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" The Gospels are historical documents, virtually first-hand chronicles." J. Carmignac

Page 5 – 9 and a double extra page

A new detail observed on the Shroud of Turin

We learned in late 2010 of the astonishing discovery made by Mr. Wehrkamp-Richter, who uses – and creates – medical equipment as part of his professional activity. From his friend Barrie Schwortz, a photographer who was a member of the American research team STURP in 1978, Mr. Wehrkamp-Richter has acquired a full-size facsimile of the Shroud of Turin, which reproduces on transparent photographic film more than 4 meters long everything that is impressed on the Shroud.

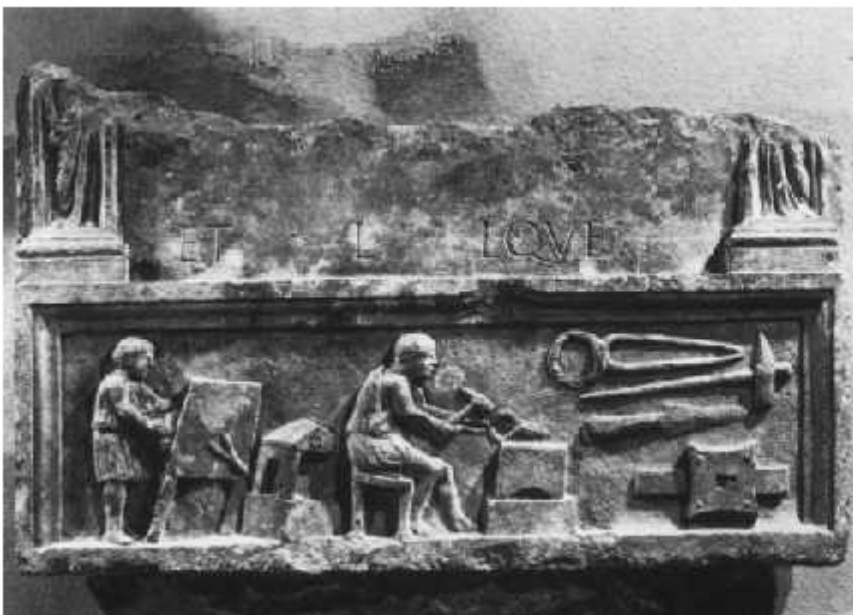
Very close observation, aided by adjustments in lighting and contrasts, has allowed him to discover the image of a geometric form in the centre of surrounding blood traces. His work is a little like that of archaeologists who, during aerial observations from a certain distance and under good light conditions, sometimes notice geometric forms unrelated to the surrounding nature: this lets them know that there is something to discover.

This discovery helps to understand how the body of the Crucified was fixed on the cross. We thank Mr Wehrkamp-Richter for sharing it with our readers.

The Italian photographer Secondo Pia proved in 1898 that the Shroud of Turin is a negative; the American research team STURP carried out in-depth studies of the Shroud in 1978. Since then, an uninterrupted series of increasingly advanced scientific studies has been undertaken. After 1986, the development of the electron microscope (which won the Nobel Prize in Physics that year), it has been possible to photograph and study with a very high magnification micro- and nano-structures such as the cellular structure of blood stains or the thin coloured fibres of the linen cloth, the ones responsible for the image formation.

However, the interesting detail presented in this article does not need a microscope: a good magnifying glass, at most, will suffice. The detail can be verified by anyone working with a facsimile of the Shroud, modifying the contrasts as needed or even just adapting one's eyes. But before starting to describe the discovery, let us make a detour by way of the Romans.

A first observation: Roman blacksmiths knew how to manufacture all kinds of nails and tools. History and archaeology have preserved a great number.



A cenotaph preserved in the Museum of Aquileia near Trieste (Italy) shows the workshop of a Roman blacksmith with his tools in the first century. In the centre of the stele the blacksmith holds in one hand with gripping pliers a piece of metal on which he works over an anvil. In his other hand he keeps a hammer. On the right side we can see gripping pliers, a hammer, a file and a lock. On the left side his assistant activates, behind a heat shield, a blower to increase the temperature of the melting-furnace. It was not a problem for this blacksmith to fabricate a nail with a cross-section more or less quadratic, rectangular or triangular.

To get a sense of the real size of a big Roman iron nail as it was used during crucifixion that was able to carry the whole weight of the victim, let us have a look at three kinds of nails from this period.



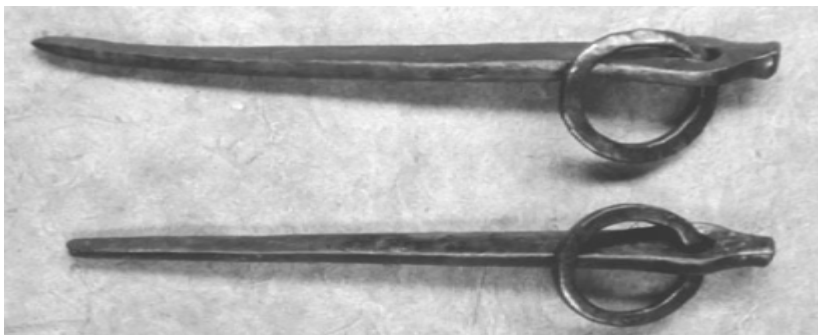
First we must consider the famous 'Nail of Trier', which is preserved today in the Trier Cathedral Treasury (Germany). Under the name Augusta Treverorum, Trier was the Roman capital city where Emperor Constantine and his mother Helena reined before choosing Byzantium, renamed Constantinople, as the new capital. At around 326 AD, just after the council of Nicaea, it was Empress Helena who visited the Holy Land and the Holy Places in Jerusalem and returned, according to tradition, with this large nail and a long tunic belonging to the Christ. This Holy Nail of Trier and its tip (which is preserved separately in Toul, in north-eastern France) have a combined length of about 21 cm.

Other large Roman nails are known: for instance, a nail in the heel of a crucified man. Along with the Shroud of Turin, this heel bone – punctured by a crucifixion nail and dating from the beginning of the first century AD – is another witness to crucifixion in Judaea. The name of the victim, **Yehohanan Ben Hagqol**, was engraved on an ossuary which contained various bones like the one pictured below.

Discovered in 1968, today preserved in the Israel Museum, Jerusalem



Some years ago in Lower Saxony (Germany), at Hedemünden (in the south of Göttingen), several Roman tent nails with fixation rings were found during archaeological excavations. These served to secure the heavy Roman military tents in an advanced Roman military camp in Germania around the time of Emperor Augustus.



Fixation nails for heavy Roman military tents: Photo: Dr Klaus Grote, archaeologist

All these large nails (around 20 cm long) have tips which are blunted or badly designed. This is not an inconvenience when tent nails simply have to penetrate the ground. But we have to imagine a much sharper nail-tip if such a big nail is to penetrate wood. As the Romans knew already how to file and drill metal or how to drill wood, we can hypothesize that they used a drill to make an initial hole in the wood, as Albrecht Dürer imagined in his beautiful painting.



The seven Sorrows of the Virgin

Lower right scene: The Nailing to the Cross
c. 1495 AD

Albrecht Dürer (1471 -1528)

Nürnberg (Nuremberg)

The seven scenes with Mary in the centre

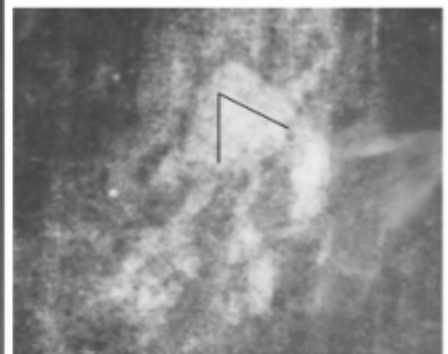
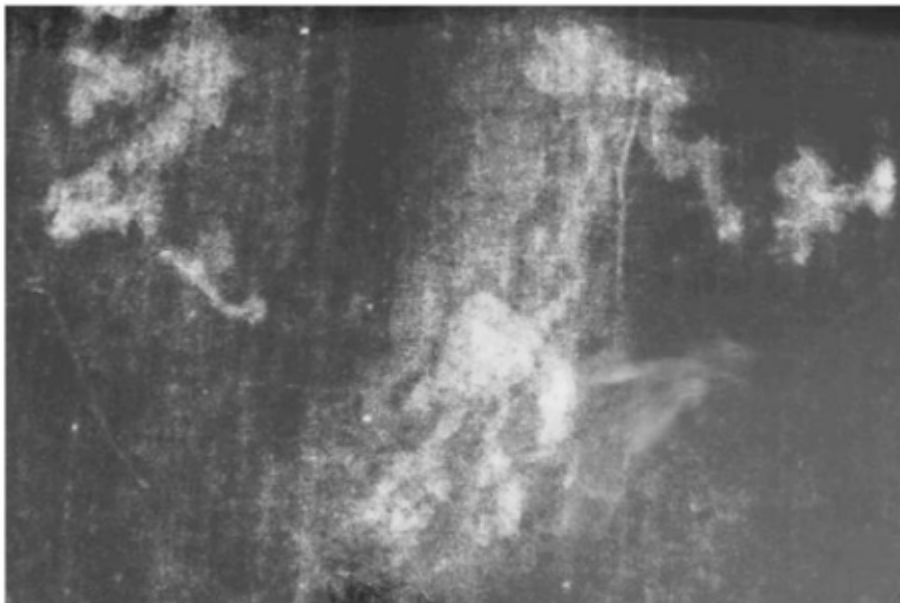
are preserved in two museums:

Sempergalerie, Dresden

Alte Pinakothek, Munich

1. The nailing is done on the ground
2. Before pounding the nails into the wood, holes had to be drilled with an auger

Let us return to the traces of blood on the quite bloody sole of the right foot of the Crucified. We can differentiate three lines of approximately 22 mm length each. Two of these measurable lines have a clear form and a measurable angle of 60° . The third line is unclear. These three lines surround a **triangular space** that appears quite homogeneous to the naked eye.



The two edges of the nail are visible and measurable even without a magnifying glass

The angle between the two edges (sides) is measurable (around 60°).

Photograph: Reginald Wehrkamp-Richter, from a facsimile supplied by Barrie Schwartz, (a photographer with the American STURP Research team)

Once discovered, this triangular space can be readily differentiated from the surrounding area. A flow diagram of the blood traces makes it possible to explain in detail the bloody image around the triangular form. The arrows indicate the directions of the blood flow.

During crucifixion the blood flow follows the law of gravity. The blood flow is more or less parallel with the axis of the body (vertical). Zone B which is in contact with the upper side of the nail, holds back much more blood than zone C, because the blood that leaves edge c of the triangle can immediately flow downwards in the two channels k2 and k3. But for zone B, the upper edge of the triangle nail forms a kind of dam that holds back the blood. The blood had first to flow to the right side before continuing down through the channel k4.

For students of fluid dynamics, the fineness and precision of the blood flow are additional proofs that this image cannot be a drawing or painting.

We also need to find an explanation for the blood flow up in the opposite direction. This blood trace, which irrigates zone W, could not have been generated at the same time as the other blood traces on the cross; it was produced later.

What can be observed is extraordinary. But one observation is a fact that has to be taken in account. This triangle is nearly equilateral; an exact geometric figure, which appears within the bloody image. What is the meaning of this image? What can it tell us? How can it be explained? Was the Shroud of Turin in contact with the metal nail, or part of the metal, during the short time in the tomb? Can we see the image of a hole which partially preserved the clear boards in the flesh, even if the hole has been partly filled in a second phase? Is this the trace of a large **triangular** nail (1) left in the foot of a crucified man? Are these traces remainders of coagulated blood, which when dried out, became hardened and preserved the form of the nail? Is this the silhouette just of the hole which one can see and which the enormous nail has driven into the flesh of the man of the Shroud of Turin? In any case, we can clearly see that the foot has been fully perforated from one side to the other. The calculation of the nail surface gives the enormous value of around **2 cm²**. Those who had to detach the body at the time could actually look right through the foot.

On the other hand, the technically precise image of the blood marks from the three sides of the nail allows us to say that it was impossible for the victim to turn his feet around the nail. Only a slight movement at the level of the knees was possible.

Shroud of Turin : Flow diagram of the bloodstains on the sole of the right foot

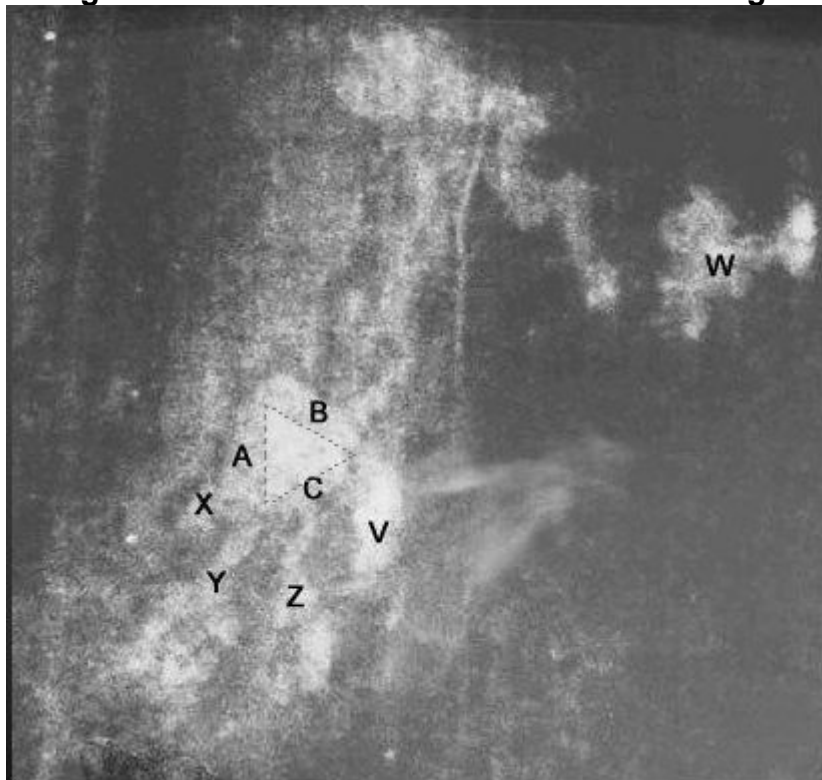


Photo and indications: Reginald Wehrkamp-Richter

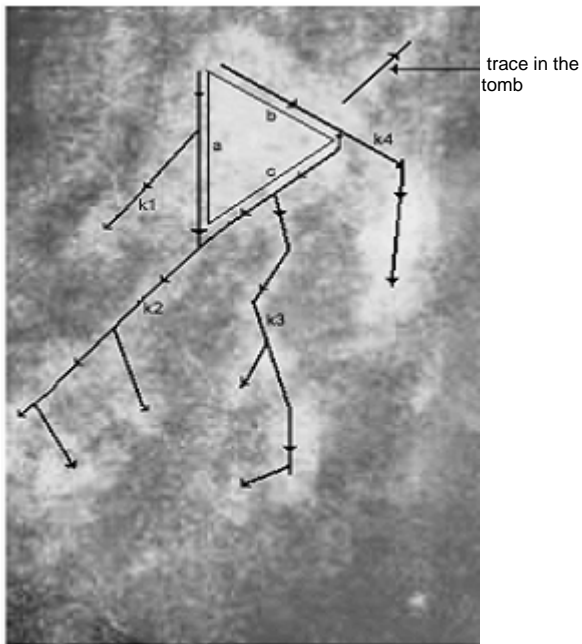


Photo and flow diagram : R. Wehrkamp-Richter

Flow diagram

N.B. : Within In the Shroud the right foot of Jesus was still in the same position as on the cross (rigor mortis)

1: The sides (edges) of the triangle can be easily recognized. Edge **c** is less viewable. The angle of 60° can easily be seen. The two other angles are more difficult to identify.

2. Around the nail we can differentiate between three zones of blood evacuation **A, B, C**. The arrows indicate the direction of the blood flow

- the blood that formed stain **X** originated in zone **A**
- the blood that formed stain **Y** originated in zone **A+C**
- the blood that formed stain **Z** originated in zone **C**
- the blood that formed stain **V** originated in zone **B**

- blood from zone **A** flowed through channel **k1** to bloodstain **X**
- blood from zones **A + C** flowed through channel **k2** to bloodstain **Y**
- blood from zones **C + B** flowed through channel **k2** to bloodstain **Y**
- blood from zone **B** flowed through channel **k4** to bloodstain **V**

3. the blood trails **X, Y, Z** and **V** were generated when the body was on the cross

4. the blood trail **W** originated in the zone **B**. How can this be explained?

The man of the Shroud shows crucifixion marks on the left hand and on the sole of the right foot. Observation and comparison of the image of the right sole, which was pressed against the wood of the cross, but under the left foot, with the image of the dorsal side of the left hand, which was pressed against the wood of the cross, but which was placed within the tomb over the right hand and in direct contact with the cloth of the Shroud, allow us to say that much smaller nails with a cross-section not clearly perceptible on the Shroud were used to fasten each hand.

From these observations we can derive various hypotheses. First, the mode of crucifixion required three nails: a large triangular nail that had to keep both feet together and two much smaller nails for the hands. Thus we can suppose that the nails for the hands were just used to hold the body of the crucified in place, but that the long triangular nail with a large cross-section had to carry nearly the full weight of the crucified man. This does bring us another piece of information: for the *patibulum* (the horizontal part of the cross), a simple plank was sufficient for the spread of the arms and to hold the hands in place, because the nails that fastened the hands had no real weight to support.

During the nailing, primarily with the large triangular nail, the cross had to be laid on the ground (see as well the painting of Albrecht Dürer) and not held in a vertical position. Technically speaking, it is hard to imagine nailing a man on an upright cross. Such a cross would vibrate powerfully under the hammering and would not enable the nails to penetrate, let alone go all the way into the wood, even with a *stipes crucis* (the vertical part of the cross) of around two to three metres height set firmly in the ground. Crucifixion on a cross in an upright position is possible when the victim is lifted and tightened with cords (crucifixion without nails).

French scientist André Marion has used optical instruments to compare the blood stains in the zone of the shoulders on the back sides of the Shroud of Turin and the Tunic of Argenteuil (a suburb of Paris). The image he produced after optical and mathematic filtering shows the traces left on the back of a man from contact with a whole cross as we see it most often in our churches: a cross made of a *stipes* and a *patibulum*, and not merely the horizontal *patibulum* which could have been fixed on a *stipes* already in place. This is why we can imagine a crucifixion with three nails.

Victims of crucifixion, even weakened by torture, used their last strength to avoid being crucified, by moving their arms, legs, and bodies in all directions. Several men were surely necessary to hold down the victim, who could also be fettered by sturdy ropes until another man pounded the nails in with a hammer.

Other hypotheses concern the way in which the body could have been removed from the cross. The clearness of the blood stains on the sole of the foot, which were formed when Jesus spent his last hours alive in a vertical position on the cross, and which were preserved as they appear on the Shroud, show that when he was dead his body was detached with great caution. Otherwise, the bloodstains and blood traces would not be preserved in this way, or at least not so distinctly.

All four Gospels (2) mention an important and benevolent person, Joseph of Arimathea, whom Pilate permitted to take charge of the body of Jesus. From his importance we can imagine that he had numerous servants who could have worked with him. From his attachment to Jesus we can conclude that he supervised the work so that it was done with a great deal of care.

*The question is no longer: Is the Shroud of Turin **Yes or No** the authentic Shroud of Jesus ?
But how can anyone still say today, at the beginning of the third millennium, that the Shroud of Turin is a fake, given all the scientific work that has been done in the last hundred years and more ?
Now we know with absolute certainty that the Shroud of Turin is unforgeable.*

And if the Shroud of Turin is authentic, then it is a direct witness of Resurrection ...

Reginald Wehrkamp-Richter

Many thanks to Professor Fayat (a distinguished specialist in physics and chemistry) for his precious help and encouragement.

* We must avoid speaking simply of 'the Shroud', because we have to differentiate between **the Shroud of Turin** and **the Shroud of Oviedo**. The Shroud of Oviedo is also being subjected to more and more scientific research.

1. *Jesus was laid by the archers on the cross [...]. The augers were big pieces of iron that had the form of a T [...]. The nails were of such a length that, when held in a closed hand, they stuck out on both sides by the length of a thumb. The nails had flat heads with the diameter of a penny. These were nails **with three edges**; the upper part was as big as a man's thumb. At the lower end the nails had the thickness of the little finger. The nail tips were filed down to a point, and I saw that when they were hammered in they stuck out slightly beyond the wood of the cross on the back.*

An extract of **The Dolorous passion of Our Lord Jesus Christ** by Anne Catherine Emmerich (1774 – 1824). Original german text: "*Die bitteren Leiden unseres Herren Jesus-Christus*".

Anne Catherine Emmerich was one of nine children of a poor peasant family and became an Augustine nun and a mystic in Dülmen / Westphalia (Germany). She was beatified in 2004 by Pope John-Paul II. Her writings are very controversial.

The following Gospel texts are from the international version of the International Bible Society, UK, 1984

2. << When the evening approached, there came a rich man from Arimathea, named Joseph, who had become a disciple of Jesus . Going to Pilate, he asked for Jesus body, wrapped it in a clean linen cloth, and placed it in his own new tomb , which he had cut out of the rock. He rolled a big stone in front of the entrance to the tomb and went away. (Matthew 27, 57 – 60)

<< It was Preparation Day (that is, the day before the Sabbath). So as evening approached, Joseph of Arimathea , a prominent member of the Council (Sanhedrin) , who was himself waiting for the kingdom of God, went boldly to Pilate and asked for Jesus' body. Pilate was surprised to hear that he was already dead. Summoning the centurion, he asked him if Jesus had already died. When he learned from the centurion, that it was so, he gave the body to Joseph. So Joseph bought a linen cloth, took down the body, wrapped it in linen, and placed it in a tomb cut out of the rock . Then he rolled a stone against the entrance of the tomb. (Mark 15, 42 – 46)

<< Now there was a man named Joseph, a member of the Council (Sanhedrin), a good and upright man, who had not consented to their decision and action. He came from the Judean town of Arimathea and he was waiting for the kingdom of God. Going to Pilate, he asked for Jesus' body . The he took it down and wrapped it in a linen cloth and placed it in a tomb cut in the rock, one in which no-one had yet been laid. (Luke 23, 50 – 53)

<< Later, Joseph asked the body of Jesus. Now Joseph was a disciple of Jesus, but secretly because he feared the Jews. With Pilate's permission, he came and took the body away. He was accompanied by Nicodemus, the man who earlier had visited Jesus at night. Nicodemus brought a mixture of myrrh and aloes, about seventy-five pounds. Taking Jesus body, the two of them wrapped it, with the spices in strips of linen. This was in accordance with Jewish burial customs. (John 19, 38 – 40)

Books and papers highly recommended :

- M. Antonacci : *The Resurrection of the Shroud* (Ed. M. Evans and Company - New York). 2000
 P. Baima Bollone, S. Zaca : *La sidone al microscopio* (Ed. Elle Di Ci, Leumann, Torino), 1997
 Flavius Josephus : *The Jewish War* (different editors).
 Flavius Josephus : *Antiquities of the Jews* (different editors).
 W. Gaitzsch : *Römische Werkzeuge (Roman tools) , a diploma work in archaeology , Univ. of Tübingen, 1978*
 M. Hengel : *Die Kreuzigung in der antiken Welt und die „Torheit“ des „Wortes vom Kreuz“.* Mohr u. a., Tübingen u. a. ,
Crucifixion in the Ancient World and the Folly of the Message of the Cross, Philadelphia 5/1989).
 A. Legrand : *Evangile et Linceul* (Ed. F.-X. de Guibert, Paris) = *Gospel and Shroud of Turin* , 1998
 J. Lipsius : *De cruce libri tres* (Ed. Ex Officina Plantiniana, Antwerp, 1599 et al.).
 G. Lucotte : *Vérités sur le Saint Suaire* (Ed. Atelier Folfer), 2010 *An extraordinary book in French with numerous macro photos taken by electronic microscope. Prof. Lucotte made also DNA analyses of dust from the Shroud of Turin.*
 A. Marion, G Lucotte : *Le linceul de Turin* (Ed. Presses de la Renaissance) , 2006
 W. Schmid : *zwischen Frömmigkeit und Politik, Reliquien im Mittelalter* , 2011
(between devoutness and politics, relics during Middle Age)
 A. et M. Whanger : *The Shroud of Turin* (Ed. Providence House Publishers, Franklin, Tennessee), 1998
 F. Zugibe : *The Crucifixion of Jesus, a Forensic Inquiry* (Ed. M. Evans and Company, New York), 2005

P.S.

For those who want to learn more about the Shroud of Turin , a visit to the Shroud museum in Turin is a must! Visitors will also find literature in a variety of languages.