

INVENTION

Non-Terrifying Gas Mask Lets Wearer Look Natural

A NEW non-terrifying gas mask, which enables the wearer to look natural through a transparent frontpiece, has been evolved. It is now being tested by the U. S. Army.

While the mask is expected to appeal to feminine America on the grounds that, if women do wear gas masks here, this type removes the beauty hazard—so that the wearer no longer resembles the bride of Frankenstein—the primary importance ascribed to the new mask is its effectiveness against war gases. Inventor of the new mask is Charles Leguillon, manager of the machine and process development division of the B. F. Goodrich Company.

The new material in the mask, which is a transparent thermoplastic, is said to be considerably more “resistant to all types of poisonous and noxious gases and dust, and does not react to climatic conditions.” A defroster, to remove condensed moisture that fogs up eye-pieces in some masks, is provided. Head straps, nose pieces and other parts have been fitted with attention to appearance, and black tubes characteristic of many such masks have been eliminated.

Science News Letter, November 29, 1941

GENERAL SCIENCE

Canadian Scientists Seek Colleague's Reinstatement

SCIENTISTS at the University of Toronto are making determined efforts to obtain the reinstatement of one of their number, Dr. Samuel Levine, research associate in geophysics, whom they hold to have been unjustly imprisoned, and afterwards deprived of his position at the university, equally without justification. The case is outlined in *Science* (Nov. 14) by Dr. Harry Grundfest of the Rockefeller Institute for Medical Research, national secretary of the American Association of Scientific Workers.

Dr. Levine was arrested after two men, who had been roomers in his house, had been taken into custody as Communists. A few pamphlets were found in his dining room, which the two men had been using. Despite strong testimony in his favor by his colleagues, and the declaration of the two roomers that he had been in no way involved in their affairs, Dr. Levine, tried before a police magistrate and without a jury, was sentenced to six months in prison. After

serving three months, he was released from prison, but confined in an internment camp for nearly another three months before he was given a hearing. After three hearings, with intervals of a month between them, he was unconditionally released.

Dr. Grundfest characterizes the Canadian legislation under which Dr. Levine was arrested and imprisoned as “adopted in war hysteria, harsh and undemocratic,” and calls attention to the fact that in Britain, despite the far greater war danger, freedom of speech and of action is far less interfered with than in Canada. He also declares that Dr. Levine's scientific work is of considerable importance as a contribution to defense, and hence merits continuation on its former basis at the University of Toronto.

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ANTHROPOLOGY

Virginia Indians in Pit Graves Unearthed

HURRYING north on leave from First Army maneuvers, Sergeant Howard MacCord reported to scientists his discovery of Indian skeletons in burial pits, in a region of Virginia little known archaeologically.

Addressing the Eastern States Archaeological Federation, meeting in Philadelphia, Sgt. MacCord told how he and Carl Manson, both now National Guardsmen in service, carefully excavated prehistoric bones and pottery at the “Keyser Farm Site” on the Shenandoah River in the western Valley of Virginia last summer.

Smithsonian Institution anthropologists, to whom the young archaeologists turned over the skeletons for examination, have pronounced the identity of these Indians not certain. The skulls are more round-headed than the usual type of Algonkian Indian of Virginia. Pottery from the site has been examined by specialists at the University of Michigan, Sgt. MacCord reported. It shows a resemblance to work of Fort Ancient Mound Builders of Ohio.

Pronounced a strategic location for learning more about Virginia's Indian past, the new Indian site is in a region of many migration trails. No traces of Indian village ruins have yet come to light. Whether the new-found Indians were prehistoric tourists from farther west, or acquired their mid-western type pottery by trade or travel, remains to be cleared up, perhaps by further explorations.

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IN SCIEN

METALLURGY

New Way To Harden Steel Like Damascus Process

A NEW method of hardening the surface of steel by the use of synthetic urea was described before the American Society for Metals by Ray P. Dunn, research metallurgist of the Electro Manganese Corporation, Minneapolis, W. B. F. Mackay, flying officer, Royal Canadian Air Force, and Prof. Ralph L. Dowdell, professor of Metallography, University of Minnesota.

The use of synthetic urea as a source of nitrogen in the “nitriding” of steel was investigated because it is cheap, easy to handle, can be obtained in commercially pure crystals and gives off ammonia gas, a compound of nitrogen and hydrogen, when heated to 270 degrees Fahrenheit.

This process brings to mind the famous Damascus blade of Medieval times, which is said to have been surface hardened by the use of camel's dung. If so, these early artificers were unwittingly applying a crude form of the modern process of nitriding steel.

The present investigators tested their process on small specimens of three types of steel, using different furnace temperatures to ascertain the best conditions. Hardness tests on the nitrided specimens showed that high commercial hardness can be obtained with the urea method and the conclusion was drawn that the method has distinct commercial possibilities.

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NUTRITION

New Nickname for Vitamin; “Pantothen,” Is Proposed

PANTOTHENIC ACID, one of the new vitamins which has become so important “it is destined to be almost a household article,” has been rechristened by its discoverer, Prof. Roger J. Williams, of the University of Texas. In a report to the scientific journal, *Science* (Nov. 14), Prof. Williams suggests calling the vitamin by the short name of pantothen.

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CE FIELDS

ENGINEERING

Lights Are Being Tested For Goddess of Liberty

See Front Cover

THE GODDESS of Liberty is to renew her youth and welcome visitors to the United States with a brighter torch and robes of light. A battery of 400-watt mercury vapor lamps will make her torch visible 10 to 20 miles at sea. Flood lamps of the same sort will brighten up her robes with a blue-green glow. One of these lamps is shown on the front cover of this week's SCIENCE NEWS LETTER receiving final inspection by S. G. Hibben, Director of Applied Lighting at the Westinghouse Laboratories in Bloomfield, N. J. The great split sphere behind him measures the intensity of the rays in every direction.

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ECONOMICS

Trade Unions Advised To Champion Farm Labor

TRADE unions in the United States must come to the rescue of all labor, including the great low-paid base of the American social pyramid, if the unions are to attain their goal of raising wages and living standards for working people. So runs the advice and the warning of a noted German economist, Prof. Franz Oppenheimer who once taught in the University of Frankfurt and Berlin and is now living in Hollywood, California.

The fundamental weakness of unions is that they are too modest, confining their habitual routine of organizing to urban type labor, Prof. Oppenheimer declares in the first issue (October) of a new technical publication, *The American Journal of Economics and Sociology* (Reviewed, SNL, this issue). American trade unions are given a warning lesson from the "downright annihilation" which has overtaken such industrial organizations in continental Europe.

American industry owes its almost fantastic progress to organizational genius joining hands with scientific theory, Prof. Oppenheimer points out, and he believes that science can similarly aid industrial laborers of America. As

a solution he suggests "internal colonization and wholesale land settlement" to improve the condition of share-croppers, petty tenants and migrant job seekers. Citing "completely successful experiments" of this sort in Europe, the economist states that Nazism wilfully destroyed them.

The new journal, a quarterly review on social and economical problems of the present-day cultural crisis, is published under a grant from the Robert Schalkenbach Foundation.

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POPULATION

Soviet Pre-War Census Proved Timely Defense Aid

SINCE BIBLE days, censuses have been valued in gauging a nation's fighting power, and the Soviet Union reports that its 1939, just-pre-war, census is now important aid in the struggle against Nazi invasion.

Whereas old-time head counts were relied on mainly to show how many men could be mustered, now in total war the number and location of such resources as thousands of miners, seamstresses, and truck drivers, become facts of vital usefulness.

The Soviet Union gained 16% in numbers in the 12 years between censuses, the 1939 figures point out. There are 6,000,000 fewer farmers, but machines are doing more of that work. A Soviet trek to the cities in general doubled city population. Industrialization has drawn so many people to cities and centers where natural resources are developed that nearly half of the Soviet Union's people are reported to be factory workers or to belong to families supported in this manner.

The pre-war census gave the Soviet Union a total population of 170,467,000, a figure which had risen to 193,000,000 at start of the present Nazi invasion, due to Baltic and Finnish additions, and which is now in a continual state of wartime flux.

When the census was taken, Soviet Union officials counted on 305,000 architects, engineers, and industrial designers, or almost 10 times as many as in 1926. Farm crop experts numbered 90,000. Metal workers counted by enumerators numbered 4,331,000, or more than four times as many as 12 years before. Instrument and die makers had increased from 11,300 to 137,600.

Brand new to a Russian census were 15,000 armature winders and 8,800 excavator operators.

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PHYSICS

Constant Standard Volt Obtained by "Heavy" Water

BY USE of "heavy" water, that is, water in which the two atoms of hydrogen that are combined with one of oxygen are twice as heavy as in ordinary water, scientists at the Bureau of Standards have succeeded in producing a more constant standard volt. The final tests of the new standard were made by Dr. G. W. Vinal, chief of the electrochemical section, assisted by Mrs. L. H. Brickwedde.

The standard volt is obtained from a standard battery cell which is made with extreme care according to very precise specifications. All other voltages are measured in terms of the voltage given by this cell. Just as the standard of length, preserved by the Bureau of Standards, must always give the same length, this cell must always give the same voltage.

The Bureau has several such "standard cells" and, although very satisfactory, they require a certain period of aging before they settle down to a truly constant voltage and can be used. After seven years of research in the effort to improve the standard cell, the Bureau scientists found that by using a large percentage of "heavy" water in the liquid of the cell, its performance was improved and the aging period reduced.

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PALEONTOLOGY

Colorado Mesa Contains Fossil-Bearing Layers

A "LOST horizon" constituting the boundary between the Age of Dinosaurs and the Age of Mammals has been found in the Colorado mountains near Denver, by paleontologists of the U. S. Geological Survey and the Smithsonian Institution. The sequence from extinct reptiles to ancient mammals has been studied by Dr. R. W. Brown and Dr. C. Lewis Gazin of the U. S. National Museum.

The site is a mesa topped with a layer of basalt. About 200 feet down from this protecting cap of hard rock is a layer containing fossils of paleocene mammals, primitive flesh-eating creatures that roamed the earth about 50 million years ago. Below this is a layer of about 50 feet of barren rock, containing no fossils, and immediately below that is the stratum containing the dinosaur bones.

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