

PUBLIC HEALTH

USAF Attacks Cigarette As Enemy to Health

► CIGARETTE SMOKING, as an enemy to health, is under continuing attack by the U.S. Air Force.

In addition to its recent "quarantine" on gift cigarettes for servicemen in Air Force hospitals, the Air Force has begun an education campaign to acquaint its personnel with "the relationship between cigarette smoking and lung cancer, pulmonary diseases and cardiovascular diseases." Maj. Gen. Oliver K. Niess, Surgeon General of the Air Force and past president of the American College of Preventive Medicine, announced this action to the Association of Military Surgeons annual meeting held in Washington, D. C.

"The danger of cigarette smoking in relation to these diseases has been established by many studies over the past few years," he said.

A directive as well as materials to use in the fight against cigarette smoking has been sent to all major command surgeons in the Air Force by Gen. Niess as part of a comprehensive program on preventive medicine. A publication from the American Cancer Society which discourages smoking is recommended for general distribution.

No similar action against smoking has thus far been undertaken by the Army, Navy or the U.S. Public Health Service.

It is understood these agencies will make no decisions until the Advisory Committee on Smoking and Health, recently appointed by U.S. Surgeon General Luther L. Terry, completes its review and makes recommendations. These are expected by next summer.

• Science News Letter, 82:336 November 24, 1962

PSYCHOLOGY

Chicks Prefer First Love Even If Inanimate Object

► A BABY CHICK can be forced into "love at first sight" for a strange object.

Until now, scientists have known a chick, bird or other mammal will choose another strange creature or object over its real parent during a critical period, if given the chance to identify the thing as its "mother" first. So geese, for example, have been known to prefer a passing boat to their own mother. Such phenomenon is called imprinting.

An experiment at Florida State University now shows a chick often will bestow its affection upon a ball instead of a live hen, even if it is forced into initial contact with that object.

Within 8 to 28 hours after they were hatched, baby chicks were collared to a ball by a 12-inch string and the ball was moved to lead them along 100 feet of track. If the chick fell, the ball was stopped until it got to its feet. By then, the chick perhaps should have wanted nothing further to do with that ball.

On the fourth day after hatching, the chicks again were placed on the track and allowed to choose between the ball and a live hen. Nearly 60 per cent preferred the

ball. Only seven per cent chose the chicken and the other one-third showed no preference.

Other chickens which were allowed to follow the ball freely the first time did show more marked preference for the object the second time. More than 80 per cent selected the ball, only five per cent the chicken.

Those introduced to ball and chicken for the first time on the second trial, which was after the period of imprinting generally occurs, most often made no choice, thus reinforcing a proof of imprinting.

The results of the study also indicate that although imprinting occurs with forced following, it is not as strong as when the following is voluntary.

Charles E. Rice of Florida State University reported the finding in *Science*, 138:680, 1962.

• Science News Letter, 82:336 November 24, 1962

PHYSIOLOGY

Colors Formed in Eyes, Not Brain, Tests Show

► THE SENSATION of color is created in the retina of the eye or pathway to the brain, not in the brain itself, Dr. Edwin H. Land, inventor of Polaroid, concluded in further tests he made of the color formation theory he proposed in 1959.

The original Land experiments consisted of photographing a scene through a red filter and through a green filter. The first photograph was then projected with red light and the other with white light, both superimposed on the same screen. The result was a surprising gamut of color, including red, blue-green, blue, white, yellow, gray, brown, orange and pink.

The present experiments, performed with Nigel W. Daw, also of the Polaroid Corporation, Cambridge, Mass., were in exploration of the experiments conducted by Dr. N. Geschwind and J. R. Segal of the Veterans Administration Hospital, Boston, who made photographs essentially the same way but viewed them stereoscopically.

A similar study was made independently by Dr. N. J. Pastore of Queens College, Flushing, N. Y.

They all came to the conclusion that the colors they saw were much the same as those seen in the Land experiment when both photographs were presented to each eye simultaneously.

The Polaroid experimenters made comparisons of the two methods of viewing using polarizing stereo viewers and concluded that they did not give the same results as to colors seen and other aspects. They concluded that the rival experiments do not substantiate the idea that the colors are formed in the cerebral cortex of the brain by fusion of the information from the two eyes.

Instead they report that it is entirely possible that colors are formed instead in the retina of the eye itself or in the lateral geniculate body which lies in the pathway between eye and brain.

The report is published in the journal *Science*, 138:589, 1962.

• Science News Letter, 82:336 November 24, 1962

IN SCIENCE

SPACE

Russians Launch Rocket To Probe Mars in June

► THE RUSSIANS on Nov. 1 launched the first Mars probe, an interplanetary rocket called Mars-I.

The probe weighs 1,695 pounds and was sent Marsward from a rocket in a parking orbit about the earth. Mars-I is expected to photograph the planet's surface and relay the photographs to earth by radio.

Scientists planned to make corrections in its flight path in the hopes of bringing the space probe to within 600 miles of Mars next June. The distance between earth and Mars will be more than 150 million miles at that time.

This compares with the distance of 28 million miles over which the U.S. space probe Mariner II is expected to send radio reports about Venus when it reaches the vicinity of that planet in mid-December.

• Science News Letter, 82:336 November 24, 1962

PUBLIC HEALTH

Falls Most Frequent Among Accident Causes

► AMONG THE 45 million persons now injured each year, 12 million, or 27 per cent, fall down.

Four million fall down stairs, steps or "from a height" but most of the other fallers are children under 15 or oldsters over 65 who fall on more or less level places at home.

Facts collected in the Health Interview Survey of the U.S. Public Health Service during the two-year period, July 1959 through June 1961, show that 255 per 1,000 noninstitutionalized civilians are injured each year. Injuries mean "restricted activity" or "requiring medical attention."

These include 27 persons per 1,000 injured in motor vehicle accidents, 46 per 1,000 in accidents while at work, 107 per 1,000 in home accidents and 73 persons per 1,000 population in public places such as schools, places of recreation, stores and offices. The remaining 2 persons per 1,000 had accidents of unknown origin. Unknowns take in "therapeutic misadventures" including adverse reactions to medicines and drugs.

Of those injured, 37,671,000, or 83.7 per cent, had medical attention, more frequently in the West and among those with more than \$2,000 family income. Rates for medically attended or hospitalized injuries were lowest in the South.

Males between the ages of 6 to 14 and 17 to 24 had a higher rate of injuries than any in the other age-sex groups. Between 15 and 24, the young males were injured from bumping into objects or persons "with considerable frequency."

• Science News Letter, 82:336 November 24, 1962

E FIELDS

AERONAUTICS

U.S. Still Wants Faster Jet Transports

► THE U.S. continues to count on a 2,000 miles per hour supersonic jet airliner in operation within ten years rather than settle for the 1,400-miles-per-hour plane acceptable to the French and British.

The French and British have agreed to submit plans to their governments for joint production of an airliner in the Mach 2 (twice the speed of sound) range to be operating before 1970. It was learned at the Federal Aviation Agency in Washington, D.C., that the U.S. still intends to bypass the Mach 2 stage for an airliner capable of about Mach 3 speed.

The FAA has previously said Mach 3 jet transports would make Mach 2 models obsolete and that the intermediary step therefore was unnecessary for the United States. Jet transports currently are thought of for long-range transoceanic flights between New York and Paris or Los Angeles and Honolulu, although the French have been considering one of shorter range.

Damage to buildings from the sonic booms produced by supersonic jets may limit overland travel.

Although the development of the B-70 jet bomber was once believed necessary to provide sufficient data for building an airliner flying at Mach 3, the two projects are being conducted separately and downgrading one would seem to have little effect on progress toward the other.

• Science News Letter, 82:337 November 24, 1962

MEDICINE

New Procedure Unclogs Coronary Arteries

► DIRECT SURGERY to unclog human coronary arteries may soon be possible using a new technique successful with dogs.

The new procedure, reported to the American Heart Association meeting in Cleveland, helps overcome the problem of shrinkage of the artery at the point where it is opened to remove a clot or fatty deposit blocking the flow of blood to the heart muscle. It does not require a heart-lung machine to take over the pumping of blood to the body during the operation.

Drs. K. N. Chatterjee and R. Warren of the Veterans Administration Hospital, West Roxbury, Mass., reported that they had grafted a piece of tissue from the nearby artery over the incision, actually widening the coronary blood flow channel and helping to avoid clot formation. The operation was successful in eight of 12 dogs. Since human arteries are much larger than the dog's and would be easier to work with, the doctors see a promising future for clinical use.

A simple test based on chewing paraffin before breakfast is expected to help doctors single out persons in whom high blood pressure is caused by a curable abnormality of the adrenal gland. Drs. David P. Lauer, R. H. Hickler and G. W. Thorn of Peter Bent Brigham Hospital, Boston, reported the test.

• Science News Letter, 82:337 November 24, 1962

GEOPHYSICS

Earth's Gravitation May Be Slowly Decreasing

► THE QUESTION is raised as to whether the pull of gravitation on the earth is slowly decreasing now and whether it has been for the past four billion years or so of the earth's history.

If so, there are profound effects on the earth's temperature, other conditions and its history.

Dr. R. H. Dicke, Princeton University professor of physics, suggests that this decrease in gravitation, which is dignified by being called a constant, is the consequence of the expansion of the universe, changing the distribution of matter in the cosmos.

Dr. Dicke's views are exactly opposite to those held by most physicists, which are that the distant matter of the universe is evenly distributed around the earth and without noticeable effect on the solar system.

If the earth is affected by a gradual decrease in the gravitational constant, as Dr. Dicke believes, this would mean that living forms on earth originated when temperatures were high.

He calculates that the earth's temperature was as high as the boiling point of water three to four billion years ago.

• Science News Letter, 82:337 November 24, 1962

ENTOMOLOGY

Insect Pests Attack Grasses and Grains

► THE HESSIAN FLY and the fall armyworm are plaguing grains and grasses in greater numbers this fall than in 1961, U.S. Department of Agriculture reports.

The Hessian fly is heavily infesting wheat plants in Ohio. Farmers have been reported ploughing up infested wheat crops in northern Kansas. The insect is entrenched from Kansas to Colorado State line.

The fly is controlled by planting at the right time on "fly-free sowing dates." Wheat planted during the fall is not infested.

The Hessian fly in its youthful stages, the larvae and the puparia, are found on the base of wheat stalks and leaf sheaths. Infested wheat plants become a sick yellow and die.

The fall armyworm has spread across the eastern two-thirds of Texas and is moving northward. It attacks small grains and lawn and pasture grasses. A third point of the insect's invasion is on sorghum leaves in Cameron County, Texas. Armyworm infestation is expected to continue until the first big freeze in the Deep South. It is normally a fall menace.

• Science News Letter, 82:337 November 24, 1962

MEDICINE

Mother Dead Half Hour But Cesarean Baby Lives

► A BABY BOY survived cesarean birth after his mother had been dead of accidental shotgun wound 29 minutes, the longest known time for postmortem delivery.

Dr. John W. Ritter of Seattle, Wash., told of the previously unreported case, which occurred in Sioux City, Iowa, in an article on Postmortem Cesarean Section in the Medical Trial Technique Quarterly, Sept. 1962.

When the Iowa doctor saw that the mother was dead he immediately delivered the baby, who had to be revived by mouth to mouth breathing until oxygen was available. It was 30 minutes before the baby breathed spontaneously. After six months the child was still in good mental and physical condition.

Dr. Ritter said that only 120 postmortem cesarean births had been successful previous to this one. Speed is of the utmost importance because lack of oxygen usually results in the infant's death.

• Science News Letter, 82:337 November 24, 1962

MILITARY SCIENCE

U.S. Has Counterparts of Soviet SA-2 Fired at U-2

► THE SOVIET infrared heat sensing missile that caused the first American casualty in Cuba Oct. 27 has several U.S. counterparts that can be fired from ground, sea or air.

An advanced Russian SA-2 rocket hit the U-2 piloted by the late Maj. Rudolf Anderson (USAF) while he was on a photo-reconnaissance mission at 70,000 feet above Cuba. The hot jet exhaust of the U-2 was picked up by the infrared nose of the surface to air missile, which then slammed unerringly into the U-2 for the kill.

The Navy's Sidewinder airborne intercepting missile can perform similarly. But the Sidewinder like the SA-2 is only one of the many military applications of infrared by both the United States and Russia.

Infrared detection systems are, in many instances, proving superior to radar as guardians against an enemy attack. Infrared periscopes and binoculars have been developed to enable tank operators and ground military crews to observe the enemy at night from heat radiated by the body. These devices are so heat sensitive that they can detect the warmth of a match. Infrared is employed in devices for anti-submarine warfare, reconnaissance drones, tracking starts in daylight and for satellite warning systems.

Every object known to man radiates infrared energy, and man himself gives off enough power to light a 300-watt lamp.

Infrared is radiation generated by molecular thermal action and is part of the electromagnetic spectrum that falls between visible light and microwaves (radar). Infrared can go through a vacuum as do visible light and all other electromagnetic vibrations.

• Science News Letter, 82:337 November 24, 1962