

MILITARY SCIENCE

# Jungle Warfare

The soldiers who defeat the Nazis will start fighting a different kind of war in the Pacific. Terrain and weather most important factors.

## See Front Cover

► WHEN the war against Germany has ended, certain of General Eisenhower's men, and those who are in Italy and elsewhere, will be transferred to the Pacific theater by plane and ship to fight a different kind of war, a jungle war.

The men who have already fought in the jungles of the Philippines, Guadalcanal, Bougainville, and New Britain have learned almost everything there is to know about fighting in the tropical wilderness. These men know what it is to fight through a dark, damp, malaria-ridden swamp-forest, their feet swollen, their shoes sprouting mildew, their bug-bitten bodies caked with mud. Their experiences and problems have been radioed back to scientific laboratories in the United States, where researchers have already developed medical supplies and military materiel suited for jungle warfare. Men have been specially trained for jungle combat, and it is these men who will make the going easier for the soldiers transferred from the European theater.

Terrain and weather are the determining factors in jungle warfare. Together they limit the movement of foot troops and make the movement of tracked and wheel vehicles impossible except on roads and trails or crushed coral tracks.

The coastal shores of a typical Southwest Pacific island are often fringed with dense mangrove. Twisting mangrove roots and coral outcroppings make it difficult for units to land and continue to fight as organizations. Inland are the coconut groves and stretches of jungle that fringe the shoreline and before the foothills are reached come the meadows of kunai grass. Kunai grass is strong, coarse, and thick, standing as high as nine feet. Fighting in kunai grass is dangerous. Movements of the grass betray one's presence to enemy observers perched in trees at the edge of the jungle or flying overhead. Passage through these fields is usually accomplished at night.

Still farther inland are the razor-backed coral or volcanic ridges, rising

toward the mountains. These ridges are precarious to negotiate, and they offer neither cover nor concealment.

The remainder of the island will usually be covered with very heavy jungle, in which there will be found vegetation of all types and trees of all sizes. The tangle of bush, much of which must be cut through, is particularly heavy in the valleys, but it tends to thin out as the elevation increases.

This is uncut, virgin jungle, the so-called rain forest. Trees stand as high as 100 feet, and a canopy of leaves prevents the sun from ever reaching the earth. More often than not the jungle is swampy, and always muddy. The swamps are usually about 500 yards wide, knee deep, and the muck is heavy.

Soldiers moving in from the beach, like those shown on the cover of this SCIENCE NEWS LETTER, fight in hot, blazing sun, and eventually reach the jungle where it is likely that they will fight in

a torrential rainstorm. In jungle fighting it is always a problem of how long it will take to get from one point to another, not how many miles lie between the two points. A small force can expect an average progress of about a quarter of a mile an hour.

Jungle fighting is made up of many small combats in which groups, squads, parts of squads, automatic weapons, and teams strive to eject the enemy from his positions. Artillery and mortars are essential to the reduction of enemy bunkers and pillboxes. Tanks are rarely used, unless there is time for engineers to build roads over which they can be moved. Where used, tanks must be supported by foot troops. Guns like the 37-millimeter weapon cannot often be used, since these guns are not sufficiently mobile. It should be obvious that the most effective weapons for use in jungle warfare are those that can be carried on a man's back.

The most effective weapons are rifles, machine guns, light mortars, and hand grenades. There are bazookas and the newer rocket weapons. Rockets are powerful weapons, and are not heavy. Flamethrowers are effective against enemy machine-gun positions and pillboxes.

One of the most valuable weapons in jungle warfare against enemy personnel



**MARINES ON GUAM**—Proceeding cautiously through the jungles of Guam, these Marines are on the outlook for Jap snipers who may be perched in trees. Mud and heavy undergrowth must be conquered as well as the enemy.

in covered positions is the 81-millimeter mortar, a standard infantry weapon. It fires a seven-pound shell to ranges of more than 3,000 yards, and a heavier 11-pound shell to a range of 18,000 yards. It is a light weapon, about 150 pounds, and divides into a three-man load.

Newest Army Ordnance weapon for use against the Japs is the jungle mortar, a 60-millimeter mortar that can be carried by one man, together with a limited supply of ammunition. It is fired by a trigger and lanyard arrangement. The new mortar is based on a tree, log, or other stable object and provides rapid fire against pillboxes, machine-gun emplacements, and other enemy strong-points.

Bulldozers and tankdozers, which are medium tanks with bulldozer blades, are

also being used to spearhead infantry thrusts through the jungle. The water weasel, a motorized light cargo carrier, which can haul troops and supplies over land and water and through jungle muck that would bog down any other vehicle of similar weight, is also being used for jungle warfare.

Physical and mental conditioning are essential before a man is fit for jungle fighting. Men must be trained to be alert, to think, to act. The Japs have demonstrated in combat that they are at a serious disadvantage when confronted by an opponent who thinks and acts quickly.

Soldiers who are transferred from the European theater to the Oriental theater will be prepared for the jobs they have to do before being sent into combat.

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time people must be doubly careful to prevent fires they build from spreading, and making sure that the last spark is out before the fire is abandoned. Forest fires will aid the enemy, since the wood is needed for creating weapons of war.

In addition, residents of the area are cautioned to conserve water. Lack of rain in California this year has caused the mountain streams to run low or dry up, and the water supplies in the cities served by these mountain streams are short.

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### MEDICINE

## Cancer of Windpipe

A patient with this rare malady, treated by surgery and radium, is still alive and well two years after the illness.

► THE CASE of a patient who has recovered from the rare condition of cancer developing on the windpipe, or trachea, is reported by Dr. Philip H. Pierson, of Stanford University School of Medicine, (*Journal, American Medical Association*, Sept. 23).

The patient was a 61-year-old man who was a lecturer. Bouts of hard coughing with some spitting of blood, extreme fatigue and weight loss were the chief symptoms for almost three years. Then he began to wheeze and his voice was reduced to a whisper, which interfered with his lecturing. He also suffered periods of intense suffocation. At this time he consulted a physician.

Dr. Pierson removed as much of the cancer as possible by an operation through a bronchoscope, a self-illuminated tube which is passed down the patient's throat. The doctor can see through this tube whether there are any foreign substances, such as accidentally swallowed safety pins, or conditions like cancer, and can remove them.

The radium was inserted in the windpipe through the bronchoscope, using a special radium holder devised by Dr. Robert E. Newell of the medical school's department of roentgenology. At the first attempt to insert this, the applicator was broken. The second time, the patient coughed it out after three and one-half

hours. Then another applicator was broken. Finally, everything went well and the radium was kept in the windpipe for five hours, as planned.

The patient is now alive and well two years after treatment, walks considerable distances and lectures without any cough or shortness of breath, and has regained the lost weight.

Of special interest to scientists is the fact that the patient was given a drink of radioactive iodine to determine whether or not the cancer had arisen from thyroid gland tissue that might have been misplaced during embryonic development. Normal thyroid tissue collects radioactive iodine, just as it does ordinary iodine for manufacture of the hormone, thyroxin. No radioactivity, however, could be found in the pieces of cancer removed by bronchoscope, which ruled out the presence of normal thyroid gland.

*Science News Letter, September 30, 1944*

### FORESTRY

## California Forests Are As Dry As Tinder

► WARNING of the impending danger of forest fires has been issued to residents of the California region by the Forest Service of the U. S. Department of Agriculture.

The warning points out that in war-