quarrying and non-metal mineral mining, each take about one-fifth the explosives produced. Railway construction is a heavy user, but wherever earth and rock must be removed, blasting makes the handling easier.

The Bureau of Mines, after long testing with various explosives, urges the coal industry to use types designated by it as "permissible," because they provide less hazard. However, in 1951, approximately 52% of the high explosives used in coal mining was not of this type. Approximately 37% was of the permissible type, 4% was black blasting powder and about 7% was liquid oxygen explosives.

Science News Letter, October 18, 1952