



OLD ATMOSPHERIC ENGINE—The Smithsonian Institution has been given one of the world's oldest atmospheric gas engines, built by its inventor, Nikolaus August Otto.

BIOCHEMISTRY

Malnourished Brain

► TESTS HAVE been developed that can be given children in order to indicate which may grow up to be alcoholics. Then, by feeding them the right foods, they can be kept from that fate.

This "bright picture" was revealed to the New York meeting of the American Chemical Society in the address of the president, Dr. Roger J. Williams, director of the Biochemical Institute of the University of Texas.

Appetites and abnormal cravings, like the craving for alcohol, have their seat in the hypothalamus of the brain, evidence indicates, and it seems likely that in alcoholics this portion of the brain has a deranged metabolism.

In alcoholics, Dr. Williams explained, the appetite-regulating center of the brain becomes malnourished.

That is because in potential alcoholics the nutritional needs of the brain center are unusual. Relatively high amounts of certain nutrients are needed, and it is not the same nutrients that are crucial in each case.

When anyone drinks alcohol in quantity, this tends to crowd out of the diet the wholesome foods that contain minerals, amino acids and vitamins. But when the potential alcoholic does this, it induces a circular effect which causes him to drink more and more alcohol.

That is because when he neglects to eat the specific foods demanded by his individual appetite center, the appetite center becomes deranged and he develops his abnormal craving.

Speaking of the alcoholism research in progress at the University of Texas, Dr. Williams said:

"We have demonstrated beyond question dozens of times that in experimental animals the desire to drink alcohol is in a striking way a function of their nutrition.

"Well-nourished animals drink little or none; poorly nourished animals always drink alcohol at a high level. Animals deliberately made deficient in a certain food element will drink heavily but will cease the drinking immediately when the missing food element is supplied."

He said it was his judgment, "based on experience and realistic appraisal, that most alcoholics who will cooperate can be greatly benefited now, and that the craving can be abolished more and more effectively in all, as the result of further research."

Science News Letter, September 28, 1957

PHYSICS

Dust on Model Creates Cone-Like Shock Wave

See Front Cover

► A SINGLE DUST PARTICLE on a model being tested in Cornell Aeronautical Laboratory's wind tunnel caused the unusual cone-shaped shock wave shown in the photograph on the cover of this week's SCIENCE NEWS LETTER.

The flow disturbance, invisible to the naked eye but visible by Schlieren photography, might cause serious problems for high-speed missiles encountering atmospheric dust when they reentered the earth's atmosphere.

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ENGINEERING

Old Internal Combustion Engine at Smithsonian

► ONE of the world's oldest internal combustion engines, built by its inventor, Nikolaus August Otto, has been donated to the Smithsonian Institution.

Officials of the United States and the Federal Republic of Germany participated in the ceremony. The engine, a gift of Kloeckner-Humboldt-Deutz A. G., Cologne, Germany, will be placed in the Smithsonian's new hall of power machinery.

The "atmospheric engine" is in working condition, developing one-half horsepower at 80 rpm. It is one of about 5,000 that Otto manufactured between 1866 and 1876, when he invented the four-stroke cycle engine that eventually became standard for automobiles.

Although the atmospheric engine did not use the compression principle, it was quite efficient by the existing standards.

Science News Letter, September 28, 1957

PHYSIOLOGY

Alcoholics More Easily Shocked Than Are Dries

► ALCOHOLICS can be shocked more easily than other persons. So can persons with hardening of the arteries, those with disturbed thyroids and those with greasy skin.

This is shown by a study on the effects of shocks by lightning and man-made electricity reported to the International College of Surgeons meeting in Chicago by Dr. G. Kenneth Lewis of the University of Illinois College of Medicine.

The effect of electrical shock on human beings is dependent on several factors. These include the type and amount of current, resistance set up in the body, path of the current, duration of the contact, conditions surrounding the accident and the question of individual susceptibility.

Aside from death, electrical shock can have damaging effects upon the heart and nervous system, stimulate strong muscular contraction, inhibit the function of vital organs, destroy cells and vital tissue and cause extensive latent dying off of burned tissues or cells.

The study showed that accidental contact "with anything above 110 to 115 volts of electricity is dangerous if the victim is wet and well-grounded," Dr. Lewis reported.

It also showed that alternating current is considerably more dangerous than direct current of like voltage and amperage.

Currents of low voltage follow a path of least resistance but currents of high tension tend to flow along the shortest path.

"Injuries produced by electrical accidents are more dependent upon the path of the current than its intensity, and current passing through the left side of a victim's chest or brain can be more dangerous than that traversing the right side because of its damaging effect upon the heart," Dr. Lewis pointed out.

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