

MILITARY SCIENCE

# Cloaks of Invisibility

**Soldiers in this mechanized war are often making use of natural materials, such as hay for pseudo-haystacks, to conceal their hideout devices.**

By DR. FRANK THONE

► CAMOUFLAGE using natural materials, collected on the spot, is very definitely no new thing under the sun. According to the record, Adam and Eve tried it—though not successfully. They wove leaves into partial coverings for themselves, and then hid among the trees.

The Lord might have shelled them out with thunderbolts and brimstone, but he chose a war of nerves instead. Adam's bad conscience brought him out into the open, to admit his fault and take his medicine.

Descendants of this early pair of unsuccessful camoufleurs have been using variants of their technique ever since, but the basic principles have remained unchanged, and the closer they are adhered to, the better the concealment.

In this most modern and mechanized of all wars we find the most ancient and primitive of materials used alongside the newest inventions of science in giving fighting men the gift of invisibility which is more valuable than the thickest armor. Grasses and leaves, vines and tree branches are now utilized by applying them to a dozen mechanically ingenious devices, so that what seems to be a dense bush at one instant is at the next completely gone, giving the suddenly unmasked gun within or behind it an unobstructed field of fire.

At the great Army Engineer Corps training center near Washington—Ft. Belvoir, Va.—some of the most inventive-minded of the younger officers are constantly working on the construction and improvement of these field-built concealment gadgets. Their devices are reminiscent of the wilderness mechanics

of the pioneer trappers, modified by a modern-small-boy penchant for the use of plenty of wire, string and nails.

Many of their works are of necessity not open for public inspection at present. What Hitler and Tojo don't know won't hurt them—until it jumps out and bites them. Other things, however, may legitimately be shown and described. Indeed, in one part of the huge military reservation there is what is known as a Demonstration Area, which is a kind of outdoor museum of typical camouflage techniques, useful in the instruction of officers who will presently go forth and do in like manner. It can also be shown to visiting officials, newspapermen and such few other callers as are permitted at a military post nowadays.

## Strange Object

One of the first things you see in this military House of Delusions is a strange-looking object, about the size and shape of a small stack of hay. It is so obviously fake, however, that you wonder how it could deceive anybody. This, the young officer in charge explains, is just the foundation of a camouflage haystack; the hay is to be attached later, to match whatever kind is being mowed in the neighboring field. There is no point in dressing it up in alfalfa if the farmer is going to stack peanut stalks or soybean hay.

As you approach a little closer, suddenly the strange object cracks down the middle and collapses to both sides. In a split second you see that a soldier was inside, with room enough for a tommy gun or a mortar or an anti-aircraft machine gun. The collapse of the bogus haystack gives him unobstructed scope for his weapons in all directions.

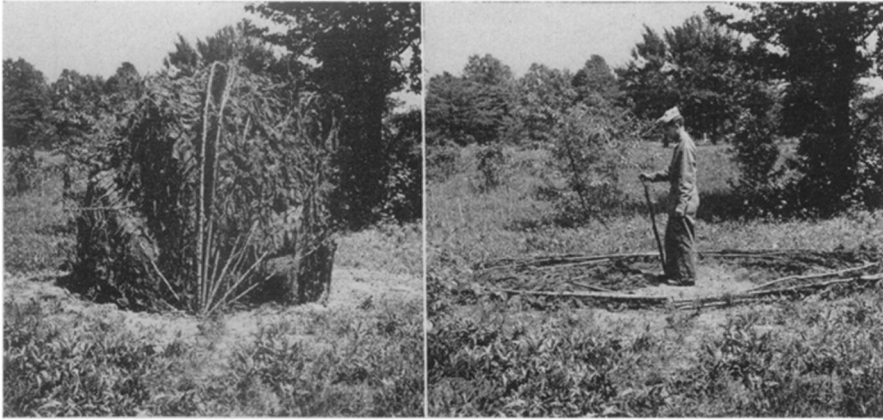
## Framework of Poles

The framework of the device, you see on closer examination, is a series of flexible poles cut from green wood and bent into bows like those of an old-fashioned buggy-top. Two such buggy-tops set edge to edge make a completely closed booth, when covered with netting and garnished with hay to match the local crop. A simple wire catch, that can be loosened with one quick jerk, is all that holds it up.

Even simpler is the next device, that covers a machine-gun pit. This one is perfectly flat, the netting stretched on a rus-



**STROLLING NOWHERE**—This convincing country road can be laid down anywhere to fool the enemy with two strips of light-colored cloth for ruts. This photograph, as well as the others on camouflage, was taken by Fremont Davis, Science Service staff photographer, at the Demonstration Area of Ft. Belvoir, Va.



**BLIND**—From a distance or from the air, the gadget on the left would look like an innocent haystack, especially after it was covered with hay or straw from nearby fields. The right picture shows how it can be collapsed.

tically built but well-braced pole frame. At one corner it pivots on a stout post sunk solidly into the ground. A push from one of the concealed gunners swings it sidewise, uncovering the position and leaving the gun free to fire.

A variant of this has two sliding halves, that can be shoved to right and left, permitting the concealed weapon to go into action.

#### Can Be Quickly Installed

Most of these gun-position covers are built as if for anti-aircraft weapons. They can be quickly installed around advanced landing fields, ammunition dumps, truck parks and other tempting targets for hostile airplanes. However, they are also well adapted for concealing installations of ground machine guns, anti-tank cannon, and anything else that needs the protection of invisibility with minimum expenditure of engineers' labor and (most especially) of expensively hauled-in materials.

"Flat-top" seems to be the engineers' favorite type of concealing cover. Get up poles around the edges of your gun pit, supply dump or what have you, stretch netting over the top, attach materials to make it match surrounding fields as nearly as possible, then slope the sides to do away with sharp-edged, betraying shadows. You have virtually lifted the ground surface and made of it a shield against the flying enemy's eye.

In using native and natural materials, the camoufleur would rather operate in fall and winter than in summer or late spring. Foliage cut when it is green begins to wilt in a few minutes if the day is hot, and in a few hours at most it is worse than useless. Autumn-colored

leaves, on the other hand, keep their hues indefinitely; a simulated heap of dead leaves or tangle of yellowing vines will probably be good for as long as you want to hold the position.

So difficult has the use of natural green foliage proved itself that the camoufleurs have simply given it up, at least for the time being, and are using a fairly durable green water paint that can be sprayed rapidly on withering leaves, to keep them in some semblance of their fresh appearance. This paint sticks for several weeks, even against moderate rains.

There is one exception to the trouble with wilting and withering in green leaves—evergreen tree foliage. As the

name implies, these needle-leaves stay good for a considerable time, even in the hottest, driest weather. When they finally die they turn a rusty red; and since there are plenty of sick evergreens in any natural woodland that have the same unhealthy color in their foliage even this is not a betrayal of position.

How effective the dull-colored foliage of rough-leaved ground plants and shrubs and gray, dried grasses and sedges can be is well illustrated by a story that has drifted back from Kiska. Soldiers bidden to camouflage their position were reproved by their colonel the first time he spotted it on his rounds of inspection. The second time he saw it, despite efforts at improvement, the boys got a stiff bawling-out. They made up their minds there would be no third time, and really started "cooking with grass." On his next inspection tour, the colonel stepped on their roof and very literally crashed the party, before he discovered the whereabouts of the position.

#### Garnished Netting

The netting which the camoufleurs stretch on their frameworks of tree boughs or saplings and wire is still to a very large extent the same galvanized chicken-wire that was popular during World War I. However, to save metal and conserve shipping space, netting of cotton cord is being given a workout. Most satisfactory results so far have been obtained with the (*Turn to next page*)

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## Do You Know?

*Paper* napkins and handkerchiefs are now unobtainable in England.

*Insects* cause an annual loss of about 10% of all food and fiber crops.

*Victory Gardeners* should order seed early, the Department of Agriculture advises.

One successful Army *tank engine* is composed of five automobile motors linked to a central crankshaft.

In three years of war, more than 5,000 merchant *ships* and 4,000 naval ships have been repaired and put back in service by Canadian shipyards.

Nearly one-quarter of *China*, land which once grew crops and great forests, is now a desert of bare hills without enough soil to support the growth of the toughest weeds.

In 1940 and 1941 approximately 15,000,000 *rubber* trees were planted in Latin America; the Army furnished bombers to carry rubber tree seeds from Liberia and Brazil to various distribution points.

*Tin* is used in every war machine on land or sea or in the air; a battleship has 76 tons of it; bomb sights, gas masks and radio equipment contain tin; it is used almost exclusively in combination with other metals.

The cost of *rearing a child* from birth to 18 years of age is approximately \$7,500 in American families with an average income of \$2,500 a year; deducting cost of being born, the expenditure is about \$400 a year.

*Rock bursts* in mines, which cause injuries and death to many miners, may be predicted by a new electrical instrument sunk 30 feet in the rock; noises inaudible to the human ear that precede breaking are recorded.

Known reserves of domestic *bauxite* of all grades have been increased by several million tons, and those of alumina-bearing clays by more than 100,000,000 tons, through the intensive exploratory program of the United States government.

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kind of machine-made netting used by shrimp fishermen. It is cheap, light, very tough and durable, and can be taken down and used repeatedly.

The materials fastened to the net, whether native foliage or "issue stuff," are all collectively known as "garnish" by workers in the camouflage business. During World War I days, camouflage nets were usually garnished with strips of dyed burlap woven into them or with bunches of raffia tied onto the wires. Both these materials are scarce in the present war, so that other things are being tried out, for use when native materials are unobtainable or for some reason inadvisable.

Substituting for burlap is the coarse cotton fabric known as Osnaburg. This stuff got its name from the Swiss monastery where it was first woven. Little did the peaceful monks imagine where their rough, unluxurious but strong and durable cloth would wind up! Osnaburg does make very good garnish, it is reported.

Of course, camouflage is not utterly impenetrable. Little mistakes may be made, edged shadows permitted to fall, fresh cuts left visible on tree stumps—any one of a thousand clues that an alert enemy might read. So the camoufleurs, when they have time, build extra camouflage installations, which they expect the enemy to see and perhaps to attack. The more bombs and bullets he spends on these ghost positions, the fewer he'll have for the real ones.

*Science News Letter, February 5, 1944*

## PSYCHOLOGY

# Psychologists To Unite

► IN TUNE with modern trends of rationing and restrictions, a movement is now on foot to combine the nine leading national psychological associations and groups of psychologists into just one large national association.

Details of the merger are being worked out by a committee appointed by representatives of all the present organizations.

Final action ratifying the new constitution is expected on the part of the two largest organizations, the American Psychological Association and the American Association for Applied Psychology, in September. Difficulties may arise due to the fact that the annual business meet-



**SPIDER HOLE**—If you were a soldier in the peaceful field shown in the top picture and saw no sign of the enemy, you might be very close indeed to death. Look at the bottom picture to see where a sniper might be hidden.

ings of these organizations were canceled last year due to war-caused transportation difficulties. It is not now known whether a meeting will be held for this purpose, whether action will be taken by the administrative councils of the organizations, or whether members will be asked to vote by mail.

The new organization, which will also be called the American Psychological Association, will have, it is planned, a number of divisions, each with its own chairman, secretary and other officers. The divisions will sponsor programs, the annual meetings and may also publish journals. Any member may belong to one or more divisions.