

PHYSICS

Advantages of Radar

Excels older sound detectors in speed, accuracy and distance. Short electromagnetic waves, reflected like a sound echo, return from object with speed of light.

► THE ADVANTAGE of radar over the old sound detectors is a matter of speed, accuracy and distance. The short electromagnetic waves from the transmitter used in radar travel at a rate of 186,000 miles a second, the speed of light. Sound travels at the rate of only about 1,120 feet per second at ordinary temperatures.

Radio waves are reflected from an object in much the same way as sound waves in an echo. The shorter the radio wave the clearer the reflection. Radar beams may be directed at a definite object. They do not scatter as do the waves from the radio in the ordinary broadcast.

The history of the development of the radar stretches back at least two decades. Apparatus developed and constructed by the Westinghouse Electric and Manufacturing Company, installed for the armed forces at Pearl Harbor, detected

the approaching Japanese planes some 30 minutes before they attacked on Dec. 7, 1941. Westinghouse is reported to be producing more than 40 times as much radar equipment and other communication apparatus for military use as in 1940.

"The ordinary commercial broadcast is made at frequencies of from 550 to 1,600 kilocycles per second, which corresponds to wave lengths of 187 to 550 meters," stated C. J. Burnside, manager of the Westinghouse Radio Division. A kilocycle represents 1,000 cycles or wavecrests a second. The frequency of the ordinary broadcast is from 550,000 to 1,600,000 cycles or crests per second. "As waves get shorter and shorter," he added, "they tend to merge into heat radiation, and shorter than that into light. It is this tendency that makes possible the transmission in beams of ultra short waves."

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occurred within a few weeks of their arrival at one station. Between Oct. 1 and Dec. 26, 1941, an estimated 1,894 man-days' time was lost among 300 men. Use of this station was discontinued.

Screening of quarters and the use of bed nets are among the measures credited with protecting the airline personnel against malaria. Bed nets alone are not sufficient, the report emphasizes, because: 1. The malaria mosquito may bite through the net; 2. the nets do not protect during the most dangerous periods between dusk and bedtime and between early arising and daylight in the morning.

Spraying of European and native quarters with insecticides and draining and oiling and dusting mosquito breeding areas with Paris green were other measures used to fight malaria.

Daily prophylactic doses of quinine, and later of atabrine, were given the men. Atabrine appeared to be as effective as quinine and no toxic effects were noted.

Atabrine was not found to limit the aviators' ceiling when given as prophylaxis against malaria. If men are sick and getting larger doses for treatment, they should not be permitted to fly.

Long trousers, long-sleeved shirts and mosquito boots were required evening attire, to be donned after a shower at dusk. This costume was found to protect the men when away from camp or outside the screened quarters.

Personnel of the airline's medical department includes: Dr. L. T. Coggeshall, Senior Medical Officer; Dr. A. Yeomans; Dr. J. F. Rogier; Dr. O. Pearson; Dr. George Jones; Dr. Robert Tucker; Dr. Gordon Jones; Dr. L. Eliel; Dr. W. Jagard, (dentist); and F. Snyder, entomologist, all stationed in Africa, and Dr. F. Shillito, and Dr. Seymour Fiske, stationed in New York.

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The 1942 total production of recoverable *copper* in the United States was over a million tons, an increase of 12% above 1941.

Recent archaeological studies of the *Canari Indians* of southern Ecuador made by the Field Museum uncovered burials, remnants of houses, and large refuse deposits left by the prehistoric inhabitants.

A new thermosetting *lignin* plastic, made from farm wastes such as cornstalks, wheat straw and flax shives, is announced by the U. S. Department of Agriculture.

PUBLIC HEALTH

Health Record in Africa

Only 37 of 1,300 personnel of new airline to Africa, Middle East and India have been sent back to the United States for medical reasons.

► ONLY 37 of the 1,300 airline personnel sent to Africa during the first 14 months of Pan American Airways-Africa, Ltd., operations had to be sent back home for medical reasons. None of the 37 were seriously incapacitated.

This health record of the new airline was achieved in operations across a part of the world so unhealthy it is known as the "white man's grave." How it was accomplished is told by the airline's medical department in *War Medicine* (May), published under the auspices of the American Medical Association and the National Research Council.

The record is the more remarkable because the airline went into operation so fast there was no time to make preliminary surveys. Within 60 days after a decision had been reached in the United States, the line was transporting military

personnel and equipment across Africa for the United Nations, operating under U. S. Army contract. Later the line was extended through the Middle East to India, and there were also many unscheduled flights.

Reasons for the medical discharges of the 37 men who had to be sent back home are given as: peptic ulcer, 8; malaria (recurrent attacks) 5; strained back, 4; alcoholism, 2; psychoneurosis, 2; chronic otitis media, 2; pulmonary disease, 2; dermatitis, 2; and miscellaneous conditions, 10.

Of all the tropical diseases that abound in the regions covered by the airline, only malaria and dysentery gave any real concern. Because the line was so hurriedly assembled and the men had to be sent into highly malarious areas without proper protective measures, a major epidemic