

CHEMISTRY

Colored Chemical Smokes Help in Identifying Japs

► DEAD MEN may still tell tales, in mopping-up operations on islands wrested from Japanese control. They do it through rainbow-colored stains on their clothing or skins, the Army's Chemical Warfare Service has disclosed.

It is a new application of the grenade-like "candles" that pour out great volumes of bright-hued smoke, originally devised for the identification of tanks or troops in the open to friendly airplanes overhead, and for other signalling purposes. The smokes come in the six principal rainbow colors, from red to violet, as well as in white and black.

When an American mopping-up patrol locates a cave system full of hold-out Japs, they heave in some smoke candles of an agreed-on color. The next cave complex will be smoked with another color. Later, when the Japs are killed or captured in the open, the tinge of the smoke still clinging to them will tell where they came from.

Although these colored smokes are non-poisonous, the Japs seem to be very much afraid of them.

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GENERAL SCIENCE

Latin-American Scientists Get U. S. Fellowships

► SCIENTISTS of Argentina, Brazil, Chile, Cuba, Mexico and Uruguay are represented among those awarded Latin American Fellowships of the Simon Guggenheim Memorial Foundation for advanced study in the United States.

The fellowship carries with it a stipend which is usually \$2,000 for the year plus traveling expenses to the United States and return.

The following are some of those given fellowships:

Mathematics and astronomy: Prof. Rafael Laguardia, director of the Institute of Mathematics and Engineering, University of Montevideo, Uruguay. Dr. Carlos Ulrico Cesco, University of La Plata, Argentina. Guido Munch, National Observatory of Mexico. Félix Cernuschi, University of Tucuman, Argentina.

Medicine: Dr. José Jesús Estable, Sub-Director of the Institute for Experimental Medicine, Montevideo, Uruguay. Dr. Alfonso Graña, Institute for Experimental Medicine, Montevideo, Uruguay. Dr. Eduardo Aguirre Pequeño, director, Institute of Scientific Research, Univer-

sity of Nuevo León, Monterrey, Mexico.

Biology: Dr. Manuel Maldonado Koerdell, chairman of the Section of Natural History, Institute of Scientific Research, University of Nuevo León, Monterrey, Mexico. Bernardo Villa Ramírez, National University of Mexico. Dr. Elisa Hirschhorn, plant pathologist, La Plata, Argentina. Sigurd Arentsen, Chilean Department of Agriculture, Santiago, Chile. Dr. Luis René Rivas y Díaz, Museum of Natural History, La Salle College, Havana, Cuba.

Other fellowships were awarded in such fields as history, geography, linguistics, agrarian policy and art.

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CHEMISTRY

Building Up Molecules Makes New Substances

► CHEMISTS are learning how to make new desirable substances by building up the kind of molecules desired, declared Dr. George R. Harrison, dean of science at the Massachusetts Institute of Technology. Only a few tens of thousands of different kinds of molecules have been identified as occurring in nature; now nearly a million new kinds of molecules have been produced, he stated.

"Scientists have long known," he said, "that the best way to understand a material is to understand the molecules of which it is composed." In earlier days, he added, "chemists produced new substances by mixing chemicals together, letting them fizz more or less at random, and then seeing whether the new substance obtained had properties which would be useful. Today, however, they are learning to figure out in advance how to build molecules which will have any desired property."

The spectroscope is the instrument that has enabled chemists to find out how atoms fit together to make molecules, Dr. Harrison stated, adding: "This device has unlocked even more secrets of nature than have its companions, the telescope and the microscope."

"The spectroscope is a very simple instrument," he explained, "but it gives the answers to an incredible variety of scientific questions, from the size of an atom to the weight of a star, merely by dissecting a beam of light from the star or atom and measuring its component colors or wavelengths."

Dr. Harrison spoke during a broadcast program of the New York Philharmonic Orchestra, sponsored by the United States Rubber Company.

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BIOCHEMISTRY

Sulfa Drugs More Effective When Used With Dyes

► SULFA drugs can be made effective against species of bacteria that ordinarily resist their action by using them in combination with certain synthetic dyes, Prof. F. S. Thatcher of McGill University at Quebec has discovered. The dyes found most effective in this way are known as methylene blue and brilliant cresyl blue. Both these dyes are themselves able to check the growth of bacteria, but when used in combination with one of the sulfa drugs the concentration of both dye and sulfa compound is much lower than when either is used alone.

Prof. Thatcher's results were obtained entirely with laboratory-grown bacteria in glass vessels. However, in reporting his researches in *Science* (Aug. 3), he states that clinical studies undertaken in cooperation with Dr. J. T. MacLean at the Ste. Anne de Bellevue Military Hospital "indicate a promising therapeutic value" for a combination dye-and-sulfa treatment of at least one type of infection.

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OPTICS

Stainless Steel Filter Gives Brighter Photographs

► VERY THIN films of stainless steel, which have a degree of transparency, placed in front of the wide-angle lenses used in aerial photography, furnish the solution to a former difficult problem. Heretofore in using wide-angle lenses a "hot spot" in the center of the field of vision resulted in pictures bright in the middle but dark at the edges.

Scientists of the Bausch and Lomb Optical Company developed a vignetting filter consisting of a disk of optical glass on which a film of stainless steel was deposited by a special electro-vacuum precipitation process. Placed in front of the lens, the film is thickest and transmits least light at the center of the disk, becoming gradually thinner and more transparent toward the edge. By complementing the characteristics of the photographic lens with which it is used, the filter permits photographs of ordinary density distribution.

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CE FIELDS

PUBLIC HEALTH

TB Death Rate Declines, Effects of War Come Later

➤ IN SPITE of the war, which might have caused an increase in tuberculosis, 3,000 fewer persons died of the disease in the United States in 1944 than in 1943. The death rate based on provisional figures was 40.8 per 100,000 population, compared with 42.6 per 100,000 in 1943. Only 12 states reported increases in 1944 over their 1943 rates, while in 1943 increases over the 1942 rate were reported by 23 states.

This "definitely encouraging" news, announced by the National Tuberculosis Association, is countered by a warning from Dr. Kendall Emerson, managing director of the association.

"Because of the long course of the disease the full effect of wartime conditions on tuberculosis control in this country may not be known for several years," he said.

Two major factors, according to Dr. Emerson, undoubtedly contributed to the continued decline of tuberculosis during war years. First, the American civilian population has not had to undergo dire wartime conditions, including severe malnutrition. Second, the recent expansion of mass X-ray surveys, particularly among industrial workers, conducted by health departments and tuberculosis associations, has discovered many new cases.

Discovering new cases, he explained, was a gain against the disease because many of them were diagnosed in the early, more easily curable stage. This means not only quicker recovery for the patient but less chance of others getting the disease from him.

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BIOLOGY

Oysters Can Be "Forced" By Warming in Winter

➤ OYSTERS can be induced to produce eggs in winter, just as greenhouse flowers can be brought to bloom out of season, simply by warming them up to the proper temperature, Dr. Victor L. Loosanoff of the U. S. Fish and Wildlife Service laboratory in Milford, Conn., has discovered. He announces his results in *Science* (Aug. 3).

Ordinarily, oysters begin the development of their reproductive glands in early autumn, then go into an inactive stage during the winter and begin producing eggs when the water warms up in spring. Sometimes, for research purposes, it is desirable to obtain oyster eggs out of season.

Dr. Loosanoff took sexually inactive oysters from outdoor tanks where the water was so cold that a scum of ice had formed on it, and brought them indoors. They were permitted to warm up gradually to room temperatures, then further warmed until the water in which they lay was as warm as in midsummer. The oysters responded by producing eggs, as well as sperm to fertilize them, and undergoing at least the early stages of development in apparently normal manner.

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MEDICINE

Protein Fraction Used In Treating Poisoning

➤ SEVERE poisoning from breathing the fumes of carbon tetrachloride, widely used but somewhat risky cleaning fluid, has been successfully treated with methionine, one of the amino acids, or building-blocks out of which proteins are formed, Dr. James H. Eddy, Jr., of Shreveport, La., states. (*Journal, American Medical Association, Aug. 4*).

The patients were all Negroes, employed in an ordnance plant near Shreveport where land-mine cases are produced. Cleaning up the hot metal cases, the workers swabbed them with rags saturated in carbon tetrachloride. The fumes sent most of them out of doors to get some fresh air, but then they went back to work and finished their shift. Not until after they had gone home did they become really ill.

Several of the victims of the gas were disabled for longer or shorter periods. They described their sensations as resembling those of alcoholic intoxication, followed by faintness, dizziness, abdominal pain, nausea and vomiting. Two patients, both women, died. Autopsy showed breakdown of the liver tissues as the principal damage.

Treatment of the non-fatal cases consisted mainly in carefully adjusted diet, plus frequent doses of methionine. While Dr. Eddy feels encouraged at the results of the methionine treatment, he adds a cautionary note that more clinical data are needed, and hopes that other physicians will report their experiences.

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ENGINEERING

Medal Awarded for Work On Jet Propulsion

➤ MEDALS in recognition of outstanding work in application of jet-propulsion, development of turbosuperchargers, and other important engineering problems will be awarded to four prominent engineers, it is announced by the American Society of Mechanical Engineers. Honorary membership in the Society will be received by a Chinese and an English engineer and by several Americans.

The American Society of Mechanical Engineers medal, the Society's highest honor, will go to William Frederick Durand, of the National Research Council, Washington, D. C., in recognition of his work, particularly in forwarding the design and application of the principles of jet propulsion, and his services to the government in engineering research.

The Holley medal will be given to Dr. Sanford Alexander Moss of the General Electric Co., Lynn, Mass., for his pioneer work in turbosuperchargers which largely made possible the high ceilings, speed and range of modern aircraft.

Dr. Joseph M. Juran, assistant to the administrator of the Foreign Economic Administration, Washington, D. C., will receive the Worcester Reed Warner medal for his contribution to engineering literature, including his contribution to the problem of quality control in mass production.

The Melville Prize medal will go to William Julian King of the Battelle Memorial Institute, Columbus, Ohio, for a paper on "The Unwritten Laws of Engineering." His work at the institute has been chiefly with the fundamentals of combustion in liquid fuels, and the development of gas engines.

In addition to these four, Bruce E. Del Mar, supercharging engineer of the Douglas Aircraft Company, Santa Monica, Calif., will receive the Junior Award for his work and a technical paper on centrifugal compressor performance.

Honorary membership in the society will be received by Wong Wen-hao of Chungking, China, and by Sir William Arthur Stanier of London, England. Rear Admiral Harold Gardiner Bowen, U.S.N., Dugal Caleb Jackson of the Massachusetts Institute of Technology, and Audrey Abraham Potter of Purdue University will also receive honorary memberships.

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