MEDICINE

Oasis for Strep Germs

The Navy's disease fighters win their struggle in the northern Idaho panhandle despite sulfa-defying germs; mass chemoprophylaxis used.

By JANE STAFFORD

➤ IN THE northern Idaho panhandle there is a streptococcal oasis. Seeing it, you would never call the region an oasis. The olive and date trees traditional to oases for humans in the desert are lacking in this mountainous, forested section of Idaho. But it apparently has what it takes to make an oasis for that dangerous tribe of germs called streptococci. The Indians for generations avoided the region, though they lacked the knowledge to recognize it as an oasis for strep germs. White men did not know it was a streptococcal oasis, either, until the war turned the searchlight of modern medical science on it.

The Navy found out about this oasis when it built a big training station at Farragut. The station was opened in 1942 and within three months the health problem had become terrific.

Disease germs went on a rampage. They kept it up for two years. Mumps and all kinds of pneumonias occurred there more frequently than at other naval centers. The streptococcus family of disease germs gave the worst headache. These germs cause tonsillitis, bronchitis, sinusitis, ear trouble, scarlet fever, occasionally pneumonia and meningitis, and precipitate rheumatic fever and rheumatic heart disease.

Idaho's streptococcal oasis loosed a singularly tough and virulent form of streptococci. Some were the most dangerous we have had in this country since 1918. A man attacked by them would report sick one day with a sore throat. The second day he had streptococcal pneumonia. The third day he had empyema. Recruits came down with this virulent infection within two weeks after reaching the station.

Program Threatened

The oasis lived up to the Indian superstition about it with a vengeance, threatening to wreck the naval training program. The training station at Farragut would have been closed early in 1943 on the advice of naval medical authorities if there had been any place else to send the recruits needed for expansion of our Navy. But there was no alternative.

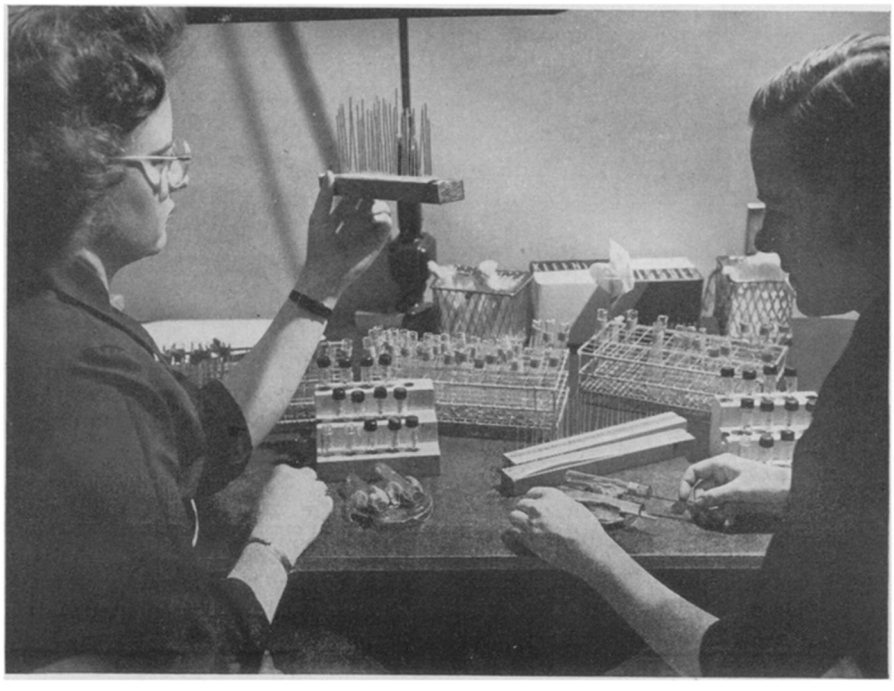
So instead of closing the training station in the oasis, it was expanded and recruit training continued until late fall of 1944. The Navy's disease fighters lived up to their slogan of keeping "as many men at as many guns as many days as possible" even if they could not achieve the medical ideal of keeping every man healthy.

They managed to squeak through to victory over the oasis. The naval training program was saved and we got enough bluejackets to swarm over the Pacific and push the Japs closer and closer to their ultimate defeat.

Sulfadiazine was the weapon that saved the day temporarily at Farragut, holding the fort against the streptococci even though the walls were breached and the streptococcal invasion came dangerously near to being overwhelming. These germs were a problem not only in Idaho's oasis but at other naval activities elsewhere in the country. The situation everywhere had grown so threatening that in September, 1943, the Surgeon General of the Navy, Vice Admiral Ross T. McIntire, called a conference of medical scientists to explore the entire problem thoroughly. This group decided on the heroic procedure of trying to halt the spread of streptococcal disease by giving small doses of sulfadiazine to every recruit during every day of his training. Mass chemoprophylaxis is the name for the procedure.

At first it was started in only a few naval stations and limited to certain groups of men. This was so the effects could be closely watched and the benefits, if any, carefully measured by comparison with what happened in similar groups not getting the drug.

After three months the results were found so good that the chemoprophylaxis was extended to other naval activities. By June, 1944, 600,000 men had been given continuous sulfadiazine prophylaxis. Only one-tenth as much streptococcal respiratory disease occurred among these men as among 350,000 not getting



TYPING GERMS—Streptococci are being typed at the National Naval Medical Center in this photograph by Fremont Davis, Science Service staff photographer

sulfadiazine prophylaxis, naval medical records showed. Rheumatic fever cases fell off. Meningitis was reduced practically to zero.

Even in Idaho's oasis, the suladiazine prophylaxis started in two camps in December, 1943, took hold. Within the first week sickness in these camps dropped precipitously. The program was extended so that after March 6, 1944, everyone at the station, including civilian employes, was getting daily doses of the sulfa drug.

During the spring months scarlet fever fell off at Farragut, though it was increasing throughout the nation. Strep sore throats, strep pneumonia, and rheumatic fever decreased at the same time.

In May, sulfadiazine programs were stopped at all naval activities. Scarlet fever and other streptococcal diseases usually fall almost to the vanishing point in the summer so it was thought safe to stop chemoprophylaxis. The oasis of Idaho, however, did not follow the rules. During the summer of 1944, as during the summer of 1943, the streptococci continued to be active. Sickness from these germs rose higher than at other naval centers.

Tried Sulfadiazine

The medical officers at Farragut tried sulfadiazine in companies with many streptococcal infections and even increased the dose of sulfadiazine. With three times the dosage that had been effective elsewhere, the streptococcal infections continued during August and September. In the late fall it was possible to stop the arrival of new recruits since facilities had become available in other localities.

Meanwhile the Navy's medical men had been looking into the matter of whether the oasis for streptococci had drug-resistant bacteria. Development of drug resistance in other diseases had been met by medical men before this experience. Sulfa drug treatment has had to be abandoned in certain individuals because of this drug resistance on the part of the disease germs. When this happens, doctors now can turn to penicillin but there may come a day when germs develop resistance to penicillin. The problem is one of far-reaching importance.

The Navy has already developed an important tool for investigating this problem. This is a special culture medium for streptococci to grow on in the laboratory. Heretofore scientists had no way of knowing whether or not a particular strain of streptococcus was sulfa-drug resistant except by what happened when the drug and the germs met in a patient's body. The reason was that the culture medium contained material that chemically blocked the action of the sulfa drugs. The Navy laboratories at Bethesda, Md., however, developed a medium containing none of these sulfa-drug-inhibiting substances.

With this medium it was found in the fall of 1944 that nearly all the streptococci at Farragut were sulfadiazine-resistant. The same types of streptococci from other naval centers, however, were not sulfadiazine-resistant. In general, sulfadiazine prophylaxis has proceeded this winter at other naval activities with promising results.

Why streptococci were sulfadiazine-

Do You Know?

Babbini is a new insecticide produced in Peru to use against cotton plant pests.

Switzerland *watch factories* are working full time, and exports in 1943 were 17% higher than those of the preceding year.

Large quantities of *soap* are used in the wire-making industry to decrease friction as the wire is drawn through dies to reduce it to the desired size.

Diesel engines in various parts of the world are operating satisfactorily on linseed, cottonseed, peanut, tung, palm and camphor oils.

Waterproof *matches,* developed for use in jungle areas and at sea, will light after being submerged in water for many hours.

Forty-watt fluorescent *lamp* recently developed does not require a starter and operates on a special type of instant-starting ballast.

The *stingless bee,* scientifically *Melipona beecheii,* was the one particularly favored in Mexico and Central America; it is sometimes called the "loyal" or "lady" bee.

Foxes and minks are the two principal animals raised on American fur farms, with rabbits rating next; martens, muskrats, raccoons, chinchillas and others are raised in limited numbers.

The total amount of *iodine* found in the average man weighs a little less than a drop of water; about one-half of this essential material is located in the thyroid gland and the rest distributed to every cell in the body.

From Page 187

resistant at Farragut is at present an unanswered question. It has been suggested that the germs developed the resistance as a result of the prophylaxis. The small daily doses, according to this theory, were not enough to knock out the germs but just enough to let them get used to the drug and learn to tolerate it. However, this did not occur at other naval activities where identical prophylactic programs were instituted and the same types of streptococci were present.

There is another striking difference between Farragut and other places: Streptococci at Farragut thrive 365 days of the year instead of following the usual strep life cycle of four months of increasing pathogenicity in the winter, a critical decline and then a long period of quiescence in the summer. Farragut is the only activity in the Navy where streptococcal diseases are prevalent throughout all seasons. It may be, therefore, that conditions in Idaho's panhandle favor bacterial mutation. That may explain not only the sulfadiazine resistance of the streptococci but the region's ancient reputation.

The experience at Farragut provides a warning against the wishful thinking that all you have to do to avoid sore throats, scarlet fever, rheumatic fever, and other streptococcal diseases is to take a sulfa pill every day. Chemoprophylaxis against the streptococci is a valuable adjunct and effective within certain limits but it does have its limitations. Other recognized measures for preventing the spread of streptococci, such as isolating patients even if they have only sore throats, are essential and oiling floors to control dust, ultraviolet irradiation of the air and use of triethylene glycol vapor to sterilize the air may also be called for.

Science News Letter, March 24, 1945

RADIO

New FM Converter

➤ A NEW FM (frequency modulation) converter, built by the Engineering Department of the Federal Communications Commission, will prevent the possibility of $50,000,000 worth of FM receivers now in use from becoming obsolete. The new converter will enable you to pick up FM broadcasts in the new part of the spectrum to which the FCC proposes to move FM broadcasting.

Patterned along the design of remote-control tuning devices and wireless record players which can be used with a standard broadcast receiver, the FCC converter can be operated from any convenient location in a room with the present receiver. If operated from an armchair, you can tune stations in and out without touching your main receiver, making it a lazyman's remote control.

It was developed by the FCC as a result of protests from FM broadcasters at recent hearings following the publication of FCC proposed frequency allocation.

These broadcasters declared that by moving FM up in the spectrum, the FCC was wiping out thousands of expensive receivers now in the hands of listeners. The FCC has replied by offering this converter, that is capable of converting an FM receiver geared to the present 42-50 megacycle band where FM is now located, so that it can receive the 84-102 megacycle band to which the FCC plans to move FM.

Any radio amateur or handyman can build one of these FM converters, which is about the size of a cigar box, at a total cost of $8.85 for parts that are now available in radio stores. Commercial ready-built converters will also be available for about $11. No special knowledge is needed to install one of these converters. The converter in no way affects the fidelity of tone and the quality of reproduction of sound in the FM receiver.

It is believed that FM broadcasters may take steps to make these converters available to their listening audience at cost in the event that FM is shifted.

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NUTRITION

Civilians Drinking More Milk Since the War

➤ CIVILIANS have been drinking more milk and eating more meat since the war. They are now drinking between 20% and 25% more milk than they drank in the prewar days, according to the War Food Administration. During the first three months of 1944, the average American was eating meat at the average annual rate of 158 pounds, as compared to 126 pounds each year in the late thirties.

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