



FOR AIR CREWS—Head injuries from low-velocity flying fragments of anti-aircraft shells have been considerably reduced since combat plane crews have been equipped with the helmets pictured in this official U. S. Air Forces photograph. The major on the left is wearing the M3 flyers' helmet, developed by the Ordnance Department, which can be worn by most members of a plane's crew. It is a one-piece type with hinged flaps to protect the headphones worn by airmen. The sergeant on the right wears the M4 helmet designed for gunners who have only limited space in their turrets.

laid because of war demands on the manufacturing laboratories.

Convalescent serum has also been tried to ward off attacks of scarlet fever in those known to have been exposed to a case. Since scarlet fever, however, has a short incubation period, developing within two to seven days, and usually is not diagnosed until the rash appears, it is not always possible to use the convalescent serum early enough for it to be helpful.

The disease usually starts suddenly with sore throat, nausea and vomiting and high fever. The rash appears on the first or second day, except in persons immune to this feature of the disease. Because of the danger of complications, patients should be under the care of a physician. Scarlet fever patients must be isolated. The usual quarantine period is 21 to 28 days.

Measles and Meningitis

Increasing numbers of measles and meningitis cases throughout the nation and an outbreak of typhoid fever in Indiana with a decline in deaths in 90 large

cities are also reported by the U. S. Public Health Service.

The total number of deaths in the large cities, which include about 40,000,000 of the nation's population, were 9,455 for the week ending Feb. 5, considerably below the 9,937 reported for the week ending Jan. 29 and also, for the first time in many weeks, below the three-year average for the first week in February of 9,736.

Measles cases increased from 15,403 to 18,648 for the week ending Feb. 5. The five-year median figure for this disease is 13,444. Both measles and scarlet fever cases are occurring in all sections of the country. In the nation's capital, there is more scarlet fever than in the surrounding states, with the picture just reversed for measles.

Meningitis has climbed to a very high level, with 527 cases reported the week of Jan. 29 and 571 the week of Feb. 5, compared with 330 for the first week in February, 1943.

Indiana's typhoid fever outbreak, with 70 cases the week of Feb. 5, and a total of 111 cases reported since Jan. 22, is centered around the towns of Warsaw and Peru. Cases have occurred in rural

areas in eight counties. Cottage cheese contaminated with typhoid fever germs is believed to have caused the outbreak. Preliminary investigations traced all cases to this one factor.

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STATISTICS

Cost of Raising Child On Middle Income Given

► FOR FAMILIES with \$5,000 to \$10,000 a year incomes, the cost of bringing up a child to the age of 18 averages \$20,785, the Metropolitan Life Insurance Company announces in a study supplementing earlier studies on the cost of child-raising with \$2,500 a year family incomes.

At the higher level, the total cost breaks down into the following: Cost of birth, \$750; food, \$3,628; clothing, \$1,697; shelter, \$5,774; education, \$283; medical care, \$846; transportation and recreation, \$2,787; sundries, \$572. Added to this is a mortality charge of \$212 and interest on the money expended, compounded annually at the rate of 2½%, of \$4,236 for the 18 years.

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HORTICULTURE

Aerosol Method Used To Secure Seedless Fruit

► AEROSOLS, at present used exclusively for killing germs in the air of hospital rooms and similar enclosed spaces and for combating malaria mosquitoes on the fighting fronts, may find a peacetime occupation in the treatment of plants with growth-control substances to secure seedless fruit from unpollinated flowers, to prevent premature fruit drop, and for other horticultural purposes.

This suggestion is offered by three U. S. Department of Agriculture scientists, C. L. Hamner, H. A. Schomer and L. D. Goodhue, on the basis of a series of experiments performed at the Department's great experiment station at Beltsville, Md. (*Science*, Jan. 28)

Aerosols are solutions of chemicals in some readily evaporated liquid in a container kept under relatively high pressure. When the pressure is released, the liquid is ejected into the air in an exceedingly fine mist, carrying the chemicals with it. Aerosols have been found many times more effective than ordinary sprays, as means for diffusing chemicals through spaces.

An aerosol of naphthoxyacetic acid, one of the plant growth-promoting substances, released in a closed space containing a number of flowering but unpollinated tomato plants and left with them for 16 hours caused the setting of a high proportion of fruits, while untreated controls set very few. The aerosol-treated tomatoes ripened larger than

the less numerous controls, and were all seedless.

It was even found possible to get tomatoes to set fruit in the open field when the aerosol was released in the immediate neighborhood of their flowers. Further experiments are in progress.

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MEDICINE

New Type Ear Defenders

A synthetic material better than rubber makes models which completely close the ear canal, eliminating almost all but bone-conducted noise.

► NEW TYPES of ear defenders, which shut out practically all noise except that perceived through bone conduction, have been developed by Dr. Norman A. Watson and Dr. Vern O. Knudsen, of the University of California at Los Angeles, in one of the few war research projects of the National Defense Research Committee so far published.

The new defenders are made of Neoprene, one of the synthetic rubbers, which the scientists state in their report to the Acoustical Society of America is "superior to rubber and entirely adequate for the purpose."

The superiority of the synthetic material for ear defenders comes from its being permanent; resistant to lanolin

(which is about the same as ear wax), soap, water and cleaning alcohol; non-irritating and non-toxic; non-inflammable; almost flesh-colored and therefore inconspicuous in the ear; and, after being washed with soap and water, without objectionable odor.

Some 50 different types of ear defenders were designed, molded and tested. The insulations against sound obtained with the widely different types were surprisingly near to the same value. This fact and many special tests, including one in which a heavily padded cloth hood was tied over the listener's face, head and ears, showed that the controlling factor in limiting the insulation possible with ear defenders is probably the vibrations of face and skull bones caused by the air waves.

On the basis of all tests made, two models were finally chosen for use when complete closure of the ear canals is permissible. These look alike, but one was specially designed for unusual shapes of ears. This has an extra compartment filled with an isoplastic, "tacky," non-elastic plastic loaded with metallic or metal oxide dust. Because of this "fill," the ear defender can be deformed to almost any shape of ear and will hold that shape.

A third type of ear defender was developed to provide automatic pressure equalization through it. This was accomplished by a drilled, cotton-packed insert sealed into the dividing wall of one of the ear defender models.

For those who have trouble removing the ear defenders, a modified design provides a longer flap at the outer end.

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FOR THE NAVY—The safety of Allied harbors and ships is the big responsibility of the men who have the job of laying and keeping intact the extensive network of anti-submarine and anti-torpedo nets put across the mouth of a port. The floats and buoys which support the tremendously heavy nets get careful attention, as well as the meshes themselves. A seaman is shown in this official U. S. Navy photograph spraying a pile of buoys with anti-fouling paint.

CHEMISTRY

Scientific Fraternity Elects Honorary Member

► DR. Florence B. Seibert, known for her research on the chemistry of tuberculosis, has been elected a national honorary member of Sigma Delta Epsilon, graduate women's scientific fraternity.

Dr. Seibert, a chemist and bacteriologist of the Henry Phipps Institute of the University of Pennsylvania, has focused her research during the last two decades on the study and isolation of the active principle of tuberculin, which is widely used in the detection of tuberculous infection in man and animals. She has isolated the substance, a protein, in highly purified form and has studied its biological and chemical properties.

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