

The Truth In Trousers

A Monograph of Federal Civil War Trousers

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A survey of eight dismounted and seven mounted trousers from the Smithsonian Institution collection was conducted by the authors over the summer of 1988. Though other examples (from Smithsonian and private collections) are being continually added to our sample size, along with new primary data, a number of similarities occur within this initial survey to conclude that most current reproductions are unsatisfactory. It is impossible to make statements to the effect that all trousers produced during the war were made to the specifications of the trousers we saw, but tangible examples should be considered clearly desirable to the claims of nearly all-reproduction uniform makers.

PATTERN

Yoke

The most noticeable detail of the specimens was the manner in which the back raises up higher than the front (fig). The top waist-band in nearly all reproductions comes straight across when viewing the pants from the side. This interpretation probably stems from looking at the original trousers' back side lying flat (fig). An illusion is created suggesting that the rear portion of the waist band is straight across and even with the top of the front waist band, while the bottom seams of the yoke do the angling downward. Indeed, modern slacks are made in this straight across fashion. In reality, however, the bottom seams of the yoke parallel the front portion of the waist band, and the back part of the waist band angles upward. This upward rise was so pronounced, that a slight pucker was caused in the waist band at the point where its direction changed. When seen from the front it was again clear that the back was higher. A human form to fill the trousers would have easily halted this misinterpretation. Correctly constructed, the trousers would not expose an unsightly gap while bending over when wearing a shell jacket.

Another interesting feature that was apparent among the contract pieces only was a variation in the yoke style. Out of the fifteen pair of trousers examined, eleven were contract, the other four being made by the government clothing depot, Schuylkill Arsenal. Six of the eleven contract garments had a pentagonal piece inserted rather than the usual yoke pattern most thought of in Civil War period trousers (fig). This piece varied in dimension and shape. Five of the pair followed figure three closely, but one pair was constructed with an almost rectangle back (fig). The only speculation we can make about this unusual insert is that it appeared in the contract examples only. Lack of information on the dates they were produced and the theaters from which they came make it impossible to label them. The authors have gone to great lengths to do so, but documentation has, at this point, not been discovered.

The other nine examples conformed to the commonly thought of yoke pattern. But even here the consistency was lacking. The yoke seam would either come straight back at the junction of the side pant seam and the waist band, when viewed from the side, (fig), or it would be dropped two inches (in these particular examples) along the pant seam before coming straight back (fig). Of the remaining five contract examples that did not have the pentagonal back, two had the "drop pattern" yoke pictured in figure six. The four Schuylkill specimens along with the other three contract pieces had the "waist band junction" pattern yoke.

The yoke piece itself appears to have no relation to size. The haphazard way that the pieces are utilized is probably a function of a tailor trying to get the most use from the cloth. A letter dated July 4, 1868 from John _____ in reply to the Quarter Master General's inquiry on trouser sizes reads as follows: "The only measurements necessary to be taken for the manufacture of Army Trowsers are as follows:

'Outside seam, inside or leg seam, waist, & bottom of trowsers. I have consulted the Chief Inspector, and these are his views.' And, in fact, only the above measurements are listed for the four sizes specified by the Quartermaster Department." Documentation connecting yoke placement with sizing has not presented itself.

The purpose of the yoke can be speculated as twofold. It gives fullness to the rear, and it provides the upward swing in the back that we described earlier. The top portion of the back, again viewed from the side, angled inward, thus making the rear fuller while tapering at the small of the back. This change of direction did not necessarily correspond to the position of the yoke seams. In some cases it would encompass only the waist band and an inch or so below, while other samples revealed several inches being utilized.

None of the backs were belted. Various contracts for pantaloons buckles have been uncovered, however. Notably one agreement made by Col. G. H. Crosman in Philadelphia with Frank S. Trout on March 9, 1864 for "1,000 gross of pantaloons buckles, at 51 cents per gross". Henry Wilson also sold several contracts for "black pant. buckles," to Schuylkill in Philadelphia. What exactly the purpose of the buckles was is unanswered. Another contract was let by Crosman to "Wm. Pyle" for "...59,616 greatcoat straps, (United States furnishing buckles,) at \$7.38 per 100; 240,384 greatcoat straps, with buckles complete, at \$7.74 per 100..." It might be that the buckles were for purposes other than what we would like to think. It is also unknown where the buckles may have been utilized. The Philadelphia arsenal often procured much of the materials that were later shipped to the branch depots. It should also be noted that the authors have viewed or surveyed by mail a total 50 samples (at this writing), and none displayed a belted back.

Waist Band

The waist bands were interesting in that they all narrowed from front to back. The measurements varied anywhere from 2 inches at the front to 1 inch at the back (the four largest examples) to 1 1/2 inches at the front to 3/4 of an inch at the rear (also four pair). The mean of five pair stood at 1 5/8 of an inch at the front and anywhere between 5/8 of an inch to 1 inch at the rear. The "v" split in the rear extended from 2 to 3 inches, but always below the waist band. In one of the Schuylkill examples, the edge was rounded, all the others had a square finish (fig)

The drill inside part of the waist band deserves some discussion also as it did not conform to the dimensions of the outside wool portion. It likewise would taper, but not in all instances. At the front it was the same size or slightly larger than the outside part. From there, this lining would remain constant or diminish slightly to the end. In all cases but one it was larger than the outside band at the rear finishing point.

Fly

The flies measured, from the top of the waist band to the bottom point where the seams come together, an average of 12 1/2 inches. A true measurement of the rise, however, is obtained from subtracting the inseam from the outseam; measurements that we did not accurately take. Examples

of trousers that were professionally measured comes from Sandra Altman, of Past Patterns, and Bob Huntoon. Though the Quartermaster Department specifies a rise of 10 1/2 inches, reality places the measurements between 9 1/4 inches to 12 3/4 of an inch.⁵ This is rather concrete evidence that, unless the Federal soldier preferred wearing the crotch several inches low, the trouser waist line was higher than their modern counterparts.

Legs

The trouser legs were all straight and full. No unusual tapering or swelling was apparent. Ms. Altman feels that the pattern is based on the old 1830's drafting system which utilized a fall line (a straight outseam) rather than a plumb line (a straight inseam). This may be another cause for error in modern reproductions since seamstress' today use the plumb line method.

The bottom cuffs were cut straight with no flair. Douglas McChristian, park historian at the Custer Battle Field, informed us that a slightly belled bottom or "sprung bottom" was adopted in 1876, but did not appear in the uniform regulations until 1879. In 1884, he recounts, was when the straight bottom changed to that of having a dip in the center, and it wasn't until 1902 that the back dropped lower than the front. The bottom circumference called for on the stove pipe trousers produced in 1865 was twenty inches.⁶

An **overlapping** split on the bottom of the outer seam existed in all of the examples. This split, regrettably, was not measured on all the pieces. The several that were recorded measured 5/8 of an inch to 3/4 of an inch in depth and 1 3/8 of an inch to 1 3/4 of an inch in length.

Pockets

One of two different style watch pockets was present on the trousers. The four Schuylkill pieces along with two contract specimens had a rectangular piece of facing placed above the pocket opening which was left unfinished on both sides. The nine other contracted garments sported a mere opening cut into the bottom of the waist band with no facing present on the waist band itself. A row of top stitching slightly below the placket finished the look. The openings measured anywhere from 2 1/2 inches to 4 inches (the average was 3 inches).

All the full pockets were the side seam type with openings measuring a mean of six inches. No written evidence to our knowledge has surfaced to suggest that French pockets (mule ear) were an accepted variation to the standard side seam pocket. Reputed collector, Don Troiani, does, however, own a Schuylkill Arsenal-marked pair of trousers that have French pockets. Close examination seems to indicate that the pants were produced in this manner. This rare example is the exception rather than the rule. Most French type pocket specimens that exist in private collections are private purchase or cases of soldier modification to reflect civilian styles; without a careful examination a conclusion should not be drawn as to whether or not they were government, or government contract, produced. This is probably also true of the crescent style pocket. This variation was accomplished by sewing up the side seam and cutting a half moon slit parallel to the waist band, and about an inch below, to enter the pocket.

Mounted

It is interesting that the re-enactment and living history communities have for years been falsely misled into believing that the trousers they wore were reasonably correct. The authors were able to directly trace the source of these misconceptions to the illustrations on page 59 of American Military Equipage, 1851-1872, by Frederick P. Todd. Though both the

infantry and cavalry drawings show the waist band as coming straight across (we know that in the actual artifacts, it probably does not), the real error lies in the fact that the cavalry trousers are shown as being different than the foot. This strange horse pair exhibits an overly wide waist band with a two button encloser, one extremely large watch pocket, no side seam pockets, peg type legs, and no overlapping split in the out-seam of the cuff. The pair hails a home in the West Point Museum collection, and so we contacted curator Michael J. McAfee to find out the whole scoop.

McAfee informed us that the specimen was donated to the museum in the 1960's by Stanley Olsen. The only identification present on the garment is a paper label attached by Olsen that reads: "Civil War Cavalry & Artillery. Differs from infantry by having reinforced seat." The professional opinion of McAfee is, however, that they predate the War for the Union by, possibly, as much as fifteen years. He assured us that these trousers, whatever they are, are not Federal issue mounted trousers from the War period. McAfee felt that the reason they were chosen was "because they were readily available, and neither Todd nor Woodbridge felt their unique construction details were significant. In other words, they were just another pair of mounted trousers in their eyes."

The trousers for mounted troops are nothing more than infantry trousers with a reinforced seat. This is confirmed by the fact that the Quartermaster Department listed size specifications of "Trowser for cavalry and footman" under the same heading. Under a different heading is given the dimensions for the reinforcing piece.⁷ The trousers we viewed followed this pretension.

This extra material on the seat covers the rear and extends down the inside of both legs. Four of the seven mounted pair had a rounded shape (fig) while the remaining three (two produced by Schuylkill) were decidedly pointed (fig). Sometimes it would cover the yoke seams (three examples), and other times it would not (four examples, two of which were marked Schuylkill). This reinforcement was usually left raw and whip stitched down. A row of top stitching a quarter of an inch in from the edge was added for strength.

Lastly, the inside of the cuffs contained four small (fly size) tinned iron stamped buttons, two on both sides (fig). These buttons were in place for the instep straps of which little is known. Paul McKee has viewed a pair in the Smithsonian collection that were still attached to the trousers. They were a thin, narrow leather piece dyed black on the grain side with one key shaped button hole on each end. Whether these were government issue or private purchase, we may never know.

CONSTRUCTION

Stitching

Elias Howe invented the first practical lock stitch sewing machine in 1846 with the aid of his brother-in-law, none other than, Nathaniel Banks.⁸ Initial testing by the government clothing establishment of this contraption proved unsatisfactory in the making of coats, trousers, jackets, and shirts.⁹ As a result, the principle depot, Schuylkill, did not employ the use of the machine during the war. Instead, from 8,000 to 10,000 women were hired to hand stitch the entire wartime production from their homes.¹⁰ This practice had become quite common in the New York clothing industry, where the sewing machine had put pressure on the custom trade to provide cheap labor.¹¹

Our study concluded the same results. The four examples produced at Schuylkill were completely hand sewn. The other contracted pieces exemplified machine stitching on the straight seams and hand finishing elsewhere. Inside waist band facings were whipped in along with the inside fly facings. The hand stitching on most of the examples was by no means delicate. The stitches were consistent and for the most part, straight, but it was obvious that they were done quickly (fig). None of the seams were flat felled, and all the buttons holes were hastily worked. These were not clothes a fine tailor of the period would produce.

Cuff

Fourteen of the fifteen trousers had finished cuffs. That is, there was a separate piece of facing turned up and sewn to the bottom hem. The facings upper end was left raw and whip stitched down and the bottom quarter inch was top stitched (fig). This is the way most coat cuffs are done. The facing themselves measured from $7/8$ of an inch to $1\frac{5}{8}$ inches wide. The one pair that was not done in this fashion was simply turned up and finished with no extra facing present.

Reinforcements

Small pieces of facing cloth of different materials are applied throughout the construction. One such place is around the "v" split in the back of the trousers. This one inch (about) piece of kersey simply followed the opening around on the inside and its raw edge was whip stitched in. There appeared to be no rule to follow as to whether or not it was on top of the inside waist band or below it.

In most of the specimens, at the top of the overlapping split in the inside of the cuff can be found a small patch of lining material. This rectangle is sometimes placed partially in the cuff facing. In the horse trousers it is placed in closer proximity to the instep strap buttons. Its edges are typically folded over and whipped in.

Piecing

Three pairs exhibited some manner of piecing. Though the crotch was the most common place, the bottom few inches of the pant leg also seemed to be attacked. These cases are blatant examples of cutters maximizing the use of the cloth.

MATERIALS

In a letter by the chief inspector of Schuylkill Arsenal, Neal Campbell, to Capt. G. W. Martin, dated August 25, 1862, the following materials were given for the construction of trousers:

1 $1\frac{1}{4}$ yards of $6/4$ sky-blue kersey, or 2 $1\frac{1}{2}$ yards of $3/4$.

$1\frac{1}{2}$ yards of $3/4$ drilling.

1 inch black muslin.

5 suspender buttons.

5 fly buttons.

6 skeins of dark blue thread, No 30; and for making the Trowsers,

27 cts.

The fractions $6/4$ and $3/4$ are simply references to width (a yard being whole).

Kersey

The textile industry refers to kersey as "a term applied to a milled worsted or woolen fabric of a serge-like character, and produced from a coarse, strong crossbred wool" of a weight "not less than 20 oz. per yard..."¹² We know that from a sample of period great coat cloth analyzed at the Philadelphia College of Textiles and Sciences (and shared with us by E. Jerry Coates), that the raw wool, after being scoured and

cleaned, was made into a woolen yarn. This mule spun (a method of spinning rarely employed in the U.S. today) material left the step of combing the fibers out. Combing aligns the staple and removes the shortest lengths to produce a worsted end product. The weight of the twilled fabric was 14.37 ounces per square yard, and was probably slightly heavier when new. ¹³The fifteen specimens were consistent with these findings, though no two seemed to be exactly alike.

Uniformity White and dark blue fibers were not being blended to form sky blue during the war for economical reasons. But the indigo dye was still probably applied to the raw stock rather than the yarn or bolt since an adequate system for piece dyeing with indigo was not developed until World War II.¹⁴ Further research on this matter is in process.

Col. Alexander J. Perry, the 2nd Division Quarter Master, in a report to Quartermaster General on October 19, 1865 recognized the inability in obtaining a consistent material by writing: "The experience of the past war has developed the fact that exact uniformity of texture and quality of material and articles are in some respects not altogether practical." The nature of indigo itself would all but prevent consistency with respect to color. This vat process requires that the wool be allowed to air to produce the blue cast. The dye liquor is clear save a yellowish tint. It is oxidation that acts as a mordant, exposing and fusing the blue molecule to the fiber.¹⁵ It's no wonder that our trouser samples were of many different shades. As the concentration of alkaline in the vats diminished (there were many different recipes) the greener the hue became.¹⁶

Finishing Examination indicated that after the steam operated looms of the industrial North weaved the cloth, it was finished by fulling and possibly napping. The fourth edition text book Textiles describes fulling as "a cloth-finishing process in which the cloth is washed in a thick soap solution and squeezed by wooden rollers to shrink the cloth and close up the weave by bringing the yarns closer together. After fulling, the cloth has more body and cover..."¹⁷ This would also have the effect of raising a short nap. Whether the additional expense of pulling out fibers with a teasel brush was employed is unknown at this point. The samples themselves showed both ends of the spectrum: from almost no nap, to very fuzzy.

Cowles's Process We all put a great deal of emphasis on the color and hand of the antique fabric as it appears today. Though the last hundred years of aging has probably changed the appearance of the cloth, we still persist with trying to reproduce it as is. However, some of the cloth collected today has undergone a process that may have effected its appearance before the turn of the century.

At the war's end, the huge stockpile of clothing accumulated presented the government with the problem of pest damage. From 1869 through 1876 a process was adopted (Cowles's process) by which garments were soaked in a variety of chemicals to guard against moths and mildew and add a waterproofing quality. Boys were employed to tread the cloth for thorough saturation.¹⁸ Unfortunately this would cause the fabric to full, raise more of a nap, or possibly change the color. The Civil War surplus that underwent this process is marked with "Cowles and Co." (there were other companies that treated also and likewise marked the fabric). None of the samples viewed by us, happily, displayed this mark. That is not to say they were spared or that they did not go through some other preserving procedure in their museum life.

Lining

The drill lining of the trousers was a stout cotton fabric with a pronounced twill weave. The one inch black muslin specified was probably for the fly lining. Though no samples exhibited black muslin, 80% had what appeared to be brown polished cotton.

Buttons

Five suspender buttons were called for (four for the braces and one for the waist band encloser), but only six pair utilized this placement, the remaining pants had six of the larger buttons total.

All the buttons were of a tin stamped iron in two pieces with a metal backing. Japanned, stippled buttons were not used by the military until 1885, according to post war trouser authority, Douglas McChristian.

MARKINGS

On the inside back of the waistbands in an up-side-down or sideways manner can be found maker, inspector and size markings. It's almost rare, however, to have all three present, and the marks are not always in this spot. On a few, the front portion of the waist band was marked with the maker, while on one, the pocket was the favorite spot. Black and reddish black colors were used in the stamps.

Symbols, such as the maltese cross discussed in a former "Company Wag" article, appeared on one of the Schuylkill trousers. Jerry Coates, an authority on Civil War procurement, has unearthed documentation suggesting that these symbols were simply inspectors' marks for Schuylkill Arsenal. Both the dot and Arabic systems were used to designate size.

CONCLUSION

Federal Civil War trousers are not that easy to come by. Only with studies such as this can we all hope to understand the intricacies they possess. If anything is bore out from our research, it should be that we should take special notice of our own impression to see that it is correctly portrayed. To this end the authors have been working to ~~correctly~~ ^{accurately} reproduce the sky blue kersey on period equipment and with vegetable dye. At the same time Past Patterns is working on a ~~correct~~ pattern which we have reviewed and find excellent.

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Respectfully yours

¹Letter, National Archives Record Group 92, Entry 17

²Colonel G. H. Crosman, 'Quartermaster Manual, 1865'. Donald Kloster, ed. (in preparation for publication), p. 26.

³Annual Reports of the Secretary of War to Congress of Contracts made by the Quartermaster's Department. Year ending 1864. 38th Congress, 2nd Session. Ex Doc. No. 84. pp. 22-23, 28-29.

⁴Risch, Erna. Quartermaster Support Of The Army, A History of the Corps, 1775 - 1939. Quartermaster Historian's Office, Office of the Quartermaster General, Washington, D.C., 1962. p.350.

⁵1) Colonel G. H. Crosman, "Quartermaster's Manual, 1865".
2) Altman, Sandra. Conversations with, relaying data from her visit to Smithsonian Institution in November of 1988.

⁶Ibid. p. 26.

⁷Ibid. p. 26.

⁸Linton, George E., The Modern Textile Dictionary. Duell, Sloan, and Pearce. New York. 1954. p. 341.

⁹Risch, Erna. Quartermaster Support Of The Army, A History of The Corps, 1775 - 1939. p. 348.

¹⁰Ibid., p. 348

¹¹Pope, Jesse E., The Clothing Industry In New York. Burt Franklin. New York, New York. 1905. p. 12-13.

¹²Midgley, Eber. Technical Terms in the Textile Trade. Emmott & Co. Limited, London. 1931. p. 213.

¹³Marvin Jr., Gerald L. Professor at The Philadelphia College of Textiles and Sciences. A letter written to Earl Jerry Coates in the late 1970's regarding a small sample of great coat cloth.

¹⁴"The Application of Vat Dyes." A.A.T.C.C. Monograph No. 2. Prepared by a Board of Editors from the American Association of Textile Chemists and Colorists. 1953. p.232.

¹⁵Gerber, Frederick H. Indigo and the Antiquity of Dyeing. Published by the Author. Florida Graphic Printing Company. Daytona Beach, Florida. No date listed. p. 26-32.

¹⁶Ibid., p. 42.

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