ENGINEERING

Noisy Air Hammer Replaced by Flame

➤ NO LONGER NEED a neighborhood be disturbed by the deafening noises of the air compressor cutting away pieces of concrete in street or sidewalk. A flux-forming fuel, and method of use, patented recently, permits a noiseless process. While it is particularly applicable in piercing round deep blasting holes in concrete and hard iron ore, it can be used to make grooves or cuts in the mineral materials.

The flux is a mixture of free-flowing finely pulverized materials, fed continuously into the blowpipe flame of an oxygen burner. It is composed of varying quantities of iron, manganese, silicon, aluminum, and either zirconium or calcium. A convenient way to get the mixture is to use ferromanganese, zirconium-silicon alloy, and aluminum, all in finely divided form. Calcium-silicon alloy can replace the zirconium alloy in whole or in part.

This mixture, when burned in gaseous oxygen, provides much heat. It forms oxides with the materials being cut, and these are in the form of a highly fluid slag. The gaseous products of combustion force the slag from the hole.

Patent 2,402,947 was granted Charles J. Burch, Plainfield, N. J., for this invention. It has been assigned to the Linde Air Products Company.

Science News Letter, July 27, 1946

MEDICINE

New Treatment for Glaucoma Stops Pain

➤ A NEW, PAIN-RELIEVING treatment for acute glaucoma, disease responsible for a large proportion of blindness, is arousing enthusiasm among eye specialists in this country and in Mexico.

The treatment was developed independently and at almost the same time by Dr. Manuel Jose Icaza, of Mexico City, and Dr. J. M. Levitt, of Brooklyn, N. Y., who has just finished almost four years of Army service.

The treatment consists in injecting an anesthetic solution into the region behind the eyeball. This blocks the sensory nerves of the eye, preventing their carrying pain messages. Before and after the injection, solutions of pilocarpine and physostigmine are dropped into the eye and epinephrine is injected with the local anesthetic.

As a result, the pain disappears completely and all signs of too great tension in the eye rapidly and completely disappear. The opacity of the cornea, caused by swelling, clears up, the pupil contracts strongly under the effect of the drops given before and after the injection, the redness of eyelids and eye goes away, the eye softens and in some cases the visual power improves and the field of vision is enlarged. Whether these effects on eyesight occur depends on how much permanent damage to vision has taken place.

Besides giving the patient relief from great pain, this treatment puts the eye into perfect condition for operation and allows the surgeon to plan the best operation for each case and to perform it at exactly the right time, instead of having to do an emergency operation under conditions more likely to lead to failure than success.

Dr. Icaza does not believe this treatment is a remedy for glaucoma. He considers it the most useful palliative yet found. He has used it successfully on more than 200 patients in the past five years.

The method of injecting an anesthetic into the tissues at the back of the eye socket has long been standard practice for operations on the eye.

Science News Letter, July 27, 1946

ASTRONOMY

World Chain of Coronographs

➤ A WORLD-WIDE chain of telescopic coronographs, permitting the antics of the sun to be watched at all times as if there were a perpetual eclipse, may result from the visit of Dr. Bernard Lyot to this country. The coronograph is the invention of Dr. Lyot, famous French astronomer.

Such continuous eclipse observations will help considerably in making radio forecasts and in foretelling what will happen to the weather.

Starting at Harvard Observatory, Dr. Lyot will visit all the large observatories in the United States and Canada, including the Climax, Colo., station of Harvard, 11,500 feet above sea level, where is located the only coronograph in America. He will test seeing conditions at each of the observatories to compare with conditions on the Pic du Midi, high mountain in southern France, where he observed with his coronograph throughout the war despite the German occupation.

Science News Letter, July 27, 1946

IN SCIENC

INVENTION

Tin-Plating Sheet Metal By Electricity

➤ TIN PLATING of sheet metal, to be used in making the familiar "tin cans" and for other purposes, was carried out for years by the so-called dipping process. During the war a process of applying the tin in an electrolytic bath was developed and used largely because a thinner coat could be applied and less of the critical metal used. A patent, 2,402,185, on one electroplating composition and process has been granted to Ernest W. Schweikher, Shaker Heights, Ohio, assignor to the E. I. du Pont de Nemours and Company, Wilmington, Del.

For electroplating, compositions in which the tin is in a stannous compound are found satisfactory but these compounds are not stable or, if dry, become partly insoluble in storage. This patent is given for a mixture of stannous tin and smaller quantities of other chemicals that increase stability and produce no undesirable effects upon the tin deposits. A dry composition included is 66% stannous chloride and 33% sodium fluoride, the remainder being equal amounts of potassium ferri-cyanide and sodium thiocyanate.

Science News Letter, July 27, 1946

RESEARCH

Acetylene Plastic Wins Stalin Prize

➤ PLASTICS developed from acetylene have won a Stalin prize award for Dr. Ivan Nazarov, director of the organic chemistry laboratory of the Academy of Sciences Institute in Moscow.

A pupil of the late Russian chemist Favorsky, Dr. Nazarov has developed a number of organic compounds in the vinylacetylene series. Among these compounds is the base for strong glues used to join glass, plastics, woods, metals, stones and other solids.

He produced transparent resins by polymerization of ethers, esters and glycols produced during the condensation of vinylacetylene with ketospirits, and has conducted research on organic compounds.

Science News Letter, July 27, 1946

E FIELDS

RADIO

Radio "Hum" Attributed To Interstellar Space

➤ RADIO SIGNALS received from outer space on the wavelengths around five meters are attributed to interplay of free electrons in interstellar space, not blasts of radiations in the distant stars.

The latest discussion of origin of the mysterious radio "hum" of the universe, that received some attention following the radar echoes from the moon, is contained in a report to the London science journal, *Nature* (June 15), from astronomers of the Yerkes Observatory of the University of Chicago, Drs. J. L. Greenstein, L. G. Henyey, and P. C. Keenan.

The sun is known to send out radio frequency radiation in connection with sunspot activity. This caused the suggestion that the radiation of a similar sort from interstellar space might be due to a sort of symphony of similar radiation from a great multitude of stars throughout the universe.

Computations made by the American astronomers show that this source of radiation would produce an intensity much lower than that actually received on special radio receivers tuned to the outer universe. They conclude the origin is truly in the space between the stars.

Science News Letter, July 27, 1946

SAFETY

Army Life Raft Suitable For Commercial Planes

➤ ODD APPEARING life rafts, developed by the Army, bear little resemblance to any ever seen before. Their unusual shapes give them their names, the "Wheel" and the "Covered Wagon." A particular feature is their size.

Both are suitable equipment for giant transports on ocean routes as well as for the military crafts for which they were developed. They are equally suitable for use on surface vessels. The Wheel is large enough so that 104 men in the water can cling to it; the Wagon keeps 20 men comfortable and dry.

They are made of rubber, and when packaged for storage in a plane or on ship deck require little space, not much more than a large suitcase. They are the types that automatically inflate themselves with carbon dioxide gas, from attached pressure tanks when released from their packaging.

The Wheel resembles a large doughnut with two cross tubes all inflated with the gas. Ropes are attached to all tubes for survivors in the water to grasp. The raft is a temporary means of survival until boats can come to the rescue.

The Covered Wagon is boat-shaped but has a large canopy to protect its occupants from sun and storms. It is a rubber raft with side walls, and inflated seats around the sides provide comfort for the men in it and insulate them from coldness of the water below. The arched supports for the canopy are inflated rubber tubes. Attachments are available for mounting an outboard motor. The raft and canopy weigh 178 pounds, and when in storage make a package less than three feet long and about two feet square.

Science News Letter, July 27, 1946

MICROGRAPHY

Crystal Structure of Molecules Studied

➤ A NEW LOOK has been obtained into the basic molecular structure of the crystals of disease viruses. Electron microscope photographs of 26,000 times magnification taken at the National Institute of Health show the molecules themselves perched upon the face of a virus crystal in a regular arrangement.

One of the unsolved problems in studying these disease-causing viruses is the structure of their crystals. Once scientists know how the molecule particles array themselves within the crystal they will have one more hint as to how to proceed in fighting the virus itself in the human, animal or plant that it makes ill.

Two U. S. Public Health Service scientists, Dr. W. C. Price, also with the University of Pittsburgh, and Dr. Ralph W. G. Wyckoff, have just published scientifically in the London journal, *Nature* (June 8), actual electron microphotographs of the molecules spotted in regular array on the face of a crystal of bean mosaic virus.

The next step after this exploration will be to apply the new method to protein and other large molecule substances. This new way of reaching down into the minutely small structure of matter thus promises to give science a new probe into the fundamental process of living matter.

Science News Letter, July 27, 1946

WILDLIFE

Duck and Goose Decline Reported as Serious

➤ A DUCK'S LIFE is a hard one, and the prospects are that it will get harder.

Hunters' shots, disease and drought in the northern breeding grounds have cut the duck and goose population of the United States by 36% in two years. Meanwhile, the number of hunters has increased more than half a million, with 1,686,368 gun-carrying enemies searching for the remaining 80,000,000 wildfowl.

Officials of the U. S. Fish and Wildlife Service term the situation "serious," and their latest field reports indicate that the duck decline has hit all regions and all species.

The answer, they declare, is shorter seasons for hunters or smaller bag limits or both.

While many of today's hunters were in the Armed Forces aiming at Nazis and Japs, the wildfowl census reached a peak in 1944 with an estimated 125,350,000 birds. But peacetime guns are being aimed at an already diminishing number of ducks and geese.

Science News Letter, July 27, 1946

AERONAUTICS

Long Range Altimeter Aids in Blind Flying

➤ PLANES won't be likely to crash into skyscrapers when using a new type of long-range radio altimeter, now being installed in transport planes. It gives the plane's height in feet above the earth or any obstacle below.

Although not designed to detect a building ahead as radar might, the altimeter enables the pilot to maintain safe altitudes when sudden changes in reading indicate he is flying over a city with many towering buildings. The instrument is especially valuable in facilitating blind landings, since it gives the exact altitude continuously within a few feet, from ground level up to 400 feet.

The present instrument, using a high frequency radio transmitter and receiver, was adapted from similar equipment developed for the Army Air Forces during the war. It automatically computes the exact distance to the terrain directly below by gauging the time needed for short signals beamed from the instrument to be reflected back.

Science News Letter, July 27, 1946