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NOT TO BE TAKEN INTO FRONT-LINE TRENCHES

NOTES ON CAMOUFLAGE

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THE ADJUTANT GENERAL'S OFFICE,
Washington, June 19, 1917.

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BY ORDER OF THE SECRETARY OF WAR:

H. P. McCAIN,
The Adjutant General.

WAR DEPARTMENT,
Washington, September 12, 1917.

The following pamphlet, "Notes on Camouflage," is published for the information of all concerned.

[062.1 A. G. O.]

BY ORDER OF THE SECRETARY OF WAR:

H. L. SCOTT,
Major General, Chief of Staff.

OFFICIAL:

H. P. McCAIN,
The Adjutant General.

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NOTES ON CAMOUFLAGE.

I. CONCEALMENT.

CONCEALMENT FROM AEROPLANE VIEW.—Emplacements, etc., are given away by—

1. Shadows.
2. Earthwork, traces of work, movement.
3. Tracks, blastmarks, flashes.

1. MEANS OF CONCEALMENT.

(*a*) Painted canvas.
(*b*) Raffia on wire netting.
(*c*) Strips of canvas on wire netting. (Vide p. 8, par. 7.)
Supplied by S. W. P.

(*a*) CANVAS.

Should always be sloped (at least 30°) over raised objects in order to eliminate shadow.

Must cover every particle of earthwork marks, materials used whilst working, etc.

Should be **supported throughout**; if not flapping caused by wind will shake all color out and rip canvas.

Straight lines **must** be broken up.

(*b*) RAFFIA NETTING.

Surface about half covered with raffia (Gardener's bast, dyed).

In most cases advisable to supplement with local grass, especially over chalk, new sandbags, etc.

Can be imitated locally with bunches of hay tied firmly on netting and painted lightly.

(*c*) CANVAS STRIPS.

Colored strips about 10 inches long, ¾ inch wide, knotted on wire netting, are an excellent substitute for raffia. Torn painted canvas can be used.

2. GENERAL.

Generally speaking, all three above-mentioned materials are equally satisfactory, but (*b*) and (*c*) are lighter and do not offer much resistance to wind, blast, etc.

Absolutely necessary to study surroundings and apply suitable camouflage, especially as regards canvas supplied in bulk by S. W. P. E. g., do not use a " grass and earth " canvas on a chalk heap—sounds unlikely but actually happens.

Most essential—not to start work until arrangements for concealing and **keeping** concealed are **completed.**

Application of concealment **after** work is finished only draws attention to fact that there is something worth concealing.

3. COLOR.

It is not sufficient to paint a canvas merely grass green—such a canvas will show up light in a photograph and look like a plane surface. There must be shading to give idea of depth and form; without this, color is absolutely useless.

If painting canvases locally, in oil paints, be sure to use flat colors (flattened by adding excess of turps) to prevent shiny surface, and never store folded up, as there is danger of spontaneous combustion.

Canvas will not stand close direct view—raffia will

4. ROAD SCREENS.

Under conditions of light and angle of vision most favorable to enemy about 4,000 yards off, wire netting requires about two-thirds of the surface covered to conceal movement.

Material (such as branches, bunches of hay, canvas strips, raffia *supplemented* with local vegetation) that will stir in a breeze is better than threaded strips.

5. PAINTING SOLID OBJECTS.

Not much use painting solid objects to harmonize with surroundings unless a very long stay in the neighborhood is expected.

Better, therefore, aim at **destroying identity** by use of large, bold patches of green, cream, brown, with black definitions between each color about ½-inch broad.

Green and brown both occur frequently in nature; cream color is useful to separate them. Objects should be split up into numbers of dissociated pieces.

Paint dark on top; light underneath. Never stop pattern on an edge, but continue over it.

II. O. P.'S.

1. PARAPET.

The exact position having been chosen, S. W. P. requires to know following details:

(*a*) SANDBAG PARAPET.

Regular or irregular. Color and condition.	In this case dummy front is three sandbags high.
Distance from enemy.	Observer up to his neck in ground.

(*b*) SANDBAG BREASTWORK.

Regular or irregular. Color and condition. Distance from enemy.	Dummy front, four sandbags high, observer lying; otherwise, as dummy must be in front line of breastworks, the chest and body would require special protection.

(*c*) EARTH PARAPET.

Color and condition; i. e., grassy or mixed up with sandbags. Distance from enemy.	Observer up to his neck in ground.

N. B.—Because a parapet happens to be revetted with sandbags, it does not necessarily follow that the front is sandbags. Often it is earth and rubbish accumulated from trench cleanings. It is essential to get a view from the front. This is to insure suitable camouflage cover.

2. GAUZE.

Observation loophole is concealed by painted gauze.

Over 200 yards this may impede perfect view with glasses, but it is absolutely necessary to hide loopholes at short range, otherwise O. P. is bound to be discovered; where, as has happened, in one or two cases, observers deliberately removed gauze, the O. P. was shelled immediately.

Above 200 yards slits can be made in gauze without danger if done carefully, i. e., by cutting them where there would be a natural shadow, and not too big.

Nothing is so conspicuous as a black hole.

Good observation and invisibility are better than perfect observation and insecurity.

3. PERISCOPES.

Periscopes have limitations. Heights supplied: 7 feet 6 inches and 10 feet 6 inches.

(i) Magnification about 1½, i. e., practically equal to human eye after allowing for optical losses, field about 14°. Greater magnification means smaller field.

(ii) Expensive and delicate instruments easily damaged if tampered with. Unfortunately this is only too common.

They ought never to be touched except to lower and clean object and eye glasses with something clean and soft, for lenses are easily scratched. The lowering and cleaning can be done without dismantling.

(iii) Very difficult to procure; every periscope tampered with means one O. P. less, as they will not be replaced.

They are only installed where no means of direct vision is possible.

4. TREES.

In selecting sites for "tree O. P." to hold observer, following points are important:

(1) Possibility of making approach invisible from air or direct view.

(2) Possibility of draining foundation.

(3) Certainty of seeing what it is wanted to observe at a height of about 16 or 18 feet.

The observer is rarely put higher, though dummy tree itself may be much higher.

(4) Absence of anything near spot (T. M., for example) that is normally subject to shelling. Actual damage to tree may reveal the idea.

5. GENERAL.

S. W. P. carry out the erection of all these O. P.'s—the preparatory work being completed by local troops before night of erection, in accordance with plans sent up beforehand by S. W. P.

III. SUGGESTIONS.

A few examples are given here to suggest possibilities and to promote new ideas.

Concealment of—

(i) T. M. Emplacement.

Painted shell hole.

Remains of R. E. dump.

(ii) Tracks.

(*a*) Grass or canvas pergola.

(*b*) Confusion of tracks not stopping at real emplacement, but continuing to dummy one.

(*c*) Continuing track (canvas) right over emplacement.

(iii) Blast mark.

Removable canvas or raffia.

(iv) Sniper's post.

(*a*) In making sandbag parapets, have many of the "choke ends" outward. These "chokes" distract eye and make it easy to conceal holes in parapet.

(*b*) Select parapet well covered with old tins.

(v) Any hole.

Painted gauze.

(vi) Gun emplacement.

R. E. dump.

(vii) Road.

Screen.

If there is a wall on your side of road, erect dummy wall on enemy side and remove real wall, if necessary.

IV. CAMOUFLAGE DEMANDS.

All demands should go through corps and army to S. W. P. and **not** to any detachment of it.

Specify how object or material is to be sent, i. e., by M. F. O. or by **your** lorries.

1. **O. P.** (other than parapet), ask for officer of S. W. P. to make reconnaissance.

2. **Parapet O. P.'s or sniper's posts.**—S. W. P. require to know details already enumerated in Section II. 1.

3. **Covers for emplacements, etc.**—S. W. P. make up canvas to required size from rolls 6 feet wide.

Do not ask for so many yards of "canvas painted green" or "mats."

Following details are necessary:

(i) **Dimensions.**—The smaller being some multiple of 6 feet.

(ii) **Type of ground.**—Before work is begun.

(iii) **Type of gun**—or other purpose, e. g., T. M.—trench—dump—shell store, etc.

(iv) Whether liable to close direct view or only view from aeroplane or balloon.

The **normal size of canvas** recommended for various **permanent** emplacements is as follows:

18-pounder, 6-inch howitzer, 36 by 36 feet.
8-inch, 9.2-inch howitzer, 48 by 48 feet.
60-pounder, 48 by 50 feet.
} Subject to variation in special circumstances.

4. **Raffia.**—Is normally supplied in rolls 10 yards long by 6 feet wide.

5. **Screens for special purposes**, such as flash—road—ask for S. W. P. officer.

6. **"Brickwork," "tiles,"** can be furnished from stock giving description, dimensions, and purpose.

7. **Painted canvas strips** for knotting on to wire netting can be furnished from stock—specialy suitable for road screening.

8. **Snipers' suits.**—Accurate description of locality in which they are to be used is necessary.

9. **Portable O. P.'s** for sentries—armored or unarmored—can be made representing common objects of front line, such as a turf, a petrol tin, discarded equipment, a sandbag, etc.

When asking for camouflage YOU CAN NOT SEND TOO MANY DETAILS.

V. TRANSPORT.

Canvas:

One 3-ton lorry takes 4,000 square yards.
One 30-hundredweight lorry takes 2,000 square yards.
One box car takes 1,000 square yards.

Raffia:

One 3-ton or 30-hundredweight lorry takes 50 rolls.
One box car takes 10 rolls.

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