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INVENTION

Patents of the Week

An emergency lock for protection against car thefts has been patented. A control device for missiles and runway lights for safer landings of airplanes were invented.

► **THIEVES** attempting to steal unattended parked cars should be foiled by an "emergency lock" awarded patent No. 2,984,318, inventor James A. Mathews of Michigan City, Ind., stated.

A perforated disk attached near the drive shaft immobilizes the drive shaft when a bolt is inserted in one of the holes. The bolt is controlled by a cable that extends to the dashboard.

A control device that guides a diving deadly missile just before it hits the target was patented by Winston O. Faith and Albert E. Wasserman of Arlington, Texas, and Howard W. Prier of Dallas, who assigned rights for patent No. 2,984,435 to Chance Vought Corporation.

The "guidance control system" provides greater accuracy in striking the target by correcting errors caused by winds above the target, the patent stated.

Previous missiles often disintegrated in midair because of the great strain exerted on the missile when it was turned toward the target.

Runway lights illuminating the center line of an airstrip won patent No. 2,984,735 for Sidney A. Batterson of Newport News, Va., who assigned the rights to the National Aeronautics and Space Administration. The inventor got his idea when recent flight tests indicated that most aircraft can land safely in near zero ceiling and visibility, provided the center line is lit up. A light reflector set at an angle to the runway neatly folds flush with the runway when an airplane wheel accidentally strikes the light.

Another safety feature patented is claimed to prevent a plane from overrunning a landing strip. The invention won patent No. 2,984,438 for Friedrich A. A. Arnold of Amityville, N. Y. A grid of electromagnetic cells placed near the end of a runway slows down an oncoming plane when a magnetic "ski" is lowered from the plane. The magnets in the runway strip "pull" the airplane to a quicker stop in a shorter distance.

• Science News Letter, 79:350 June 3, 1961

BIOCHEMISTRY

New Anesthetic Theory

► **A THEORY** of how anesthetics bring about unconsciousness was proposed by Dr. Linus Pauling, Nobel laureate professor of chemistry at the California Institute of Technology.

Dr. Pauling's concept is that the anesthetic action is upon the fluid part of brain tissue, which makes up about 80% of the brain. This is contrary to earlier theories based on the idea that anesthetic agents act by dissolving fatty brain substances.

Unconsciousness is caused, according to Dr. Pauling's theory, by the action of anesthetics in causing the formation of sub-microscopic crystals that interfere with the electrical activities of the brain.

When the brain fluid is cooled to 81 degrees Fahrenheit, microhydrate crystals are formed from its normal constituents. This causes complete anesthesia in the absence of any anesthetic.

Unconsciousness is brought about at body temperature (98.6 degrees Fahrenheit) by the use of an anesthetic. This is due to the fact that the molecules of the anesthetic enter the hydrate crystal structure, causing the crystals to form at the higher temperature.

Dr. Pauling estimated that only one-tenth of one percent of the aqueous or fluid material of the brain need be converted into tiny crystals to bring about unconsciousness and insensitivity to pain.

As evidence to support his theory, the scientist pointed out that mixing chloroform or another anesthetic with water causes the formation of minute crystals and that there is a "striking parallelism between the concentration of the anesthetic gas required to form the hydrate crystals in the laboratory, in the absence of brain tissue, and the concentration of the gas required to produce anesthesia."

The new theory is the first detailed one based on molecular properties of anesthetic agents. Dr. Pauling said that the effectiveness of anesthetic agents is proportional to the calculated energy of attraction of their molecules for water molecules, as is required by his theory. This explains why divers become unconscious from nitrogen while breathing air under high pressure, he reported. When the divers are at considerable depth and the concentration of nitrogen is sufficient in the brain tissue, molecules of this element stabilize hydrate microcrystals.

This effect is prevented by replacing the nitrogen by helium, because helium atoms have a very small attraction for other molecules and do not stabilize the formation of hydrate microcrystals, he said.

The molecular theory of anesthesia was developed by Dr. Pauling while he investigated the chemical basis of mental disease.

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