

MEDICINE

Mass Epidemics

Almost all troops based in the Pacific in the early phases of the war suffered from one or more diseases, it is disclosed by recent report.

► ALMOST all troops based in the Pacific in the early phases of the war suffered from one or more epidemic diseases, Comdr. James J. Saper and Lieut. Comdr. Fred A. Butler of the Navy Medical Corps report, (*Journal, American Medical Association*, March 3).

"A series of outbreaks of tropical diseases in epidemic proportions of a magnitude and potential threat seldom if ever exceeded in American military history" is how they describe what happened as our forces began occupation of numerous islands to stem the Japanese 1942 advance.

From the lessons learned in this phase of the war, however, the epidemic diseases were soon brought under control.

"History," the two Naval medical officers believe, "will in time show that Allied success in disease control so greatly exceeded that of the Japanese that a major advantage in the war was thereby gained."

The most significant diseases which plagued the troops in New Caledonia, the New Hebrides, the Solomons, the Fiji Islands, and the Ellice, Samoan and Tonga Island groups were, in order of importance, malaria, dysenteries, dengue, Bancroft's filariasis, scrub typhus and infectious hepatitis. Bancroft's filariasis appeared in epidemic form in troops for the first time in history.

Military expediency and in some cases ignorance of methods of controlling these diseases were chiefly responsible for the early epidemics, it appears.

The initial occupation had to be made with such speed that there was no time for carefully considered plans of disease control. Also, the entire effort of the newly occupying force had to be turned toward even more urgent matters such as getting food and ammunition and digging in to fight the enemy.

Even though the newly occupied islands were known to be centers of "an impressive array of threatening diseases," many of them presented problems of control with which most medical officers were totally unfamiliar. In some cases the mechanics of how the diseases spread was not known to medical science.

One "small heroic group," for example,

went into a region they did not even know was malarious. They had no entomologist with them to point out the breeding habits of the particular mosquitoes that spread malaria in that region. They put on a gigantic program of quartering, raking and burning coconut half shells and swamp draining, only to learn later that the particular malaria mosquitoes of the region did not breed in the swamp, seldom if ever bred in coconut half shells and actually were breeding in a small, harmless-looking stream.

The filariasis epidemic was totally unexpected. During the 40 years in which a naval station had existed at American Samoa, not a single case of this disease, with the dreaded end result, elephantiasis, had been reported in naval personnel. Subsequent discovery that the chief mosquito carrier of this disease would be found only within short distances of native villages which were the source of the infection showed the way to control this threat. In the early days of the war, however, troops were sent to some of the islands in such numbers that it was impossible to quarter them at safe distances from the natives and there was not always time for adequate mosquito control measures.

Unlike malaria and dengue, little progress has been made in preventing or controlling dysentery which plagued troops initially on every landing, the Naval officers report. Flies seemed to be the chief trouble-makers but usually before anti-fly measures could be taken, the epidemic had done its damage.

Amebic dysentery did not appear in epidemic form but how many low-grade chronic infections will appear in the future is "a matter for speculation."

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DENTISTRY

Immunity to Tooth Decay May Come From Ammonia

► IMMUNITY to tooth decay, or caries, comes from tiny amounts of ammonia continuously present in the mouth, it is suggested by findings reported by Dr. Robert G. Kesel, Joseph F. O'Donnell



HYDRAULIC HOIST—This is the method used in a helicopter air-sea rescue system. It consists of a pump and motor each about the size of a man's hand—which was found capable of lifting and controlling a 400-pound load at two and one-half feet a second. Official U. S. Coast Guard photograph.

and Ernst R. Kirich, of the University of Illinois Colleges of Dentistry and Pharmacy in Chicago, (*Science*, Mar. 2).

The ammonia is present specifically in the patch of material on the tooth surface which acts as lodging for bacteria, known as the bacterial plaque. The ammonia comes from a small group of amino acids, protein building blocks, which are in the mouth as a result of the type of diet and body metabolism, the scientists report.

The lucky persons who are immune to caries have in their salivas enzymes capable of producing ammonia from certain amino acids, according to the findings of the Illinois group. Many enzyme systems were also found in salivas from persons with actively decaying teeth, but in most instances these salivas did not have an enzyme system capable of converting glutamic acid to ammonia.

The presence of ammonia in saliva was reported some years ago by another group of scientists, Drs. C. T. Grove and C. J. Grove. Its significance, however, was not appreciated. Search for the reasons why persons without tooth decay have no acid-forming bacteria in their mouths and why their salivas do not rapidly convert sugar into acid led the Illinois group to discovery of the role of ammonia.

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