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Some Observations on the Medical Aspects of the Shroud of Turin

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From the medical aspect, the Shroud of Turin shows a badly battered body with numerous areas of traumatic injury; apparent swelling and bruising of the face; numerous areas showing evidence of scourging probably with a two-thonged scourge; and wounds consistent with a crucifixion of a man who died on the cross and was buried in a linen shroud which completely covered the body, both front and back.

Let us look at each area from a medical standpoint. The head shows that there was a considerable amount of trauma with a large number of bleeding points present. The exact cause of this extensive amount of hemorrhage to the scalp and head area is undetermined. However, these are interesting types of wounds as depicted by the heavy bloody stains in the hair and the peculiar bloodstain which appears as a reverse "3" on the forehead. There must have been some obstruction to the flow of blood in the middle of the forehead so that the blood, instead of flowing directly down the face as one would expect by gravity flow, took a more devious route to get around the obstructing objects which were present in the forehead. Those objects which are in the head area also prevented the

blood from running down the middle of the face and back of the neck. The face shows other evidences of trauma, in particular, swelling under the right eye and the swollen area across the bridge of the nose. I cannot differentiate, however, the types of bleeding, whether it be arterial or venous in origin.

The body is obviously covered with numerous marks consistent with a scourging, but I found it extremely difficult on the pictures which I have studied of the shroud to be accurate on the number of blows, since in many areas, particularly on the back, these markings appear to blend together. Yet in reading many of the authors, such as Hynek—80 marks; Bucklin—at least 100 marks; Barbet—100 to 200 marks; Wilcox—at least 98, and perhaps more and as many as 120, it is apparent that the number of blows, seems to vary from 40 to 60 considering a two-thonged scourge was used with tipped ends. The number of blows, however, does appear in excess of the Mosaic Law which, by any standard, would be a severe scourging. But why was the Mosaic Law only 39? It must have been because of the serious potential of a person dying from the scourge if more than this number were placed on a human body.

Apparent Chest Wound

The large wound in the right chest is readily apparent and is located between the fifth and sixth ribs, with the flow of blood running down toward the ground, as one would expect from an individual in the crucified position. The blood appears to be cut off at a fairly sharp point in the lower portion of the chest area. This may be explained by the fact that individuals on the cross at death would be in maximum hyperextension. This would create a large depression in the abdominal area, plus the fact that the hands folded in front of the body would prevent the cloth from touching these areas.

The other possibility could exist that an individual on the cross at death tends to be leaning forward, so that some of the blood could have fallen directly onto the ground. The wound also shows that the individual continued to bleed after death, as the postmortem blood is identified across the small of the back.

Blood Volume

The volume of blood coming from the wound in the chest could be considered, since medically we know an individual sustaining repeated and severe trauma to the chest cage, plus the fact that he is in progressive right heart failure, accumulates a serous fluid in both the pericardial and pleural spaces. When opened, then, this would issue forth as a serous and bloody fluid and could explain the various intensities in color which one sees in the heart stain area, the variation depending on the mixture of serous fluid with the actual red blood cell component. The two types of bleeding here are 1) that when he was on the cross with the blood flowing toward the ground, and 2) after being taken down from the cross and continually

bleeding, that blood identified on the lower back area of the shroud where one can readily see the separation of the serous fluid from the cellular component. That this bleeding occurred after death is apparent because blood was in the small of the back after the individual had been laid in the shroud. I am unable, however, to otherwise differentiate antemortem from postmortem bleeding.

Discussion of Blood Stains

Blood stains on the arms and wrist areas have been thoroughly discussed by Doctors Barbet and Bucklin as to why they are in the wrist areas. The flow and the angles would again give evidence that the man on the cross is moving and this we know medically is necessary to continue to breathe, as asphyxia and death would occur very rapidly if the individual could not push himself up to breathe.

Both Doctors Barbet and Hynek were familiar with the German treatment of condemned people by the use of "Aufbinden". Doctor Hynek knew from personal experience, and Doctor Barbet knew of this from experience at the Dachau concentration camp. In a hanging position, individuals must pull themselves up to breathe. Doctor Modder and Father Weyland showed a similar experience from their work.

The left leg is still partially flexed so that the imprint of the left foot is faint and somewhat irregular, while there is almost a complete imprint of the right foot. In some articles, it has been stated that this is due to the feet being hyperextended onto the wooden beam. However, this may not be accurate, as it is possible that this full imprint of the feet occurred because of the cloth being folded up over the feet. The flexion of the left leg would indicate a three-nail type of crucifixion, with the left leg being placed over the right. Again, we see that bleeding occurred while the individual was on the cross, where the blood flow occurred downward toward the toes, and again, bleeding occurred after the person was taken down from the cross and placed in the burial cloth. This is indicated by the pooling of the blood in the heel area of the right foot.

Doctors' Identification

Doctors Heller and Adler have identified the reddish staining material as blood and human protein, and also several Italian scientists who worked under the direction of Dr. Baima Bollone were able to show that this is not only human blood but were able, under special techniques, to identify the blood grouping. The excellent work done by these scientists should end the discussion of whether this is iron oxide pigment or human blood.

If one looks at the cloth, one is struck by the manner in which the body appears to be quite rigid and stiff, suggesting postmortem rigidity which, medically, we know occurs very quickly after an individual dies from any type of traumatic death. We know rigor mortis begins in the small structures and progresses to the larger muscles. In Arizona, this takes

approximately four to six hours under normal circumstances. However, under torture or excessive physical activity, rigor mortis is probably complete almost immediately, and if one looks at the pictures of the shroud, one gets the impression that the face, arms and fingers, the gluteal areas and the left leg show that this individual demonstrates rigor mortis. We would expect rigor mortis to disappear somewhere between 48 to 72 hours, with the body becoming flaccid, with loss of normal body contours, and distension of the facial and abdominal areas. The man on the shroud shows no obvious evidence of postmortem decomposition. The problem, however, becomes more acute when one tries to explain how the man got out of the cloth within 48 to 72 hours without smearing or altering the blood stains which had soaked into the linen fibers and transferred accurately and correctly the configurations of the blood flow.

Another difficult problem to resolve is whether a sedile was used. If one refers to the works of Doctors Barbet, Hynek and Modder, plus the work of Father Weyland and from personal experience, one has serious difficulty in explaining the historical fact that individuals could last so many hours, and up to days, on the cross. The work and experience of the above individuals, particularly Doctors Barbet and Hynek in reference to *Aufbinden*, showed individuals dying in three to four hours. From the work of Doctor Modder and Father Weyland, we find that living people had great difficulty after 20 minutes, and in my own experience, it was less than 10 minutes. For a crucified individual to survive 24 to 48 hours is difficult to understand. If a sedile were used, it would suggest that the person were fixed in one position, so drag on the arms and chest and asphyxia would not be a problem. Death would probably be due to dehydration, with thirst being the overriding problem.

Final Cause of Death

As to the final cause of death of the crucified, many causes have been listed, such as bursting of the heart, rupturing of the heart, and others. From a medical examiner's standpoint, I would have to say that death occurred by asphyxia due to crucifixion, with other conditions listed as scourging plus bilateral pleural effusion, dehydration and hemoconcentration.

In conclusion, I have just completed my 27th year of studying and lecturing on the Shroud of Turin. As with any topic of this type, many people have offered support and have been extremely helpful in advancing my understanding of this subject. Rev. Jim Mahoney and Dr. Francis Filas of Loyola University in Chicago were extremely helpful, as was Rev. Adam Otterbein at the beginning of my quest back in 1958, and he continues as a great source of help and information. I had the opportunity of having had some helpful discussion with Dr. Robert Bucklin, and some personal communication with Mr. Frank Tribbe. A special thanks to Mrs. Andrea Malmberg for her help in finishing this paper.

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