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# Camouflage and Art

by HOMER SAINT GAUDENS

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CAMOUFLAGE in the American Army in France depended far more on ingenuity than on art; though if the ingenuity had not been based on principles acquired in the study of art, chaos must have resulted from our efforts.

Unfortunately, we were stamped at the outset as "Camouflage Artists" and as "Camouflage Artists" we were expected, in our initial work to be able to produce endless yards of magic veil under which everyone from general to private could hide both himself and his luggage, however fat.

Our merits were established or demolished on the basis of the story of the railroad tracks. All military men had heard about those railroad tracks that had been painted in perspective on a wooden screen and set up across the true rails where they ran between a station and storehouse so that the traffic on the street crossing the track behind the screen could be carried on unbeknownst to the Germans. Unfortunately when I saw that screen at Pont-a-Mousson it had been weather-beaten by a couple of years exposure to the consistency and color of an abandoned freight car. Yet the traffic behind it passed by unmolested. I doubt whether, even when new, the device deceived the Germans for one single day. It faced due North and so threw a strong shadow. Owing to the buildings the light on it must have varied in the morning and the afternoon. Moreover, the first time German aeroplane information of the traffic there was compared with German balloon reports, the discrepancy must have led to investigation.

As a consequence of just such Sunday Supplement edification, the army was one-third credulous and two-thirds skeptical of our value. The faithful understood that if we painted the bottom of a potato white and

graded it up to brown on top, they could not see it on the road. Therefore we were wizards who could hide them in any emergency. The skeptical decided, as the literal translation of our French name implied, that we were fakirs and would have none of us.

The result was the same from either attitude. Other armies, allied or enemy, might develop their schemes of scientific murder with a businesslike military policy of obtaining the best results at the least expenditure of lives or property. But the nephews of Uncle Sam, firm in the belief that invisibility was either wafted to them by us as friendly genii or not obtainable at any price, advanced with a care-free enthusiasm that is still manifesting itself in the casualty reports. Only toward the end of the war did we reach a position where we could convince the authorities that, without proper camouflage discipline, the material work of the Camouflage Section must inevitably fail to balance the foolish mistakes made through indifference to camouflage needs; that, for example, it profits little to conceal guns themselves, when ammunition trains needlessly remain parked in the open, during the daylight hours, directly behind these guns—as I remember they did in a gully on the side of the Mort Homme just before the Verdun-Argonne attack of about September twenty-seventh.

In my own personal experience this condition of indifference rose to its climax at the time we reached Death Valley, a few kilometers south of St. Giles on the Vesle. There I found assembled two regiments of 75's, one regiment of 155 mm. howitzers and one regiment of 155 mm. longs—ninety-six guns in all—which were blazing away in a truly sunny France with what camouflage they possessed hung over them like mushrooms, and about them their picketed horses, their ammunition caissons, their latrines, their kitchens, their pup-tents, and the freshly turned earth of their dugouts, forming a raw and awful litter. They needed only to have a battalion of engineers building a bridge by them in the open and a quantity of infantry held near in reserve,

to present to the Germans such a target as they had not been offered in years.

Lieutenant Thrasher, one of our best officers, who was killed there a few days later, while he was attempting to clean up that Augean Stable, was in a pitiable state of mind over it. Well he might be. When the Hun had got his own artillery into his well reconnoitered position and had finished his work, the place was a shambles, with not a battery remaining in its original location.

It must be obvious from this that our task required a much wider scope than that of applying the theories of protective coloration of animals to men who stumbled around by day and night, in rain and mud or dust and hot sun, as the season allotted, generally without food and frequently in gas-masks, driven by the agonizing demands of present-day fighting to a point where the thought of getting hit was regarded with more or less relief.

In our development which altered very much with the broadening of our scope, we set out guided largely by French principles. This was natural, as the French, with their good-humor and insight, helped generously when help was asked, kept out of the way when not wanted, encouraged us in our successes, and remained silent over our failures. The English, however, had also received an excellent reputation for rough-and-tumble results. Therefore, we sought to combine the good qualities of the two. But we soon found out what the rest of the army was discovering with equal speed, namely, that we could not adopt wholesale the extraneous methods of others and apply them with success to our own eccentricities, especially at the very moment when warfare was changing from trench to field.

Throughout all our operations, we attempted, at the front, to have a lieutenant in charge of the work of each division, a captain in charge of the work of each corps and a major or a captain in charge of the work of each army. From all these officers there was required more responsibility and initiative than was expected in the same grades in other branches of the service.

They not only had to meet the eccentricities of paperwork and to control the men under them with the universal ability and responsibility, but they also had to know the photographic values, the textures, and the characteristics of materials required, and the best means of adapting them to the natural aspects of the area in which they operated. They had to learn how to approach superior officers to obtain what they wanted in time of stress. They had to maintain their initiative and ingenuity.

Our best officers were architects. They not only understood the principles of form and color, but they had been faced with clients who would have the linen-closet, the stairs, and the chimney all in the same place. Long pestered with the practical side of life, they tempered their art to a line of brass tacks.

For our non-commissioned officers and privates, the moving-picture and stage-property men and carpenters were, by all odds, the most successful. An ability to handle those superior in rank and a resourcefulness at all hours was theirs.

Camouflage, as we found it, had two functions, to deceive the eye and to deceive the aeroplane cameras. Concealment from the eye was concealment from enemy observation posts and balloons. Except in the case of actual movement, or very large objects, aeroplane observation was photographic. Concealment from the eye was accomplished by imitating something else, that is, by making an observation post look like a coil of wire, or by disguising an object so it was not seen at all or looked like nothing in particular. Most front line work came in this category, and consisted merely of a clever manipulation of the surroundings. Road-screening, by the way, which has often been spoken of in this connection, was not concealment at all. Nothing was ever stretched over the top of a road. From an engineering point of view that would have been wholly impractical. Nor did the screens along the sides conceal the road. The road was on the map. It could be inspected by enemy aeroplanes, and it was by the map that the artillery shot. The good that road-screening did was to pre-

vent the enemy from estimating from his observation balloons the nature and the amount of traffic on those roads, and, therefore, the troops that those roads fed.

Concealment from aeroplane observation was more difficult, for the camera was more accurate than the eye. Objects to be so concealed were such as batteries, small tracks or paths, trenches, and dumps. In hiding these we were often unsuccessful because we could rarely show our army the proof of the pudding. Officers could see what they could see, but without photographs they could not see what the camera saw, and the Photographic Section of the Aviation Corps did not produce results until too late.

However, we inspected and preached until our lungs and our legs were sore. We explained that an individual object of any reasonable size, like a motor truck or a machine-gun position is invisible on the normal aeroplane photograph, taken at 2,000 meters. It is the recognizable repetition of this object, or its position in relation to its surroundings, or the signs of occupation about it, like paths or dust, that betray the object. A photograph cannot show a trench mortar with a man or two about it. But it can show the characteristic mark of the mortar's emplacement in the trench, or the peculiar nature of the disturbance when, even with all the care in the world, soldiers attempt to set a machine-gun up in a wheatfield—as I remember they did out in front of the Bois de Belleau. A photograph cannot show a field-gun, but if four of them (a battery) have been in action, it can distinctly show the paths leading up to them, and ammunition boxes and dug-up earth, and the four white, evenly placed scars, made by their blast marks where the grass has been burnt flat before them.

Photographs show patterns of black and white composed of color, form, shadow, and texture.

Color proved to be of relatively small importance. But color meant paint, and, as painters, we were asked to render invisible everything from a motor truck to division headquarters. Most of it could not be done.

Is the amorphousness of this motor truck to be accomplished under a tree, or out by a wheat field? Trucks do move. Also they get covered with mud and dirt. As for headquarters, one side will shine in the morning sun and another in the afternoon light. Moreover, a building throws a shadow. Its shadow bears an absolute relation to its form. The shadows vary during the day. The time the photograph is taken is recorded; thus, by measuring the shadow the outline of the object that caused it is obtainable.

Texture, too, offered a difficult problem, one that the layman was rarely able to understand. A favorite illustration was the silk hat, light when smoothed the right way, and dark when brushed the wrong. Loose dirt and fresh grass photograph dark, like the silk hat rubbed the wrong way. But once the army brogan has been planted on this dirt or grass, the opposite effect is obtained. The trampled gun-position would register on the photograph, like a white bulls-eye on a black target.

To help blur these shadows, forms, and textures into the surroundings we developed our camouflage material. It was composed of various sorts of dull-colored cloth, cut into dangling strips, tied to chicken-wire or fish-nets in such a manner as to give the needed variation of light and shade. In broken country with such material it was easy to take advantage of existing forms and shadows and imitate them or to create fantastic shapes that meant nothing. In flat country an overhead cover that matched the landscape was needed. These were called flat-tops and were made mostly of fish-net or chicken-wire, thirty or forty feet square, stretched horizontally, on which were tied these same bunches of burlaps to produce a texture like their surroundings. The material would be thick in the centre over the object to be hidden. It would thin out at the sides so as to blur the spot into the surroundings, as a girl blends rouge into her face.

Even when these nets were put to their proper use, aeroplane photographs which our Aviation Section took for us after the war was over, on an experimental field

near Toul, proved them to be futile unless set up in broken or mottled country. But never did mediaeval conjurer have any more popular form of self-hypnotism. I even remember under one such net, a white horse, hauling ammunition over a new and glaring trail between the road and a battery position near the Vesle. Anyhow, it kept the flies off him.

To counteract our inability to wave successfully the wand of invisibility, we constantly broadened our efforts in another direction, not fully recognized until near the end of the war. This was in the matter of reconnaissance. For example, in the search for battery or machine-gun or trench-mortar positions, the camouflage officer could give his greatest assistance, since, within the limitations imposed by the tactical requirements of the case, he could best point out where advantage could be taken of the broken nature of the landscape.

The proportionate importance of the various branches of camouflage work developed, therefore, into approximately these amounts:—

Selecting positions that can be camouflaged, fifty percent.

Strict camouflage discipline, twenty percent.

Proper erection of material, fifteen percent.

Proper material, fifteen percent.

On occasions we grew sadly discouraged. But when anyone is close to a large object it is only the discouraging details that are seen.

We did accomplish, and we did develop. We started as the painters of a new brand of scenery. Before the war closed army and corps and division headquarters, all reached a point where they became quite peevish if our little section could not be in all places at once.

On October thirtieth Lieutenant Colonel Bennion, in charge of the Camouflage Section, came to me at Toul, where I had charge of the work of the Second Army, and informed me that from that time on our scope and size would broaden rapidly. Our efforts would be called "counter intelligence work," that is, preventing the Germans from obtaining information as to our movements, or the disposition of our troops or materials. We



would make recommendations at all times regarding breaches of secrecy and violations of discipline. We would be held responsible for the general insurance of the secrecy of army troops.

That, it may be seen, was a large order, scarcely one in which art bore a predominating part, yet quite illustrative of the manner in which the Camouflage Section had drifted away from the province originally assigned to it. In war as in life, nothing is stationary. You must advance or retire. Our other choice would have been to sink back into a mottled "embusche" shadow, to paint on trucks and guns fantastic patterns that we knew from experience were useless, to obliterate one small point of relatively minor importance while miles of equipment and millions of mud-stained men passed us by to take their chances regardless. I am glad that we were given the opportunity to advance. It was a blow to art. But I fancy art still has a few compensations left.