

CONCERNING THE SIDE STRIP
ON THE SHROUD OF TURIN

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The side strip on the Shroud of Turin, the apparent seam separating it from the rest of the cloth, and the two missing panels of cloth at the top and bottom of this strip that reveal the underlying backing cloth have long been a subject of interest and speculation to sindonologists. Why is this strip there? What purpose could it serve? What is the nature of the seam? At what time in the cloth's history was this strip and seam created? Why are there two missing panels of cloth? When and why were they removed?

There are three possibilities as to the nature of the side strip: 1) it is a completely different piece of linen cloth which has been joined to one edge of the Shroud for some unknown purpose; 2) it is a piece of the original cloth of the Shroud which for some unknown reason became detached from the original and was then reattached by the seam; 3) it is cloth that is continuous with the rest of the Shroud and the seam is really a tuck or a tube that has been sewn into the cloth for some unknown purpose.

Crispino¹ has reported a chronological survey and summary of various observations on the Shroud as a textile. Many of these reports also include comments on the side strip. More recently Vial² has also summarized some technical details on weaving faults observed on the Shroud and possible weaving techniques employed in the production of the original cloth.

Schwalbe and Rogers,³ mainly on the continuity of various macroscopically observable patterns seen in the weave in the radiograph images⁴ taken during the STURP investigations, rejected the possibility of an adventitious piece of cloth for the side strip and concluded that the two pieces of cloth were actually continuous through the seam. In accepting this conclusion one must be certain that the pattern of the underlying backing cloth does not confuse the issue, as the radiographs were made through both pieces of cloth. Fortunately, this can readily be done as the backing cloth is an over and under tabby weave while the Shroud and side strip are both a twill herringbone weave. There is also a readily distinguishable difference in the image intensity of the threads of the two weave patterns. This is due to the fact that at the X-ray source wavelength employed in this study the major element present producing most of the intensity of the image is calcium. The STURP X-ray fluorescence⁵ and chemical⁶ investigations

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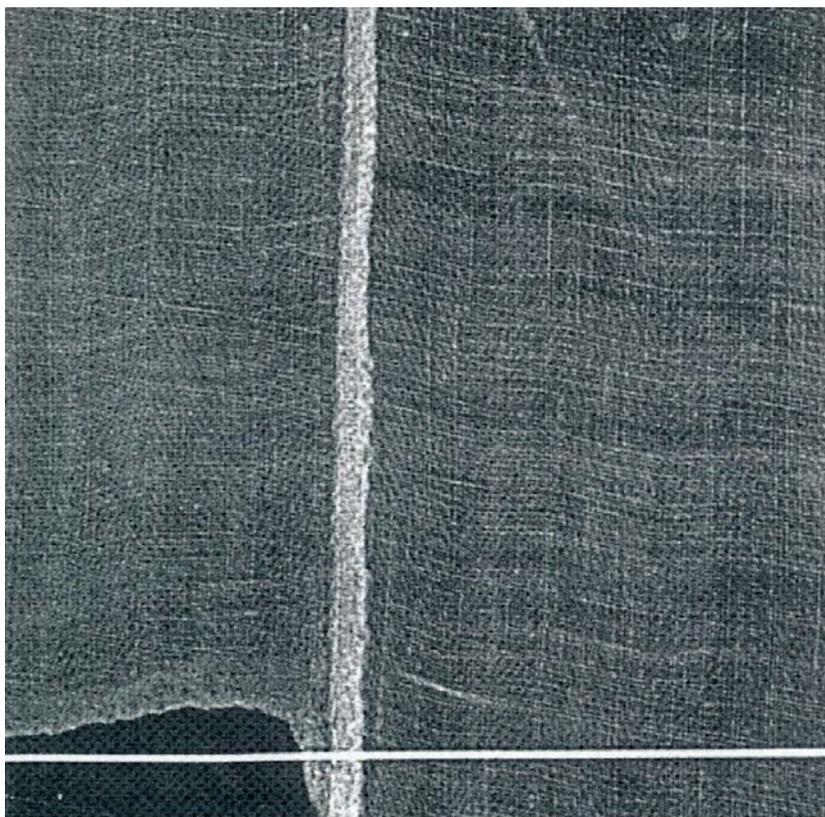


Fig. 1. Portion of X-radiograph of the section of the Shroud's frontal image showing the end edge of the side strip, the missing panel with the exposed backing cloth, and seam between the strip and the rest of the Shroud.

evidenced a substantial difference in the calcium content of the backing cloth and the Shroud cloth.

Figure 1 shows a portion of the X-radiograph of the section of the Shroud's frontal image displaying the end edge of the side strip, the missing panel with the exposed backing cloth, and the seam between the strip and the rest of the Shroud. The radiocarbon sampling area is only a few inches below this section.

Figure 2 shows a contrast enhanced and magnified section of Figure 1 demonstrating that the backing cloth weave image is readily distinguishable both by pattern and image intensity from the images of the side strip and Shroud cloths. Figure 3 shows another magnified section of Figure 1 demonstrating that every thread in the weave of the Shroud is continuous through the seam and matches its corresponding side strip thread in position, thickness, and intensity. Viewed at low angles the continuity of the chevrons of the herringbone weave pattern through the seam are also clearly evident. In other radiographs fault patterns in the weave can also be seen to go continuously through the seam. This continuity can be seen for the entire length of the seam, except for the very ends where the situation can not be cleanly resolved.

Of our three original possibilities, situation 1 is clearly rejected and situation 2 also seems highly unlikely in view of the detailed thread matching that would be required and the absence of any evidence of any frayed thread ends along either side of the seam image. Therefore we conclude that the side strip is actually continuous with the rest of the Shroud. The seam image in Figure 3 also seems to

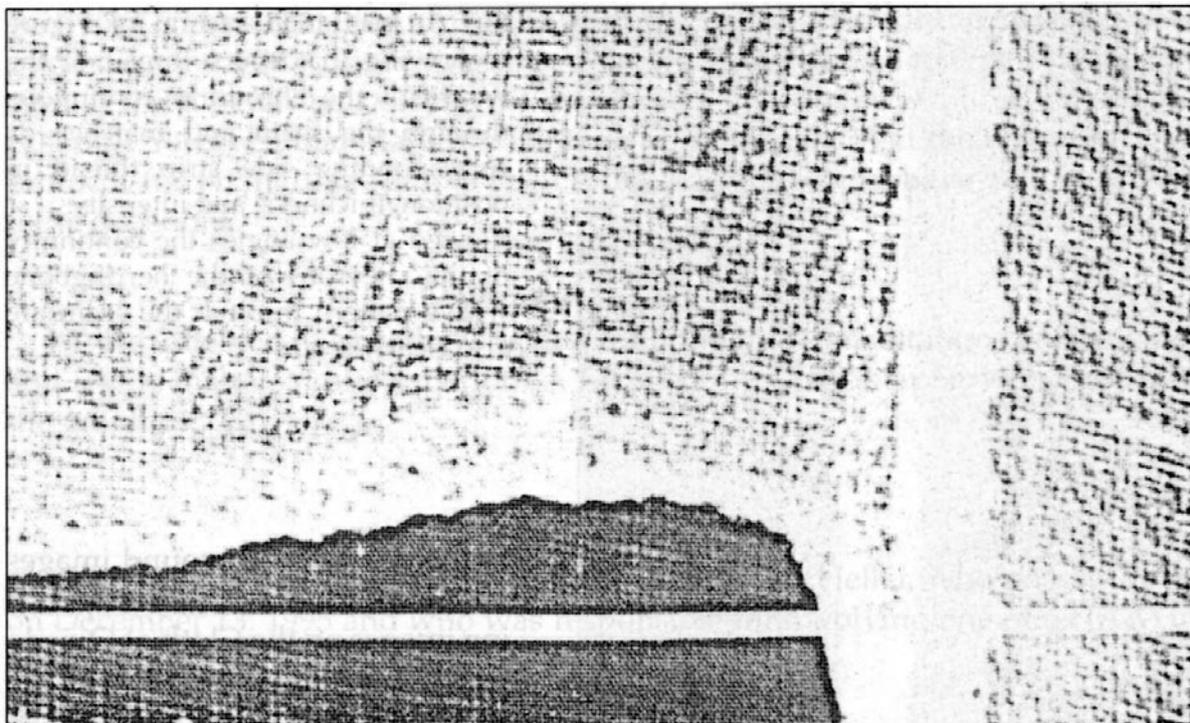


Fig. 2. Contrast enhanced and magnified section of Figure 1 showing that the underlying backing cloth's over and under tabby weave pattern is clearly distinguishable from the twill herringbone pattern of the side strip and the Shroud both by pattern and intensity of image.

show some sinusoidal pattern in the seam. However, the resolution is not good enough to determine whether this is a stitch forming the tube or represents an enclosed twisted cord in this seam as has been suggested by some authors.

A recent investigation⁷ comparing STURP sticky tape sample fibers with those of the radiocarbon sample by Fourier Transform Infrared Microspectrophotometry and also Scanning Electron Microprobe Spectroscopy demonstrated a clear difference in the chemical composition of the radiocarbon fibers from those of the various types of Shroud fibers. (Note that this calls into question the accuracy of the radiocarbon date.) In Table 1, it can be seen that the radiocarbon fibers, although they are from a waterstain area, are "saltier" than the waterstain image fibers from the rest of the cloth. Since the edges of the waterstains on the body of the cloth are unbounded permitting free diffusion, this implies that missing panels were already missing at the time of the 1532 fire, as such a bounded edge would concentrate diffusing dissolved salts at such an edge. Therefore, we conclude that the creation of the side strip itself also predates the time of the repairs following the 1532 fire.

This same study⁷ provided new evidence confirming previously reported conclusions^{3, 6, 8} that the Shroud is not a painted image and that the blood images represent blood derived materials. It was also shown that the congruence

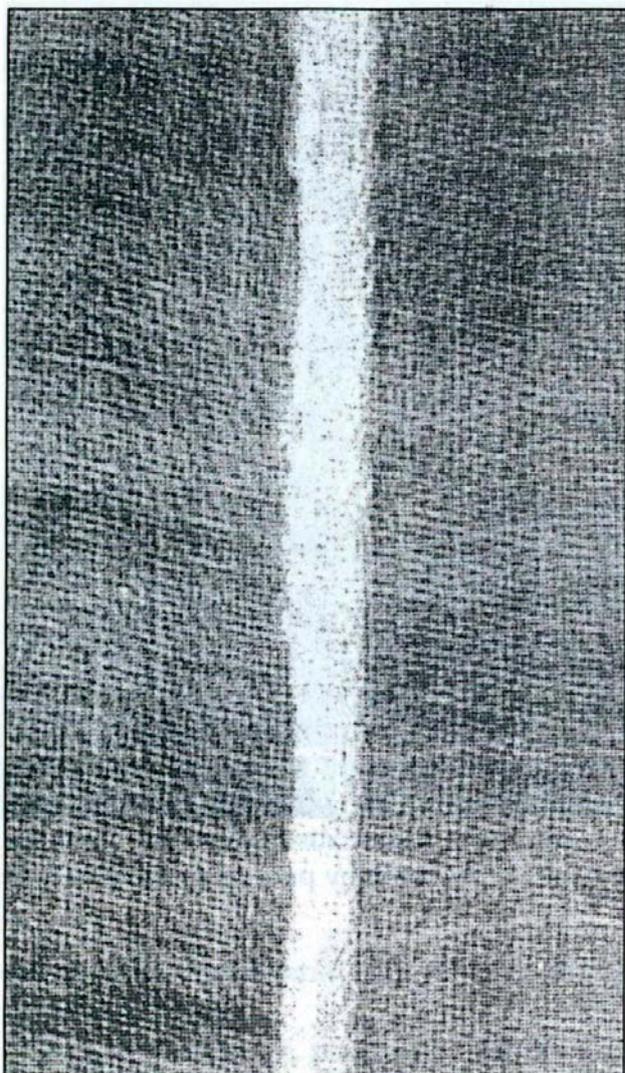


Fig. 3. Magnified section of Figure 1 showing that every thread of the weave of the Shroud is continuous through the seam and matches its corresponding side strip thread in position, thickness, and intensity. Viewed at low angles the continuity of the chevrons of the herringbone weave pattern through the seam are also clearly seen.

of the dorsal head wound images on the Shroud with corresponding images on the Cloth of Oviedo provide strong evidence that the radiocarbon date is not just possibly inaccurate, as suggested by the chemical composition data, but is actually inaccurate in view of the known historical age of the Sudarion. Baima Bollone 9 has also independently made this type of comparison between images on these two cloths.

Several authors have suggested that the purpose of a corded side seam might be to facilitate hanging the cloth for exhibition. Certainly many paintings of such medieval exhibitions show the Shroud being displayed in such a manner with the cloth shown along its length and held or suspended along what would appear to be the side seam. It should be noted that this

mode of display places maximum stress at the end points of suspension and tearing of the fabric would be expected to proceed from the ends inward along the seam. Some historical accounts record that certain noteworthies were given pieces of the Shroud. It would be logical to assume that such samples would be taken from

Table 1

CONTRAST OF WEIGHT % COMPOSITION OF «SALT» ELEMENTS
AS SEEN IN TYPICAL RADIOCARBON SAMPLE AND SHROUD WATERSTAIN FIBERS

Sample	Na	Mg	Al	Cl	K	Ca
Radiocarbon	8.3	0.9	2.0	3.1	4.3	8.5
Waterstain	0.6	0.0	0.0	0.5	0.1	0.1

such torn end panels, thus providing a simple explanation for the missing panel portions of the side strip. Perhaps the Charny family decided to repair such damages at the time of their display of the Shroud. Maybe the radiocarbon sample is simply rewoven material from the time of this repair. Had the recommended protocol for taking this sample been followed,⁷ we would have an answer for these questions.

Acknowledgements

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Dedication

This paper is dedicated to the memory of John H. Heller, who passed away on December 13, 1995 and who was responsible for involving one of us (AA) in sindonology.

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