AERONAUTICS

Catapult Seat Drops Pilot Through Floor

➤ NEWEST escape device for fighter pilots to be used in case of serious emergency is a catapult seat that drops the pilot through the floor of his plane when he presses a release lever and depresses a treadle bar with his feet. Designed for use with pusher-type planes where the propeller is located behind the cockpit instead of in front, the catapult seat throws a pilot clear of the airplane so that he will not be injured by the propeller. Pilots do not relish the idea of passing through the fast-rotating blades of a propeller in the process of bailing out.

Developed by engineers of the Consolidated Vultee Aircraft Corporation, the catapult is also a miniature elevator, for non-emergency use. On the ground it can be extended beneath the fuselage or cockpit nacelle of the aircraft. When the pilot sits down and pulls a lever, it will smoothly rise into the airplane cockpit. This will make it possible to save space in aircraft that is now needed to give the pilot an entrance to his plane. After a flight, the pilot adjusts the seat lever and lowers himself to the ground.

This new development may lead to wider experimentation with pusher type airplanes. Aeronautical engineers have long known that pusher-type airplanes can be extremely efficient, due to the fact that the most vital wing contours are not disturbed when engines and propellers are situated behind the wing surfaces.

Science News Letter, May 19, 1945

METEOROLOGY-AERONAUTICS

Aviation Weather Maps Will Be Standardized

➤ AFTER JULY 1, weather maps for aviation will be the same all over the world, when the United States Weather Bureau replaces the presently used constant-level charts with constant-pressure upper-air charts as a basis for its domestic aero weather forecasts, reports *American Aviation*. (Apr. 15)

The constant-pressure charts were developed through the combined efforts of the Army, Navy and Weather Bureau for world-wide combat and transport operations. Since the armed forces are using the constant-pressure charts, the Weather Bureau decided to adopt this type of chart for domestic forecast, in the belief that it will coordinate the continuity of weather maps over the world and increase the efficiency of upper air analysis.

The domestic airlines, through the Meteorological Committee of the Air Transport Association, have opposed the move on the basis that airline operations in this country are accustomed to the use of the current type of chart. Therefore, the Weather Bureau will continue to report the constant-level types of charts on its teletype system for spot weather reporting until next year. This should give the airlines sufficient time to adapt to the new methods.

Science News Letter, May 19, 1945

AERONAUTICS

Tiny Detector Warns Pilot of Engine Trouble

➤ A NEW pocket-size detector tips off pilots of giant multi-engined airplanes that engine trouble is developing before it happens, thus enabling them to adjust engine controls and feather propellers before an accident occurs.

The instrument is called an engine performance indicator, and was developed by William Ehlers and Lawrence Bordolon, engineers of the Consolidated-Vultee Aircraft Corporation. It consists of an electric brain installed adjacent to the carburetor. In operation it measures the distance to right or left to which the engine is displaced when the propeller is spinning.

When the engine is operating properly, the instrument actuates a gauge in the pilot's control panel, indicating how much horsepower the engine is putting out. It is believed that it gives more accurate power information than any other device now in use.

Should a malfunction develop in the engine, the device transmits the information to the cockpit where a warning light flashes on, giving the pilot the extra time he needs to cut the engine and feather the propeller. If this were not done, the engine might tear itself to pieces or catch fire. A propeller that is not biting into the air, but just turning around, is often the result of improper engine operation, creating excessive drag forces and making the airplane difficult to operate.

Although still in the experimental stage, the instrument has proven so successful on multi-engined airplanes that plans are under way to produce it commercially for all aircraft manufacturers. The detector will be turned out by the Communications Equipment Corporation, Pasadena, Calif.

Science News Letter, May 19, 1945

IN SCIEN

ASTROPHYSICS

Fifteenth Radiation Cycle Discovered by Dr. Abbot

➤ A HITHERTO unnoticed periodicity in the amount of heat and light given off by the sun, of 16 months' duration, has been discovered by Dr. Charles G. Abbot, recently retired as secretary of the Smithsonian Institution, and is announced in *Science*, (May 11). It adds a fifteenth radiation cycle to the 14 previously known and studied by Dr. Abbot.

The 16-month periodicity was first noticed when Dr. Abbot was re-calculating some of the solar radiation data accumulated during many years of observations. When plotted as a curve, they produced a sawtooth pattern of great regularity. At first it appeared that they might represent a 15-month interval, but an attempt to work them out on this basis failed to produce a "fit". Then the 16-month interval was tried, and was found to fall into the pattern very nicely.

In the same communication, Dr. Abbot suggests a possible physical mechanism that would account for the apparent connection between relatively small variations in solar radiation and marked changes in the earth's weather. The sun, he points out, bombards the earth and probably all space with great, machine-gun-like bursts of electrical particles, or ions.

"Electric charges," he continues, "as well known for nearly a century, act as centers for the agglomeration of dust and water particles. Thus increased solar activity in the nature of ionic discharges tends to increase haze and cloudiness in the earth's atmosphere. Such obstructions would absorb solar radiation. Thus the atmosphere would be heated when solar bombardments increase. Other meteorological consequences would naturally follow.

"Again, it may be that 11.3-year periodic fluctuations of the sun's extreme ultraviolet radiation, cut off by ozone in the upper atmosphere, may be many times 1/10 per cent. In such ways the sunspot cycle, and its details of sunspot variation, might have meteorological importance, without being associated with considerable fluctuations of the sun's total output of wave radiation."

Science News Letter, May 19, 1945

CE FIELDS

CHEMISTRY

Drinking Water Sterilized By Improved Process

➤ WATER for drinking purposes is sterilized, to destroy micro-organisms and free it of all biological contaminations, by a treatment, recently patented, in which it first is subjected to positive pressure and moderate heat, and then injected into a high vacuum. The patent was granted to James A. Camelford, who has assigned it to the Buckeye Laboratories Corporation.

In the process, the contaminated water is strained or filtered to remove solid impurities, and then passed through a high-pressure pump which puts a pressure of from 1,000 to 4,000 pounds per square inch on it. It is heated to about 125 degrees Fahrenheit, then sprayed through a nozzle into a vessel maintained at as nearly a perfect vacuum as possible. The result is a palatable water relatively free of biological contaminations.

Science News Letter, May 19, 1945

PSYCHOLOGY

Children Only Slightly Affected by War Movies

➤ PICTURES in daily newspapers of starving children or bodies piled up like cordwood and newsreels of bloody battles have not made war part of the daily lives of elementary school children in Sioux City, Iowa, or even of their teachers.

When 536 elementary school children were asked to write a story suggested by such pictures as a gaunt man with clenched hands standing among gravestones or scenes of grief showing a revolver, a rifle or a rope, only about four children in every ten thought of war, Dr. A. L. Rautman and Edna Brower of the Sioux City Public Schools report. (*Journal of Psychology,* April)

Teachers gave only one picture in ten a war interpretation. Only about six stories in every hundred written by the children dealt with war.

The few children who gave a war theme to four or more of the 10 pictures of the test series were found to be in need of special guidance. In fact, the test is believed to be an aid in detecting these children quickly and efficiently.

The number of stories dealing with war tended to increase with the greater age and higher grade of the children, although the difference was not particularly large. This slight increase may be due to the fact that older children have had more contact with information relating to wartime conditions, the psychologists believe.

About the same proportion of stories were built around the themes of death and killing as around war.

Only 35.19% of the 5,360 stories had a happy ending, contradicting the once-popular idea that childhood is a period of pure joy and freedom from worry. The younger children gave fewer of their stories a happy ending than the older ones.

Science News Letter, May 19, 1945

AGRICULTURE

Planes Sow Mustard Seed To Prevent Soil Erosion

➤ THE MUSTARD seed that once made the favorite poultice to relieve a cold in the chest, and is ground to dress hot dogs, is the same kind of seed now scattered by airplanes over fire-devastated mountainous areas in California to start a quick growth to form a cover to prevent soil erosion. Of a hundred kinds of seeds tested for this purpose, black mustard proved most desirable.

A report relative to the use of mustard seed to prevent erosion on burned-over areas in California has been issued by the U. S. Department of Agriculture. Erosion of many of the California hill and mountain soils is extremely severe if the chaparral or forest cover is destroyed by fire, the report states. The problem is to restore growing plants to cover the soil with their leaves and hold it with their roots before rain can get in the soil and wash it away.

The black mustard seed is satisfactory because it is light and fine, and smooth so that it settles rapidly and evenly when blown from a plane. It sprouts quickly with even slight moisture, and roots rapidly. Its first growth is a rosette of leaves that forms a protective pad at the soil surface. It is an annual that reseeds well, but dies the first year and forms a litter of dead tops. It heals the scars of the burn but is not so persistent and permanent that it competes for long with the plants natural in chaparral and forest cover.

Science News Letter, May 19, 1945

ZOOLOGY

Weight of Salamander Increased Almost 40%

➤ A SALAMANDER can increase its weight by nearly 40% within a few hours just by absorbing water through its skin.

An adult salamander, excavated last fall from a shady canyon in the Santa Monica Mountains, was found to be quite dehydrated. After being weighed, the salamander was placed in a pint jar with several moist paper towels on the bottom. Twenty hours later the animal had become quite bloated, its skin smooth and taut.

Since the damp paper towels did not provide water for drinking, it was apparently absorbed through the skin, Robert C. Stebbins of the University of California at Los Angeles reports in *Copeia,* official publication of the American Society of Ichthyologists and Herpetologists. Most of the water was absorbed during the first few hours.

Mr. Stebbins doubts if terrestrial salamanders ever drink, in the sense of swallowing water, since those that have been closely observed have never been seen to take water although they have had ample opportunity to do so.

Science News Letter, May 19, 1945

BOTANY-CHEMISTRY

Many Uses for Seaweed Preparation Now Offered

➤ SEAWEED, put to a thousand uses by our enemies, the Japs, is offered honorable employment in many American industries through a product on which patent 2,375,259 has been granted to G. W. Stoyle of Wollaston, Mass. The seaweeds used belong to the group known collectively as Irish moss, or carrageen, already known as the source of a vegetable gelatin having some food and medicinal uses. It is one of the smaller, more delicately built types of marine algae, not to be confused with the big, coarse kinds known as kelps.

Instead of the prolonged boiling used in preparing the gelatin-like product, Mr. Stoyle's process involves a very short period at the boiling point, followed by continued heating at a lower temperature, and final clearing by centrifugation. The resulting product is a viscous, easily soluble colloid which the inventor states has high value in making rubber cement, paints, inks, dyes and many other materials.

Science News Letter, May 19, 1945