

MEDICINE

Meningitis Conquered

Sulfadiazine is the weapon credited with bringing down the death rate in training camp outbreaks to new low point. Outlook for future good.

► THE U. S. Army has meningitis ked almost to a standstill, with further victories in sight, it appears from a report by Col. Henry M. Thomas, Jr., medical consultant, Fourth Service Command. (*Journal, American Medical Association*, Oct. 2)

The World War I death rate for meningitis in the U. S. Army was 39%. This was cut to one-fourth (8.8%) during the early months of last winter's outbreak in the Fourth Service Command and during the last two months of the outbreak the death rate was again cut to one-fourth, or 2.1% in 761 cases, Col. Thomas reports.

"It is safe to prophesy," he states, "that the mortality rate for the remainder of this war will be held to a low level."

Sulfadiazine is the weapon chiefly responsible for the amazingly low death rate. However, the second reduction of

the death rate to one-fourth its previous figure was not achieved until medical officers and nurses throughout the Fourth Service Command had been "alerted" to awareness of the various symptoms of meningitis especially in its early stages and the need for immediate adequate treatment.

"It seems probable that all members of the medical corps on duty in the zone of the interior during the past few months," Col. Thomas states, "will continue to be on the watch for cases of meningococcal infection and will be familiar with proper treatment."

Prophylactic treatment with sulfadiazine of meningitis carriers has also been used so successfully in the Army during the past few months that Col. Thomas feels it is safe to prophesy that in the coming years the number of cases can be greatly reduced as well as the death rate from this disease.

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tain the vitamin A content. Dr. McFarlane found that this doubled the life of milk powder, and even before these findings could be published, the Canadian Navy began to use the formula in milk powder tablets for emergency rations.

The immediate military significance of this discovery stems from the fact that so little wheat germ oil is used that our entire dried milk output could be protected with it from existing supplies of the oil. Besides, no new machinery is needed to mix it with the liquid milk. Dried milk would still be packed for export in vacuum cans, but the wheat germ oil would give added protection. This would be especially valuable after cans are opened, and in warm climates.

United States production of dried milk in 1943 is expected to reach 150 million pounds, breaking all records, emphasizing the importance of keeping qualities.

Dr. P. H. Tracy, authority on milk powder at the University of Illinois, has also been working on the problem, and confirms that "wheat germ oil was found to retard the development of an oxidized flavor in powdered whole milk." Dr. Tracy emphasizes that wheat germ oil

CHEMISTRY

Keeps Milk Fresh

Addition of wheat germ oil and edible acids keeps whole milk powder fresh twice as long. Would extend usefulness of supplies for overseas.

► WHOLE MILK powder containing minute amounts of wheat germ oil and edible acids will stay fresh about twice as long as untreated milk, research at MacDonald College laboratories, St. Anne de Bellevue, Quebec, shows. If the simple, inexpensive method proves out, it could be employed to extend the usable life of the quantities of dried milk being shipped to war zones from the United States.

Dried milk is so light as to offer striking military advantages, but its use has always been limited by danger that the butterfat would turn rancid. For this reason, the Canadian Research Council asked Dr. W. D. McFarlane of MacDonald College, McGill University, to study natural food materials which gave promise of delaying rancidity in milk

powder. Dr. McFarlane now reports that "very striking results" were obtained by adding wheat germ oil formula to the milk equivalent to 0.1% of the butterfat content. The oil is extracted at low temperatures and combined with minute amounts of edible "hydroxy" acids producing a formula more effective than wheat germ oil alone, which has long been known to improve the keeping quality of less stable fats.

The wheat germ oil formula is simply homogenized into a small amount of skim milk, which in turn is poured into the liquid whole milk to be dried. So slight an amount is used that no change can be detected in the color or taste of the milk powder. The germ oil harmlessly oxidizes instead of the butterfat, delaying rancidity and helping to re-



YUCCA—This beautiful scene from our Southwest is part of the photographic exhibit now being shown at the Field Museum of Natural History. The Field Museum, incidentally, recently announced the change of its name to Chicago Museum. This print, one of 150 honored by being chosen for the exhibit, was made by Tom Peterson, of El Paso, Texas.

cannot substitute for fine quality in milk powder—that it is simply an added protection.

In connection with this improvement in milk powder, officials of the Food and Drug Administration have pointed out

that they know of no barrier to the addition of so slight an amount of pure food materials to milk powder, since no standard for dried whole milk has been set up under the 1938 law.

Science News Letter, October 9, 1943

ENGINEERING

Design Changes Needed

Warplanes should be planned so that they can be broken down into units that could be carried on standard vehicles. Better servicing would increase air power.

➤ WARPLANES now spend scarcely more than 3% of their time in the air, indicating a need for designs that will permit quicker, easier servicing, Clyde R. Paton and William C. Gould of General Motors' Allison Division told the Society of Automotive Engineers meeting in Los Angeles, during a discussion of servicing aircraft overseas.

Aircraft should be designed, the engineer stated, "so that they can be readily broken down into units, each complete in itself, and of such size as to be readily handled on standard transport vehicles." Grounded planes could thus take to the air again in a short time, as the defective part is removed and a new or overhauled unit dropped into place.

Such units must be packaged to withstand plenty of rough handling during overseas shipment. Trying to protect replacement parts with a "This side up" label means nothing under conditions of military operations.

After the parts have been installed, "tinkeritus" has been found to be a common cause of further trouble. This largely affects inexperienced ground crews who constantly work on engines even when they are in good condition, as well as give careless or faulty service when there is a real need for maintenance work.

From experience overseas, the engineers reported that "everything possible must be done in the design and engineering of aircraft to insure ease of service and maximum durability under the most primitive field conditions."

One of the greatest problems of flyers in advanced theaters of operation is the general lack of spares. Even when replacements have been sent they may never reach their destination, due to the exigencies of war, it was pointed out.

"Personnel can argue for travel pri-

ority," the engineers were told, "materiel cannot and frequently fails to move until followed up by special expeditors assigned to that problem. Separate flight schedules for personnel and materiel would, with rigid restrictions governing encroachment of one service upon the other, do much to correct this difficulty.

"Another difficulty is that during periods when materiel in transit is off loaded, it frequently is pilfered by local supply personnel who find themselves in immediate need of the materiel in their hands."

Shipments may also be diverted at times from their original destination to another point under the pressure of military necessity, the engineers reported. Improvements are now being made to help overcome these problems.

Because of the remoteness of the Southwest Pacific war theater, servicing must depend to a greater extent on salvage operations in lieu of new spares. To help solve this problem, it was proposed at the meeting that manufacturers "undertake a program directed toward developing salvage procedures which require only simple, readily portable hand tools which can be utilized under first echelon conditions."

Science News Letter, October 9, 1943

Movies An Engineering Tool

➤ MOVIES that would never be run at a theater are of dramatic interest to wartime engineers, for they measure and analyze motion and vibration in machinery.

H. D. Jackes of Wright Aeronautical Corporation suggested three problems of the aircraft industry which might be solved by further use of high-speed motion pictures:

1. Flutter of wing and control surfaces on planes.

2. Action of wheel struts and landing mechanisms upon impact with the ground.

3. Failures and vibration of exhaust collector rings. The camera could be located in the engine compartment during flight, for example, to reveal defects in the exhaust system.

Describing uses to which high-speed motion pictures are already being put for recording valve action, oil movements, and motion studies of parts, Mr. Jackes said that film records are particularly useful because they can be easily analyzed by anyone with general engineering experience. In many research problems the movies have been found superior to strain gages, seismic vibration indicators and stroboscopes for motion analysis.

The camera is the same type used to make a "photo finish" at the races. Its value has already been recognized by several industries for studies such as the action analysis of the escapement mechanism of precision clocks and of the shutters on military aerial cameras. Movies are also used in the study of various manufacturing processes, such as blowing spun glass or the action of a high-speed weaving machine.

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Gadget-Laden Trainer

➤ THE gadget-laden training plane developed in this country is now being used by 24 United Nations and more than 10,000 have been American-built since the first model of the series appeared a decade ago, Ralph Ruud of North American Aviation, Inc., announced to the Society of Automotive Engineers.

Its development has paralleled design improvements of combat types to give the best possible training facilities in almost all tactics, from ground strafing to aerial dogfighting to bombardment.

Equipment on the versatile ship includes bomb racks, blind flying instruments, fixed and flexible guns, gun and standard cameras and the other gadgets that military pilots must learn to operate.

Aside from some Air Corps specifications, the development of the trainer has been a "designer's paradise," Mr. Ruud pointed out. As a result a trainer has been produced which is purposely hard to fly yet safe, and resembles combat planes in performance and handling. It is easy to maintain and repair. It comes