

RADIO

Submarines Can Radio If They Are Not Very Deep

RADIO messages can be sent from a submerged or sunken submarine, but only if it is fairly close to the surface, states Dr. J. Barton Hoag, of the University of Chicago. (*Science*, Sept. 22)

Dr. Hoag made careful physical examinations of radio waves sent out from a transmitting apparatus submerged in Lake Michigan, and found that while the waves could get through the water they lost most of their power, through absorption, within a very few feet. Sea water has much greater absorbing power for radio waves than fresh water has.

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AGRICULTURE

Coffee Tree Disease Attacks In Hitherto Unknown Way

COFFEE plantations in Dutch Guiana, and possibly elsewhere in northern South America and onward as far as Guatemala in Central America, are suffering severely from the attacks of a deadly wilt disease. Losses on a single plantation have amounted to as many as half the trees. Wood from the dead trees has served as boiler fuel for three years—a burning tragedy.

Prof. Gerold Stahel, Swiss-born plant pathologist who is director of the Surinam Experiment Station at Paramaribo, has found the parasitic organism responsible for the disease. Important as his discovery is from the practical point of view, for the possible eventual salvation of the coffee industry, it has an even greater importance from the standpoint of basic science, for it has disclosed a hitherto unknown path along which harmful microorganisms can travel in plants.

The organism that causes the deadly coffee wilt is a one-celled animal belonging to the group known as the ciliates. It bears the zoological name *Phytomonas leptovasorum*.

The important thing about Prof. Stahel's discovery is that this minute animal swarms in that part of the tree's inner bark known as the phloem, and specifically in certain elongated sap-conveying cells known as the sieve-tubes. It is believed that these sieve-tubes carry important parts of the nutrition of plants. The innumerable parasites choke these tubes and thus kill the coffee trees.

Parasitic protozoa have previously been discovered circulating in tubes or vessels in plants. But these were the latex tubes of plants like the milkweed, which have no cross walls to interfere with travel. Sieve-tubes have cross walls, perforated with openings so tiny that it was thought impossible for anything living to get through them. Yet Prof. Stahel's microscopic animals do manage to wriggle through.

This discovery of a new route of infection may possibly open the way for the solution of other plant disease problems that have hitherto kept plant pathologists at bay.

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GENERAL SCIENCE

Languages Must Be Kept In Interest of Science

CORNELL'S announcement that a course in Russian language and literature is being established, with help of a Rockefeller Foundation grant, emphasizes that science and scholarship are truly international and language is a means of communication and not necessarily linked with ethics or ideologies.

Not liking communism is no reason for ostracizing the main language of the Soviets which was also the language of the Czars.

There is a generation in America, the one that went to high school and college during the World War, that is less literate in German than it should be, because German, along with sauerkraut and dachshunds, lost favor when we were fighting the Kaiser.

Defenses are already being erected by language teachers and others to prevent such linguistic suicide tactics under present conditions.

As for Russian here's a story. Dr. C. E. K. Mees, director of the famous Eastman Kodak research laboratories, a few years ago became convinced that the Soviet scientists were going to do important research and development in photography that would be locked up in their own technical publications away from all who could not read Russian. So he learned the difficult language, and now Dr. Mees, although head of a large research staff, personally follows the Soviet literature making available to his staff translations of articles bearing upon work in progress. Here's hoping the Cornell classes recognize this importance of Russian to science, preparing to tap Soviet science as well as Russian literature.

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IN SCIENCE

ASTRONOMY

London Black-Outs Allow Astronomers To See Stars

LONDON'S black-outs, suffered by its citizens as a wartime necessity, are proving a boon to astronomers of the Greenwich Observatory.

Absence of lights which severely handicap star studies of observatories located in or near large cities, is enabling better research work at the world-famous institution from which the earth's meridians of longitude are measured.

Not for 20 years has the London sky been so clear, William MacIntyre, secretary of the British Astronomical Association, said. The sky is also freer of dust than usual, due possibly to a decrease in fuel consumption in London during the war. Greenwich observatory astronomers have complained for years that London lights interfere with work at the institution.

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GEOLOGY

Metal Declared To Exist Beneath Meteor Crater

CONFIDENCE that metal exists beneath famous meteor crater in Arizona was expressed by D. Moreau Barringer, Jr., long associated with the mining company that owns this site, commenting on recent reports that indicated that all the metal contained in the meteorite spattered outside when it hit, (*SNL*, Sept. 9, 1939 p. 169).

"The last three drill holes which were sunk all encountered quantities of meteoric material at depths of around 500 to 700 feet below the bottom of the crater," said Mr. Barringer. "Each of the three holes was stopped by 'boulders' of meteoric material enclosed in a matrix of crushed sandstone. Since the largest bit that we were using only had a diameter of 6 3/8 inches, we were unable to penetrate the main mass of the fragments. However, the holes served to corroborate with surprising exactness both the geological deductions and the results of the geophysical surveys." (*SNL*, Feb. 26, 1938, p. 134).

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E FIELDS

MILITARY SCIENCE

New German Machine Gun Uses Gases To Speed Firing

BBRITISH military authorities are showing keen interest in a new type of light-weight machine gun of German design which utilizes explosive gases to attain firing speeds of 1,000 rounds a minute with muzzle velocities of 2,460 feet per second.

The new weapon fires 7.9 mm. bullets and is unique among gas-operated machine guns because it uses the gases only after the bullet has passed the gun's muzzle. In this way there is no decrease in muzzle velocity as there is in the usual type, which taps the gases from within the barrel at a point near the muzzle.

Specially bladed channels conduct the gases to a piston that operates the breach. The barrel is air cooled and is changed after 200 to 250 rounds, depending on the rate of fire. The entire gun weighs only 20 pounds.

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RADIO

American "Hams" Unhappy Over Loss of Foreign Pals

AAMERICAN "hams," in the radio not the theatrical sense of the word, are unhappy about the black-out of ether waves that they merrily used to catch from fellow DXers in countries at war.

Radio amateurs who have meant so much to the progress of wireless from its early days, are talking gently these days, keeping the radio waves as neutral as possible.

American Radio Relay League officials estimate that the war is affecting 60% of the membership in the International Amateur Radio Union.

In half the countries that were "worked" by American amateurs, amateur radio is suspended for the duration. About 70% of the world's amateurs have abruptly disappeared from the air, their dots and dashes and their voices echoing over oceans and continents stilled. It used to be commonplace for Americans to chat across the Atlantic and with the ends of the earth—to

swap stories and news and technical details of radio—but all that is forbidden in areas to which grim war has come.

Fearful of limitations on amateur radio in this country, here is what the amateur journal QST is advising radio amateurs in the country: 1. Keep all international contacts strictly to experiments and chit-chat. 2. Relay no intelligence of any sort from one country to another. 3. Don't discuss, even when two Americans are communicating, happenings that may have military significance, because belligerents have radio ears. 4. Keep private feelings and unneutral thoughts off the air.

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MEDICINE

R. A. F. Medical Officers Instructed on Sulfanilamide

ALL medical officers of the Royal Air Force have been instructed that no one should be allowed to fly or drive an automobile while taking sulfanilamide or related chemical remedies. Reason: Derivatives of these chemicals, by producing methemoglobin or sulfhemoglobin, may interfere with oxygen exchange of the blood and so prove a danger by reducing oxygen supply to the pilot's or driver's brain. (*Journal, American Medical Association*, Sept. 23)

Peacetime experience shows that a full dose of one of these sulfanilamide derivatives taken shortly before flying lowers an aviator's "ceiling" by about 5,000 feet. Dr. E. P. Mackie, medical advisor of Imperial Airways, saw a pilot who was suffering from severe oxygen lack as a result of flying at only 13,000 feet. Investigation showed he had been taking full doses of sulfanilamide for tonsillitis.

Similar cases have been observed in America and Germany.

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RADIO

New Technical Term "Vu" Describes Broadcast Volume

ADD to the vocabulary of technical terms the word "vu" being used by radio engineers as a unit for expressing the volume of a radio broadcast. The Bell System, the Columbia Broadcasting System and the National Broadcasting Company have a new instrument for indicating standard volume, useful, no doubt, on swing bands, symphonies, dictators, presidents, comedians and senators alike.

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ANTHROPOLOGY

To Survey America's Hair With New Measuring Device

ASURVEY throughout the country of the hair of Mr., Mrs., Miss and Master America is to be attempted for the first time by anthropologists.

The popular wisecrack that gentlemen may prefer blondes but they marry brunettes will at last be put to statistical test. Also, whether a fine or coarse head of hair is more apt to end in baldness. And whether the season of birth influences the size of the hair, as some scientists think possible.

Undertaken by Dr. Clark Wissler of the American Museum of Natural History, for the serious and useful purpose of gathering data needed by science concerning hair conditions in the United States, the survey will include a cross-section of the population. The project is made possible by a new electrical precision measuring instrument developed by the Timken Roller Bearing Company, of Ohio, with which hair can be measured on a mass scale. Heretofore, measuring hair diameters has been a tedious process.

The machine's limits are 25/100,000 of an inch and 500/100,000 of an inch. A blonde child's hair, recently measured, was only 50/100,000 of an inch in diameter. Orientals' hair frequently is too coarse for the machine.

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ASTRONOMY

War-Time Daylight Saving Proposed For Britain

WITH approaching winter months bringing shorter days and English city life ending at dusk because of the war-time black-out, a daylight saving plan under which nine o'clock in the morning would coincide throughout the year approximately with dawn has been submitted by a Cardiff engineer to the Home Secretary.

Clocks would be advanced 50 minutes on Jan. 1; 25 minutes more on Feb. 1; 50 minutes, March 1; 50 minutes, April 1; and 60 minutes, May 1. No changes would be made in June and July. On Aug. 1 clocks would be turned back 20 minutes; on Sept. 1, 40 minutes; Oct. 1, 50 minutes; Nov. 1, 50 minutes; and Dec. 1, 25 minutes.

The scheme, its backers, who include a prominent industrial council, insist, would save fuel as well as provide more daylight leisure hours.

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