

ENTOMOLOGY-RADIO

Radar Reflections Traced To Flying Insects

► FLYING insects in the lower atmosphere are now said to be the cause of heretofore unexplained "blips" appearing on the viewing screen of radar equipment. The insects seem to reflect radar waves in the same way that they are sent back as "echoes" from a distant airplane. Blips are the light spots on the screen, caused by the reflections, that warn the operator of objects located.

This explanation of insects being the cause of the mysterious radar reflections that have long troubled scientists is made by A. B. Crawford of the Bell Telephone Laboratories in the PROCEEDINGS OF THE INSTITUTE OF RADIO ENGINEERS, (April). His conclusions are based on tests and observations sponsored jointly by the Bell Laboratories and the Naval Electronics Laboratory, and conducted at Gila Bend, Ariz.

The discovery came with the aid of a powerful searchlight beam and a 200-foot tower. Working at night, observers at different levels of the tower counted insects while radar operators counted blips on their radar scopes. In one 15-minute period, 20 blips were counted, 15 of which coincided with the sighting of an insect.

Insects fit most of the descriptions which have been applied to the mysterious reflections on radar scopes, the Bell scientist states. They are small and they move at speeds comparable to wind velocity, sometimes with and sometimes against the wind. Also they are present both day and night, and there are more of them in warm weather than in cold.

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AERONAUTICS

Propose New Rules To Aid International Air Travel

► VEXING delays and formalities in crossing international boundaries by air are to be cut to the bone if proposals made in Montreal by the International Civil Aviation Organization are accepted by the 51 member states. The purpose is to make international air travel easy.

They are a set of uniform rules to which the customs, immigration and related regulations of the nations included in the organization are to be adjusted as far as they apply to international air travel. Unless a majority of the nations disapproves them by August 1 they will go into force on March 1, 1950.

The new rules will make international air travel simpler by reducing the nation's entrance requirements and by standardizing the number and content of forms required by authorities at entry airports. Included is a provision which would eliminate in-transit visa requirements for passengers

arriving and departing on the same through flight, and which would rule out the need for producing passenger and cargo manifests for customs and immigration authorities during such flights.

An embarkation-disembarkation card, which can be filled out by each passenger during flight, is designed to ban the many forms now used. With this card in use, travellers will no longer have to obtain temporary entry permits, and may lead to the further reciprocal elimination of entrance visas for temporary visitors.

The proposed plan also provides that national governments should not require such forms as certificates of good conduct and good health for purposes of entry. Again, it provides for necessary steps to prevent the importation of insects and other public health hazards to be carried out as far as possible during flight so that a further reduction in time spent on the ground will result.

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MINERALOGY

Iron Ore from Venezuela May Supplement U. S. Ore

► IRON ORE from Venezuela may soon supplement America ores and extend the life of the fast diminishing domestic supply, the annual report of the United States Steel Corporation reveals.

Extensive exploratory drilling in this near-by South American country is in progress in areas believed to contain iron ore deposits of considerable magnitude. U. S. Steel has also taken an option on manganese properties in Brazil and an investigation is underway to determine if they can be economically utilized.

Manganese is an essential in the making of modern steels. An ample supply from South America would relieve the need for Russian ore. Practically one-half the manganese mined in the world is from Soviet territory. Newly discovered manganese deposits relatively near the coast in the Brazilian area north of the Amazon river are closer to the United States than other deposits now used (See SNL, March 5, p. 147).

Another notable step of U. S. Steel is reviewed in the report. It is the completion of the postwar giant steel plant constructed at Pittsburg, Calif. This makes steel available without transcontinental transportation to the rapidly developing industries of the West Coast. The plant cost \$938,000,000, is equipped with modern machinery, and is producing cold-reduced sheets and tin plate for western industries.

U. S. Steel produced during 1948 a total of 29,300,000 tons of steel ingots and castings, the report states. This is 93.8% of capacity because of coal strikes and shortages of essential materials. During the last quarter of the year, production averaged 99.4% of capacity.

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IN SCIENCE

CHEMISTRY

Carbon Monoxide Poisoning Prevented by New Powder

► A PREVENTION against poisoning by carbon monoxide gas in garages, aircraft, submarines, factories, mines and other places was revealed at a meeting of the American Chemical Society in San Francisco by Dr. Morris Katz and Sophie Halpern of the Canadian Department of National Defense, Ottawa. It utilizes a new chemical powder which neutralizes the gas.

The new powder contains silver permanganate as the active agent. This is coated on minute particles of so-called carriers when it becomes highly effective and notably long-lived in the temperature and humidity ranges generally encountered in the temperate and tropical climates, they declared. In addition to use in gas masks, the powder can be placed in ventilating and air-conditioning systems to clean large volumes of air.

Dry silver permanganate by itself shows virtually no activity toward carbon monoxide, they stated. But when it is coated upon a suitable carrier, it can remove all the carbon monoxide from a rapidly moving stream of air at normal temperatures and humidity. In the process described, the silver permanganate is used as a coating on granules of various metallic oxides, clay, talc, or purified asbestos fiber.

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ZOOLOGY

Hibernating Bats Become Temporarily Cold-Blooded

► BATS in hibernation become cold-blooded animals for the time being, just as do several other species of normally warm-blooded animals that indulge in long winter sleep. This was demonstrated in measurements on 23 bats found hibernating in abandoned mine tunnels in Nevada, by William G. Reeder and John A. Kopec of the University of California at Los Angeles.

Carefully picking the torpid bats off the walls of the tunnels, and handling them as gently as possible so as not to awaken them, they determined their body temperatures by inserting a small thermometer down their gullets. The readings were always quite close to the temperatures of the tunnels—between 50 and 55 degrees Fahrenheit—and far below the normal level of active warm-blooded animals. The first signs of awakening, which usually came in from 20 to 30 seconds, would be accompanied by a rapid rise in body temperature.

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CE FIELDS

MEDICINE

Aureomycin Being Tested As Syphilis Remedy

➤ AUREOMYCIN, one of the new antibiotic remedies of which penicillin is the granddaddy, is now being tried as a weapon against syphilis. If it works, it will have the advantage that patients can take it by swallowing a pill instead of having to take "shots" via the hypodermic needle.

"Aureomycin appears to have definite antitreponemal (antisyphilitic) activity when given by mouth," three Mayo Clinic scientists reported at a U. S. Public Health Service—American Venereal Disease Association symposium in Washington. The Mayo scientists, who have tried the drug in six patients are Drs. Robert R. Kierland, W. E. Herrell and Paul O'Leary.

It is much too early and there are too few patients to tell whether there will be relapses or failures with the drug, they caution, adding that it will also remain for the future to tell how aureomycin compares with penicillin as a remedy for syphilis.

They gave the drug to the patients every four hours for about two weeks.

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PHYSICS-AERONAUTICS

New "Sky Compass" Will Aid Polar Air Travel

➤ AIRPLANE travel over the Polar regions will be aided by a "sky compass" developed by the National Bureau of Standards. This new compass is particularly for use during the long periods of twilight when neither the sun nor the stars are visible.

It is a non-magnetic compass. Magnetic compasses are of no help in the areas above Hudson Bay and below the Straits of Magellan, close to the magnetic poles. Nor can a sun compass, which indicates the direction of flight by direct sighting on the sun, be depended upon because of the many hours of twilight in these regions. The same is true of the astro compass, which measures direction by the stars or other heavenly bodies.

The principle upon which the new sky compass is based is analogous to that utilized in polaroid sun glasses, Bureau officials state. It has long been known by physicists that light, ordinarily consisting of vibrations in all directions at right angles to the ray, can be obtained in the laboratory, and exists in nature, with its vibrations restricted to one direction or plane.

Such light is said to be polarized. An example is sunlight from the unclouded

sky scattered by the minute particles of the atmosphere. A sky compass using this principle alone might have an accuracy of ten degrees. The new Bureau compass makes use of a much more sensitive device.

A piece of cellophane is attached to the top side of the polaroid. Cellophane has the property of rotating the directions of light vibrations through an angle before it strikes the polaroid. When looking at the sky, there may be a contrast in sky brightness as seen through the polaroid alone and seen through both the polaroid and cellophane. If there is no difference in brightness, the plane of polarization is established, and hence the direction of the sun. North-south direction is then determined by astronomical tables.

The Bureau's sky compass is based on investigations of the late Dr. A. H. Pfund of Johns Hopkins University and was developed in cooperation with the Navy Bureau of Aeronautics.

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NUCLEAR PHYSICS

Atomic Pile Measurements Made of Chemical Elements

➤ ATOMIC furnaces can be used to find out how much of a chemical element is in an unknown material, even when there is only about one part of the element in perhaps a hundred million parts of the material.

This important new scientific use for the atomic furnace or chain-reacting neutron pile, has been worked out by a pair of scientists at the University of Chicago's Institute of Nuclear Studies and the Argonne National Laboratory. First pile-measurements were made of two of the rarer elements found in meteorites.

Dr. Harrison Brown and a graduate student, Edward Goldberg, explained their new atom-age measuring technique in the journal, SCIENCE (April 8).

They used the heavy water pile at the Argonne laboratory to determine how much of the elements gallium and palladium were present in various iron meteorite samples. These and other studies of the chemical makeup of meteorites, the scientists explain, may give important clues to such mysteries as the structure of planets, including the earth, and the origin of our solar system.

Both a piece of the material being studied and a known weight of the element being sought are irradiated in the atomic furnace. The activity induced in the known and the unknown samples is then compared, to find out how much of the element there is in the material being analyzed.

Results from these tests of meteorites were so satisfactory that the scientists believe the atomic pile can be an important new tool for finding and measuring tiny amounts of chemical elements in an unknown material.

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GENERAL SCIENCE

International "Point Four" Program Is Being Planned

➤ AN international "point four" program for giving technical aid to underdeveloped countries under UN auspices may bulk large in the world's future.

Dr. Jaime Torres Bodet, director general of UNESCO, after seeing President Truman and other U. S. officials, discussed before leaving Washington a planning meeting now in progress at Lake Success.

Considerable sums of money should be spent, in Dr. Torres Bodet's opinion, on both basic education and scientific research. Possibly the new program, jointly operated by UN agencies, such as UNESCO, the World Health Organization, the Food and Agriculture Organization, through the Economic and Social Council, will eventually become larger than some of the specialized individual efforts.

For the next few weeks, the specialists will be formulating a joint plan that will go to the council. Then money will have to be found to undertake the actual operations recommended. Countries to be helped would have to request and welcome the experts from abroad, just as has been the case under the Marshall Plan.

How the USA point four program urged in President Truman's inaugural address and the UN plan, which originated in a USA-backed proposal, will work together is still to be determined.

The experts want enough money to do a good and permanent job of taking science and education to the people. Dr. Torres Bodet warns that too little money spent will result in symbolic results that will disappoint and disillusion the peoples that they are supposed to aid.

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MEDICINE

Virus X Is Not Caused by DDT

➤ IF you are worrying about getting so-called virus X disease from the insecticide, DDT, you can set your mind at rest.

The U. S. Food and Drug Administration knows of no scientific evidence to support the theory that DDT causes either virus pneumonia of man or X disease of cattle. Virus X disease in man resembles pneumonia and is called primary atypical virus pneumonia, Food and Drug medical men explain.

One of the symptoms of X disease in cattle is a thickening of the skin, called hyperkeratosis. A similar condition has resulted when DDT in kerosene was sprayed on the skin. The condition also appears when kerosene without DDT is sprayed on the skin, showing that the skin thickening is due to the kerosene, not the DDT.

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