

Do You Know?

Persons can obtain *calcium* from milk, kale, collards, yellow cheese, mustard greens and turnip greens.

Disturbing *noises* of all kinds, from barking dogs to train whistles and flying planes, are being muffled by law in many American cities.

The 18-8 designation for stainless *steel* followed the discovery that a proportion of 18% chromium and 8% nickel in the steel was ideal for a great variety of steel products.

Mine-water problems in the Pennsylvania hard-coal region are of long standing but are growing worse; the average anthracite mine now pumps out about 13 tons of water for every ton of coal removed in comparison with an 8-1 ratio 25 years ago.

Hair molecules are long chains of atoms strung together with cross links, a scientist explaining the so-called *permanent wave* stated; in the waving process the cross links are broken, the hair formed into suitable shape, and cross links re-established.

48-inch, 1948, Palomar Mountain, Calif., California Institute of Technology and the Carnegie Institution of Washington.

48-inch-to-be, Upsala, Sweden, University Observatory.

32-inch Baker-Schmidt, scheduled for 1950, Bloemfontein, South Africa, Armagh Observatory of Northern Ireland, Dunsink Observatory of Eire and Harvard Observatory.

26-inch, 1942, Tonanzintla, Mexico, Mexican National Observatory.

24-inch, 1941, Oak Ridge, Mass., Harvard College Observatory.

24-inch, 1941, Cleveland, Case Institute of Technology.

Complete list of existing large telescopes is found in the appendix of *Telescopes and Accessories* (Blakiston Co.) by George Z. Dimitroff and James G. Baker.

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ISLAND LIFE in Lake Michigan

by Hatt, Van Tyne, Stuart, Pope and Grobman

A Study in zoogeography and habits of the land vertebrates

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Cranbrook Institute of Science
Bloomfield Hills, Mich.

AERONAUTICS-METEOROLOGY

Flying in Thunderstorms

➤ A STROKE OF LIGHTNING which hits an airplane flying through a thunderstorm usually does little physical damage to the plane itself but is rated as one of the greatest psychological hazards to the pilot.

The brilliant flash of the discharge, the smell of pungent ozone, the accompanying noise and concussion may frighten even the most experienced pilot, Maj. Gen. H. M. McClelland, U. S. Air Force, Commanding General of the Airways and Air Communications Services, declared. The general spoke as guest of Watson Davis, director of Science Service, on *Adventures in Science*, heard over stations of the Columbia Broadcasting System.

If the flash occurs at night and the pilot is temporarily blinded, he might find himself trying to fly instruments and seeing nothing but blurred gauges; in heavy turbulence that is not contemplated with any enthusiasm, he added.

The general summarized experiences and lessons learned in a recent Thunderstorm Project carried out in Florida and an Ohio-Indiana area as a joint undertaking by the Air Force, the Navy, U. S. Weather Bureau, National Advisory Committee for Aeronautics, with the Civil Aeronautics Administration and the Civil Aeronautics Board cooperating. The findings are of value to both military flying and civilian air transportation.

In these thunderstorm investigations, airplanes played an important part. Black Widow Night Fighters of the Air Force were used because of their rugged design. When an approaching storm was located by radar, a number of planes took off and entered the storm, stacked at 5,000-foot intervals from 5,000 to 25,000 feet in altitude.

They were equipped to record on film the data of special instruments for measuring the extent and speed of the great updrafts and downdrafts, in addition to the smaller-scale but violent turbulence and sharp accelerations encountered in the storms. They also carried instruments for measuring temperature and electrical field, and were equipped with radar.

During the thunderstorm seasons in Florida and Ohio 150 thunderstorm days were studied, and 1,363 airplane flights were made through them. During these 1,363 flights, planes were struck by lightning 21 times. No major damage was done to the aircraft. However, lightning strikes burned off radio antennas and static discharge wicks, drilled holes up to the size of a dime in wing tips, rudders and elevators.

In addition to the use of planes in the thunderstorm studies, swarms of balloons, a surface micronet and radar were used. All four components worked together as a coordinated team. The balloons gave additional details on thunderstorm structure and circulation. Some were followed by

radar, others were equipped with transmitters and were followed by radio direction finders. The micronet consisted of 55 ground stations, each equipped with many types of weather recording instruments. Radar followed planes and balloons in flight.

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INVENTION

Golfers Taught to Hold Heads Steady by New Device

➤ GOLFERS all know that not moving your head wrong has as much to do with the success of a stroke as moving the club's head right. But correction of that fatal tendency to raise your head, or to move it right or left, isn't easy unless you have some way of knowing which way you move it, and how much.

This is just what a new device, invented by A. M. Newman and R. V. Miller of Los Angeles, undertakes to do. The golfer first takes a correct stance, presumably under the direction of his "pro." Then a band is slipped around his head, and a cord led from this to a box of electrical gadgets before him on the ground.

When he makes his practice swing, flashing lights of three different colors—red, green and white—will tell in which direction his head moved. Buzzers are also rigged, to give mechanized Bronx cheers in three different tones, according to what he does wrong. If he does two wrong things at once, like raising his head and moving it to the right, he gets it double.

U. S. patent 2,445,839 has just been issued on the new mechanized golf instructor.

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Science Service Radio

LISTEN in to a discussion on research upon feelings and emotions on "Adventures in Science" over the Columbia Broadcasting System at 3:15 p. m. EDST Saturday, Aug. 21. Watson Davis, director of Science Service, will have as his guests Dr. Martin L. Reymert, director of The Mooseheart Laboratory for Child Research, Mooseheart, Ill., and Malcolm R. Giles, executive director of the Loyal Order of Moose. They will report current findings in the application of psychology to everyday life, giving a forecast of the Second International Symposium on Feelings and Emotions to be held in Mooseheart and Chicago, Oct. 28-30.

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