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American Dyes Go To War

Serviceable dyes help make our troops the best-dressed fighting men, says the Du Pont Magazine.

Four times as much cotton as wool is needed to equip the American fighting man for war. That fact is a challenge both to cotton grower and textile producer and it is a double one for the dye maker.

Tents and tarpaulins, haversacks and cartridge belts, covers for canteens and cannon, leggings and summer uniforms are all made of cotton fabrics that must be dyed with the fastest of colors that will "hold" despite storm and tropical sun, despite the most punishing kind of wear and repeated washings.

Indeed, the life of the soldier in battle, perhaps even the success of the battle itself, may depend on the fastness of the drab brownish-yellow color imparted by dyes, that has become the traditional hue of the American Army in the field.

For poorly-dyed khaki fades to a yellowish-white, one of the most conspicuous of all colors. This means that its primary purpose, which is concealment and camouflage, not only is defeated but the bleached fabric becomes a dangerous source of enemy attention. How dangerous was indicated during the 1940 war games in the Caribbean. American sailors wore white, their usual tropical dress. They became such easy targets in landing parties that the men soaked their uniforms in kettles of coffee. Now the Navy provides special khaki dyes for use in similar emergencies.

Warned by the first World War, when faded cotton equipment worried every American field commander, as early as 1920 the United States began setting up...
guards against any recurrence of “whitening” uniforms in future wars. Exhaustive tests were made. Rigid specifications were drawn for every type of fabric entering the military services. Finally, only the fastest and most durable dyestuffs known to chemical science were designated. Color became a vital factor of front-line armament.

The dyes needed were not then being made in America because they were too complex and difficult to be produced by an industry that was new and still struggling to establish itself against what seemed to be overwhelming odds. The fact that they are being produced here now, and in quantities demanded by an unprecedented war effort, represents an accomplishment in industrial preparedness that is well worth reviewing.

Until 1914, all attempts to form an independent dye industry in this country had failed. Europe supplied 90 percent of our colors. Such was the rush and scramble for dyes during the 4 years of war that almost any kind of color found buyers, often at fantastic prices. Dye factories sprang up overnight to plunge with the blithe confidence of inexperience into one of the most tediously exacting of all chemical operations.

Black socks turned to a dingy gray in a few washings. Colors “ran” in the rain. The Army’s olive drab was of a dozen shades. Cotton uniforms quickly lost all semblance of their original khaki. Recruits found it was no trick at all to take on the appearance of veterans; a scrubbing or two removed most of the color from their new equipment and on all sides arose a popular distrust of American dyes.

This distrust persisted after the Armistice until, by 1921, the industry’s situation was precarious. Even the most careful research efforts had frequently incurred only losses and Europe was again exporting dyes.

Some substantial companies, however, had entered the business to stay and indigo, the blue dye of naval uniforms, as well as other essential colors, had been successfully produced. The costly research, which so often had seemed wasted, began to bear fruit. Many important vat colors went to market bearing American trade names. For the first time, textile manufacturers were able to meet governmental requirements for fastness and durability with made-in-America colors.

About 1930, leading American textile organizations, among them the American Association of Textile Chemists and Colorists, devised “fastness” tests for the accurate evaluation of colors on textiles. A whole new laboratory technique for this work was developed. Only a comparatively few dyes, it was found, were capable of measuring up to the highest standards thus set up, but almost without exception those dyes which the government had specified for uniforms did qualify.

Today, these severely impartial tests of color quality are recognized as a true measure of the durability and wearability of the dyes used in all fabrics. A top rating for a dye means that its color will remain true over many months of strenuous wear and in some cases will withstand years of service under all color-destroying conditions usually encountered, such as exposure to sunlight, repeated washing with or without bleaches, perspiration and hard wear and soiling.

Dyes of this type today constitute the standard colors of the nation’s armed forces on land and sea alike. They are a major reason why our soldiers, sailors and marines are recognized as the best-dressed fighting men in the world, as measured either by comfort or serviceability.