

TECHNOLOGY

Unlighted Signs Glow In Automobile Headlights

► UNLIGHTED SIGNS that show up well both during the day and after dark are making highways safer. At night they glow in the distance when bright automobile headlights shine on them.

Glass, plastic and shiny metal in various shapes and forms are being used to call a driver's attention to hazards by reflecting the car's own bright lights back to the driver.

Little glass spheres make the white line marking the center of the road much more visible at night when even a dim light strikes it. Shiny little lenses molded in plastic reflect light right back to its source, making a sign visible in the far distance.

Automobiles and trucks, bicycles and trains are being marked with some type of reflector so that the lights of an approaching car can easily spot them in the dark. Pedestrians walking at night are urged to protect themselves by carrying some kind of reflective material.

Typical reflective materials used to increase the night-time visibility of highway markers have been collected for you by SCIENCE SERVICE. Reflecting beads used to make paint more visible, fabric and sheeting made reflective by the addition of thousands of little glass spheres, and a plastic reflector with a multitude of shiny little cube corners are included in the Highway Safety kit, available for 75 cents. Just write SCIENCE SERVICE, 1719 N St., N.W., Washington 6, D. C., and ask for the Highway Safety Kit.

Science News Letter, July 12, 1952

ASTRONOMY

Radio Telescopes Show Charged Particles' Speed

► THE CHARGED particles that cause sudden outbursts of hisses, swishes and grinding noises on ultra high frequency radio sets are very tiny indeed.

There are about a hundred million of these electrons and protons in each cubic centimeter when they leave the sun on their trip toward the earth, calculates Dr. Hari K. Sen of the National Bureau of Standards.

Violent magnetic storms here on earth give us some clue to the speed and density of these particles when they reach the earth. But it is the recently developed radio telescopes, specially designed to pick up static from the sun, that are now showing astrophysicists how these particles act even before they leave the sun, Dr. Sen reported to the joint meeting of the American Astronomical Society and the Astronomical Society of the Pacific in Victoria, B. C.

The first direct evidence of the speed of these charged particles before they leave the sun has been furnished by Australian radio astronomers, Dr. Sen reported. By

interpreting their findings as evidence of radio waves being generated by solar material moving through the sun's outer envelope, he obtained an independent method of estimating the density and motion of the particles in the solar atmosphere.

These tiny charged particles move about within the sun's atmosphere at a speed of some 300 miles a second, Dr. Sen estimates. But they are speeded up in the sun's outer atmosphere, so they are traveling much faster when they leave the sun on their journey toward the earth.

They are also spread farther apart, so that there are about a thousand particles in each cubic centimeter when they reach the earth. Theories of magnetic storms on the earth also indicate approximately these velocities and densities.

Science News Letter, July 12, 1952

ENTOMOLOGY

Find New Proturan Species in South America

► A NEW species of proturan, one of earth's most primitive insects, has been found in South America, Miss Grace Glance of the Smithsonian Institution has reported.

Proturans are blind, wingless, very tiny creatures found under bark and in leaf litter. They are believed to represent one of the earliest stages in the evolution of insects.

Since the proturans are so very small and hide themselves so well, few kinds of this insect are known to entomologists. Adults of the new species, the second kind to be found in South America, are less than one-fourth of an inch long and dark yellow in color.

Sluggish and slow-moving, proturans have three pairs of legs, but only two of the pairs are used for locomotion. The front pair is held up in front of the insect as it moves. These legs apparently serve the purpose of the antennae found in all higher insect orders, and are provided with primitive sense organs of touch.

Science News Letter, July 12, 1952

GENERAL SCIENCE

NSF Grants Aid Small College Research

► RESEARCH IN small colleges throughout the nation is being supported by 29 grants, totaling \$263,535, announced by the National Science Foundation.

Although the 29 projects in the biological and physical sciences were selected primarily on the basis of merit, the Foundation is trying in its research support program to encourage research in smaller institutions.

The current awards were the final grants for the fiscal year 1952. During the year 98 basic research grants were distributed to 60 institutions in 35 states and Hawaii. The average award was about \$5,800 per year.

Science News Letter, July 12, 1952

IN SCIENCE

PHYSICS

A-Bomb Uranium Purifies Rare Gases

► THE A-BOMB element, uranium, has a new peacetime use. Rare gases can be purified by using a uranium powder more effectively and conveniently than by any other method, two scientists at Johns Hopkins University, Baltimore, have reported in the JOURNAL OF THE OPTICAL SOCIETY OF AMERICA (June).

Drs. G. H. Dieke and H. M. Crosswhite found uranium hydride can be used to eliminate impurities released from electrodes or walls of vessels such as rare-gas discharge tubes. Such impurities often make it impossible to obtain significant measurements.

Uranium hydride is heated to about 400 degrees Centigrade to drive off the hydrogen. Then the rare gas is admitted. Since the uranium reacts with practically every gas except rare ones like helium, argon, neon, etc., the impurities are absorbed.

A sealed-off iron hollow cathode discharge tube previously became contaminated in two days. But, after adding activated uranium, the tube has remained pure for more than five months of constant use.

Science News Letter, July 12, 1952

INVENTION

Fuel Injection System For Rocket Patented

► YOUR FIRST flight to the moon may be safer as a result of a recent patent. It is a fuel injection system so designed that an explosion of the fuel large enough to be dangerous will not occur.

Rockets begin to move when a propellant, such as hydrogen peroxide, and a catalyst, such as calcium permanganate, are forced together by compressed air into an enclosed reaction chamber. The catalyst turns the propellant into gas, which escapes out a nozzle, thus propelling the rocket forward.

If too much propellant gets into the reaction chamber before the catalyst arrives, the rocket may be wrecked by an explosion in the chamber.

An actuating means has been included in the rocket motor that allows the compressed air to go to the propellant chamber only when the compressed air has gone into the catalyst chamber and has driven enough catalyst into the reaction chamber.

The inventors are Frank B. Halford, Edgware, Arthur V. Cleaver, London, and Ernest B. Dove, East Barnet, England. They assigned their patent, number 2,601,607, to the De Havilland Engine Company, Ltd.

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E FIELDS

MEDICINE

Chemical Helps Stop Seizures of Epileptics

► AMMONIUM CHLORIDE, a chemical best known for its use in tinning soldering irons, reduces and sometimes eliminates seizures of epileptics. The usual doses of phenobarbital or Dilantin must be used with the chemical, Drs. Fritz Kant and Warren E. Gilson of the University of Wisconsin Medical School reported in Madison.

Epileptic seizures may be the result of damage or irritation to some area of the brain or may occur without known cause. Doctors have known for years that drugs like phenobarbital or Dilantin cut down the activity of the central nervous system and help prevent seizures. They also have known that keeping a patient dehydrated and maintaining a relatively acid condition in his body are other helps.

Keeping the acid condition by diet and the low allowable limits for intake of fluids and salt, however, made long-range treatment nearly impossible.

Drs. Kant and Gilson chose ammonium chloride as a drug having the needed dehydrating and acidifying effect. The two scientists have not had a single case that has not shown some improvement in nearly two years of clinical research. Epileptics who have never responded satisfactorily to any other treatment have found happier, more normal lives because of the ammonium chloride treatment.

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NUTRITION

Cereals and Milk Are Efficient Protein Mixture

► "CEREALS AND milk go together," Dr. E. B. Hart of the University of Wisconsin stressed in a report in NUTRITION REVIEWS (May).

He is disturbed because recent findings on the biological value of various proteins have been misinterpreted in some quarters.

The biological value of proteins depends on their content of essential amino acids and "possibly," he says, on the rate of release in the digestive tract of these acids. Wheat, corn, rye and barley contain proteins low in one of the amino acids, lysine.

If cereal grains constitute the sole article of diet, the protein alone, irrespective of other deficiencies, could not support normal growth of an animal. This has been known for 50 years.

For more than 40 years, scientists have known that cereal grain proteins had to be supplemented with the "better and more efficient proteins of milk, meat or eggs," Dr. Hart points out.

One part by weight of a cereal plus one part by weight of milk will give an efficient protein mixture, he states. Since few persons weigh their food, one can measure by volume, for example, a cup of cereal plus a cup of milk. This proportion applies to any cereal.

Muscle meat, such as steak or roast, glandular organs such as kidneys or liver, and eggs are also excellent protein supplements to the cereal proteins. But in the United States, Dr. Hart observes, they are less likely to be used in the case of young growing animals or children.

So, he warns, do not be misled into thinking cereal breakfast foods are inferior or that one of them is any better in protein value than another. Breakfast cereals, he points out, are eaten with milk, only rarely with water alone. Any differences in the biologic value of their proteins is wiped out if they are eaten with the proper proportions of milk, that is, 1:1 by weight.

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VETERINARY MEDICINE

Overweight Parrots Have Health Problems

► OVERWEIGHT IS a common health problem among pet parrots as well as humans, Dr. David L. Coffin of Angell Memorial Animal Hospital, Boston, declared at the meeting of the American Veterinary Medical Association in Atlantic City, N. J.

Polly the parrot may also get hardening of the arteries, arthritis, and the bone disease, osteomyelitis, as well as diet deficiency diseases. She can catch tuberculosis from her owners, too.

In reverse, parrots and birds of the psittacine family, such as parakeets, may give psittacosis to their owners. But many other birds, probably any bird, can spread this disease, Dr. Coffin warned. He mentioned specifically pigeons, turkeys, chickens, ducks, fulmars and gulls.

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MEDICINE

MS Patients Told to Emphasize the Positive

► EMPHASIZE THE positive is, in effect, the advice given to MS, or multiple sclerosis, patients in four new manuals written for them by Dr. Edward E. Gordon, medical director of the Institute for Crippled and Disabled, New York.

"You still have a lot more ability than disability," he states.

The manuals, first of their kind ever printed, are published by the National Multiple Sclerosis Society. They will be distributed through physicians to four kinds of patients: 1. independently ambulatory patients; 2. patients ambulatory with aids; 3. wheel chair patients and 4. more confined patients.

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ELECTRONICS

Radio Forecasts to Be Broadcast Twice Hourly

► RADIO HAMS and others using short-wave radio equipment are now able to tune in on a forecast of whether reception of broadcasts originating on the other side of the Atlantic Ocean will improve or get worse for the next 12 hours.

Starting July 1, the National Bureau of Standards began broadcasting new short-wave radio disturbance forecasts via the NBS standard frequency broadcasting station WWV. Prepared four times daily, these forecasts are transmitted in Morse code twice each hour on WWV standard frequencies of 2.5, 5, 10, 15, 20 and 25 Megacycles.

During the past six years the letters "N," "U" and "W" have signified current conditions as normal, unsettled or disturbed. Now a digit has been added to the number. The digit 1 warns that broadcasts cannot get through at all for the next 12 hours, 5 shows fair reception and 9 indicates that reception will be excellent.

Designed specially to show reception of broadcasts from London to New York, broadcasts originating in Moscow may be expected to be a bit more disturbed, those from Paris or Tangiers will normally come through more clearly.

The forecasts are issued at 19½ and 49½ minutes past the hour. They are based on reports about sunspot development, solar eruptions and other activities on the sun obtained from a world-wide network of geophysical and solar observations.

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VETERINARY MEDICINE

Newcastle Disease Not Spread by Sparrows

► SPARROWS CAN get Newcastle disease but they are "probably of little importance" in spreading this serious poultry disease, Dr. Donald P. Gustafson of Purdue University Agricultural Experiment Station declared at the meeting of the American Veterinary Medical Association in Atlantic City, N. J.

He found that English sparrows could get the disease by breathing an aerosol containing its germs and by contact with infected sparrows. But under conditions like the natural one in which sparrows frequent hen houses, the sparrows did not catch the disease from chickens, although exposed to chickens 90% of which died of the disease.

Atomized vaccine of the B-one strain of Newcastle virus blown into the poultry house gives best results in protecting birds three weeks old and older, Drs. S. B. Hitchner and G. Reising of the Massachusetts Agricultural Experiment Station report. The method may also be suitable for younger chicks, they said, but they have not yet tried it with young birds.

Science News Letter, July 12, 1952