SCIENCE NEWS

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"WHITE NOISE" IN PLANES

METHODS for solving the problem of "white noise" in airplanes, which is apt to get whiter and therefore worse as faster planes are built, are reported by Commander Leon D. Carson, U. S. Navy, Dr. Walter R. Miles, Yale School of Medicine, and Dr. S. S. Stevens, of Harvard University, to the Federation of American Societies for Experimental Biology.

White noise is to sound what white light is to light. It is heard when all sound frequencies are added together, just as white light is seen when all colors, or light wave frequencies, are added together. The person on the ground listening to a plane high overhead hears only the low frequencies of the propeller. Inside of a really fast-moving plane, all the frequencies are heard together. Usually, the greater the speed, the whiter the noise and the more objectionable it is to the ear.

White noise is not only disagreeable but produces temporary deafness and spoils communications. Three remedies are suggested.

First, the noise in a plane can be made less white by improved aeronautical design or by application of sound absorbent materials.

Second, communications can be improved even in the midst of white noise by use of high-fidelity microphones and earphones, equipment which is not yet being widely used in airplanes though a few major improvements are in process.

Third, the microphone and earphones should be shielded from the noise by acoustic devices. Oxygen masks could be designed to include a microphone shield to cut out some of the white noise racket, and the ear can be shielded by an acoustic socket designed to provide a tight seal against the side of the head.

SICILIAN SULFUR MINES

CALTANISSETTA, Sicily, now reported to be in the hands of the Allies, is the center of the great sulfur industry of the island, and is the site of the Royal School of Mines. It is a city of 50,000 population, situated some 40 miles northeast of Agrigento, whose seaport is Porto Empedocle. The sulfur mines extend between Caltanissetta and Agrigento, and through the area to the south, an area conquered by American forces.

The largest Sicilian sulfur mines are probably the Campobello-Ravanusa, Zolfara Lucia, Crocca and the Ciavolotta. These are now all in American-held territory. In normal times Sicilian mines were producing annually from 300,000 to 400,000 tons. They were the world's principal source of sulfur until the Louisiana and Texas mines began to produce in quantity. American production is now well over 3,000,000 tons a year, enough to meet all war needs of the Allies. Germany particularly will feel the loss of the Sicilian sulfur when its stockpile supplies are gone.

England, perhaps, may now use Sicilian sulfur. Much cargo space from the United States would be released for other materials, and English ships taking vital supplies to the Mediterranean area would have return loads. Miners would be employed and thus kept off relief rolls. The sulfur would partially compensate for food and clothing that must be furnished the Sicilian civilian population.

DECREASE IN PELLAGRA AND BERIBERI

BREAD is now preventing disease. That cases of two vitamin hunger diseases, beriberi and pellagra, have decreased "markedly and unmistakably" in the wards of Bellevue Hospital, New York, during 1942 and 1943, the period when enriched white bread and flour became universally available in that city, was reported by Dr. Norman Jolliffe, of New York University College of Medicine, at the meeting called by the Food Distribution Administrator to consider compulsory enrichment of all white flour as a war measure.

Only a fourth as many patients with full-blown beriberi and only a third as many pellagra patients are seen now in the wards of this hospital as were there in 1939. This decrease is attributed to the bread enrichment program through which people are getting much more of the pellagra-preventing and beriberi-preventing vitamins, niacin and thiamin, than formerly.

Opposition, strongly vocal and somewhat unexpected, to the proposal for enriching all white flour, developed from representatives of the baking industry, who urged enriching bread and other flour products at the bakery, rather than at the mill. Increased costs to bakers; loss of prestige and hurt pride because the bakers have heretofore played a big part in pushing the enrichment program; and fear of possible loss or waste of vitamins either in stored flour or in manufacture of certain bakery goods were the chief reasons given.

Evidence that destruction of vitamins in flour under storage would not be serious, nor the loss in baking crackers and such items very large, was presented by those favoring enrichment at the mill.

Government authorities lean to enrichment at the mill because of greater ease of enforcement of the order. The large number of bakeries, many of them small, would make supervision of enrichment of bread and bakery goods extremely difficult.

Millers seem willing to take on the entire enrichment job. They are already enriching a large proportion of all flour and it is believed very few mills will need any extra equipment to enrich all white flour.

Flour should be enriched at the mill, according to Dr. Russell Wilder, chief of civilian food requirements branch of the Food Distribution Administration, because the fault has been with the flour, not the bread. Finely milled white flour loses important vitamins and iron in the milling process. Enriching flour at the mill or source, he pointed out, follows the logic of purifying the water supply of an entire city rather than doing the job in each home and public building.

The proposed new order for enrichment of all white flour will not include such flour products as sphagetti and macaroni which are made from a special flour called semolina.

Whether all or only part of white flour is to be enriched, it may be possible to distinguish it after October 1 by a very faint creamy tinge due to the vitamin, riboflavin, which will be a must ingredient in all enriched flour and bread after that date. Riboflavin has a clear yellow color. In flour and bread, however, the color will be so diluted that most consumers probably will not notice it.—JANE STAFFORD.

TREATMENT OF BURNS AND WOUNDS

THE Office of Civilian Defense has issued new recommendations for the first aid treatment of burns and wounds. The American Red Cross, it is understood, will probably issue similar new directions on burn treatment.

For burns, the advice is to use sterile boric acid ointment or petrolatum (sterile vaseline), instead of the previously recommended tannic acid jellies and ointments. This follows recommendations of the division of medical sciences of the National Research Council for the armed forces. The most serious objection to tannic acid is that it almost immediately forms a scab or hard coating over a deep burn. This seals in the germs, dirt and other contamination which usually get into serious burns. Dangerous infection may result.

For wounds, more cautious use of the sulfa drugs in civilian casualties is advised. Civilian injured, it is pointed out, are likely to include persons of all ages and states of health, whereas the military wounded are in a select group of healthy young men. The danger of poisonous effects from sulfa drug treatment is therefore greater among civilian injured.

Sulfa drugs are not recommended for first aid. Unlike the war wounded, the civilians can usually be under treatment in a hospital within a short time. Once in the hospital, the sulfa drugs can be used under medical supervision with proper precautions.

PROPOSED PHARMACY CORPS FOR THE ARMY

A BILL setting up a Pharmacy Corps as part of the Army Medical Department has been passed unanimously by Congress. Under direction of seventy-two commissioned pharmacists, the Corps would be aimed at giving the Army the best pharmaceutical service available. The Corps would handle all Army medicines, from purchase, through storage, shipment and compounding, to the final dispensing.

Congressional hearings brought out that in the past, men with only a few months of pharmacy training have operated some Army dispensaries, while men holding degrees in pharmacy worked under them. Numbers of inductees are said to have been put through a 90-day training period in pharmacy to fill the Army's needs, while at the same time registered pharmacists were being inducted into the ranks.

Despite controversies aired at the hearings, some Army authorities believe that, in view of the high standards of present Army drug supplies, revamping pharmaceutical service should wait until after the war. Officials of the American Pharmaceutical Association counter with the statement that putting pharmaceutical service under a Pharmacy Corps in the hands of registered pharmacists will be more efficient and give a better check on the quality of Army medicines.

Should the President sign the bill, it will be then up to the Surgeon General's office to decide what course of action is best for the Army.

ITEMS

A PROCESS for extracting crude oil and a gasoline substitute from pine tree stumps has been perfected by a young instructor in chemistry of Fukien Christian University in China. This new process is a military secret for the present but the Chinese Army is already using the gasoline substitute obtained from the hundreds of thousands of tree stumps left as a result of timber exportation from the Fukien Province's forests. Another achievement is the development of two new varieties of rice which yield 40 per cent. more grain than the local rice of that section.

BOTANISTS in London are watching areas of bomb-scarred and fire-scorched soil in the city, to see if perchance the famous London rocket, a two-foot plant with whitish, four-petaled flowers, may make its first appearance in something over 270 years. This wild plant sprang up abundantly in the ruins after the Great Fire of 1666, which devastated the city when it was much smaller than it is now. Expectations that it may reappear are based on the fact that already nearly 100 species of plants strange to the city have sprung up in bombed and burned areas, where the chemical properties of the soil have been changed in ways that permit them to grow.

SHOOTING billions of electron bullets per second, the electronic diffraction camera is being used for a new scientific attack on rust and corrosion. These silent saboteurs of metal war equipment are being investigated at the Westinghouse Research Laboratories by Dr. Earl A. Gulbransen through studies of the atomic structure of coatings that "grow" on steel, aluminum and copper when these metals are exposed to air or corrosive chemicals. "Just as some types of bacteria are beneficial to human beings," Dr. Gulbransen explained, "some of these oxide coatings protect the metal underneath them. Others, of course, like rust, are harmful. With this electronic camera, we are testing new theories as to how these coatings are formed." The camera bounces electrons off a highly polished button of aluminum or steel on which an oxide coating is being built up. Electrons richochet off different faces of the molecules of the coating, and strikes a strip of photographic film. A design is formed on the film from which atomic structure can be interpreted. Such research points the way toward development of longer-wearing bearings and cylinders for plane and auto engines, better tin cans and cheaper stainless steel.