

Special Features

Doctors at Calvary: Part II

Victims of Crucifixion were unable to push themselves up while fastened to the Cross



Dr. Fred Zugibe

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One of the most highly respected forensic specialists in the United States, Dr. Zugibe served as chief medical examiner of Rockland County, New York, from 1969. He is professor of pathology at the Columbia University College of Physicians and Surgeons, New York. Here he follows on from Dr. Frans Wjffels, in Newsletter 52, in assessing just what we can learn from the Shroud of what it meant to be crucified...

Introduction

French surgeon Pierre Barbet's famous theory that the man of the Shroud suffocated on being unable to push himself up while fastened to the cross was based on *a priori* reasoning. It postulated that Jesus assumed two positions on the cross; a 'sagging' position and a 'straightening' position. Barbet defined 'sagging' as referring to the body's drop from the horizontal position (where the arms are parallel to the *patibulum*, or crossbeam) to the 65 degree position, a drop that he estimated as 10 inches. 'Straightening' he defined as the victim's raising himself to a position of about 70 degrees.

According to Barbet the crucifixion victim was unable to breathe out, or 'expire' in the sagging position because the air in his lungs was locked in inspiration, or breathing in. This necessitated him pushing up with his feet in order to expel the air from his lungs, thereby going into the straightening position. When the victim could raise himself no longer, he died of asphyxiation. Barbet interpreted the bifurcated or 'V'-shaped blood-flow pattern in the Shroud's hand area as due to this sagging and straightening. He maintained that the pattern depicted two flows of blood from the angle of the wrists changing due to the lowering and raising of the suspended body.

Barbet further supported his theory by quoting witnesses to atrocities committed in the Dachau concentration camp. These witnesses observed the punishment of Austro-German army soldiers and a prisoner at the Dachau concentration camp by their being hung by their arms fastened above their heads with their feet just off the ground. They had extreme difficulty breathing out because the air in their lungs was "locked" in inspiration, causing severe muscle contractions and spasms. When they could raise themselves no longer, they died of asphyxiation. Barbet fortified his speculations with the biblical scenario,

"So the soldiers came and broke the legs of the first, and of the other who had been crucified with him; but when they came to Jesus and saw that he was already dead, they did not break his legs" (John 19; 32, 33).

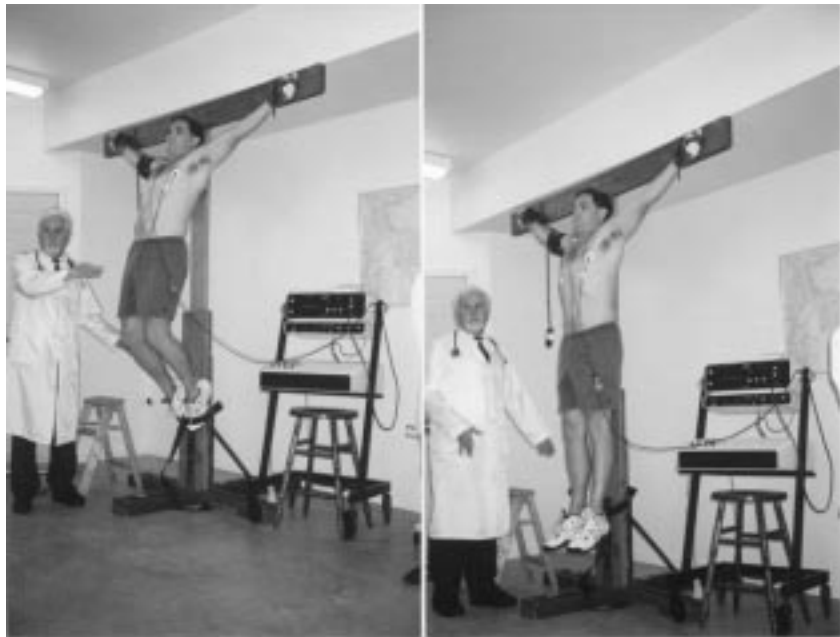
He interpreted this to indicate that the legs of the two thieves were broken to prevent them from

raising themselves in order to breathe out.

In previous studies I initially pointed out that Barbet's three hypotheses can be easily refuted. In the first case, the 'V'-shaped blood-flow pattern could not represent the blood flow in the two positions because it is on the back of the hand, which was nailed flush against the cross. This is not possible because this would cause the blood to smudge all over the back of the hands. Secondly, the Austro-German observations are only applicable when the hands are directly above the head, not at 65 to 70 degrees with the cross upright and with no foot support. Even Barbet postulated that the arms were at about 65 degrees. Lastly, in the case of the 1st century Jew Jehohanan excavated at Giv-at ha-Mivtar, Jerusalem, his legs were broken. However the reconstruction of how Jehohanan had been crucified showed him in a raised position with his arms parallel to the crossbeam of the cross.

Since some critics of my work accused me of using the same kind of a priori reasoning as Barbet, we developed an extensive experimental protocol to investigate Barbet's hypothesis. After all, it has been quoted *ad infinitum*, in magazines, book chapters, books, lectures, documentaries and the like. In this regard, we performed extensive suspension experiments utilising a very sturdy and highly accurate cross. This had a linear series of holes drilled through each arm of the crossbeam to provide for different arm lengths, with which to affix the hands. Special leather gauntlets were provided to secure the hands to the crossbeam. The volunteers were then allowed to suspend fully while an assistant bent their knees while sliding their heels upward against the cross upright until their soles were flush to the cross at its lowest point possible. The feet were strapped exactly at this point with seat belts, both with the feet flush to the cross upright and also with one foot on top of the other.

A series of sophisticated tests were then conducted. These included 12 lead electrocardiograms, pulse rates, electronic blood pressures, auscultatory examinations, vital capacities, ear oximetry values, arterial blood gases, venous blood chemistry profiles, Douglas bag studies etc. The results of these



Dr. Fred Zugibe conducting his crucifixion experiments using volunteers

studies showed no visual evidence of breathing difficulties throughout the suspension. The oxygen content of the blood either increased or remained constant as was determined by blood gases. And oximetry and Douglas bag studies determined the presence of hyperventilation with abdominal breathing. The maximum time of suspension was one hour primarily because of the pain in the arms, shoulders and legs. Moreover, volunteers that were suspended without securing their feet had no difficulty breathing and afforded identical clinical values as those who had their feet secured. It was concluded that the asphyxiation theory was untenable.

Despite these extensive tests, it has been stated by some Shroudies that these experiments were not applicable since our volunteers were not brutally scourged, crowned with thorns, nailed through the hands and feet and suspended for a long period on the cross like Jesus. Since it would be inhumane to subject our volunteers to these brutalities prior to suspension, we performed some additional ex-

periments in an attempt to obviate these problems.

The first of these additional experiments was designed to observe if there was any significant change in the position on the cross with attempts to lower the body further and to determine the effects of lowering. Volunteers were suspended in the same manner as in our previous experiments. In this regard, the volunteers were allowed to suspend fully by the hands in the gauntlets. Then an assistant bent their knees and slid their heels upward against the cross upright until their soles were flush to this at the lowest point possible. Their feet were then secured with a seat belt at this level, the procedure then being repeated with one foot on top of the other. The volunteers were then requested to make an attempt to lower the body.

The second experiment was designed to determine whether it was possible to straighten the body from the sagging position as indicated by Barbet. In this regard, the volunteers were requested to straighten the body as if to breathe out as was indicated by Barbet. They were told to push against the foot restraints as hard as they could as if their life depended on it. We repeated this with one foot placed on top of the other.

The third experiment was designed to determine whether the angle of the wrists would change during the straightening and sagging positions indicated by Barbet to account for the 'V'-shaped blood-flow pattern and if so, to determine the degree of change. We secured the hands firmly against the cross-beam and then had them attempt to push up according to Barbet's hypothesis as if to breathe with both feet flush against the stipes and then with one foot on the other. The volunteers were unable to do this. Therefore, in order to accomplish this; we had to lift them around the torso while pushing against the knees and observe their hands and arms.

Results:

The first experiment: In this position on the cross, the back does not contact the cross upright; there is a significant space being greater in the lower back area. It is, however, possible with great effort to lower the pelvic area slightly causing this area of the back to draw closer to the cross upright with a slight drop of the buttocks. This position could not be maintained very long because of the marked increase in the pull on the hands and arms causing severe pain in the shoulders and arms. This pull on the hands and arms was 2 ½ times that of the pull exerted in the usual sagging position. There was, however, only a minimal change in the angle of the arms with the upright. There was no difficulty in breathing and the ear oximetry values were normal.

The second experiment: None of the volunteers was able to straighten their body as postulated by Barbet no matter how hard they tried. This appears to be due to the fact that with the soles flush to the upright or with one foot on top of the other, the range of motion limitation for straightening has been exceeded, precluding any type of straightening or pushing mechanism.

The third experiment: Since the volunteers were physically unable to straighten, as indicated in the second experiment, we attempted to assist them by lifting them by their torsos. We noted in every instance that there was no change in the angle of the wrists. Instead, in the great majority of the cases, the arms bent at the lateral articulations between the radius-ulna and proximal carpal bones and in a few cases they bent at the elbows. Although the second experiment totally refutes Barbet's hypothesis that the 'V'-shaped blood-flow proved the victim to have assumed two positions (i.e. one arm of the 'V' representing the sagging, the other the straightening position), this third experiment demonstrates that even if it were possible for the victim to straighten, there is no change in the angle of the wrist. This further refutes this aspect of Barbet's hypothesis.

Discussion:

Our previous experiments utilizing sophisticated equipment, revealed that in the position on the cross, there is no difficulty breathing in the sagging position as postulated by Barbet. A forensic re-

construction of the above factors clearly demonstrates that traumatic and hypovolemic shock (in which the heart is unable to supply sufficient blood to the body), were the harbingers of death. Moreover, our recent experiments demonstrate that if volunteers in good physical condition were unable to push or pull up to straighten themselves with their soles flush to the cross upright, or with one foot on top of the other, how could an injured, exhausted person - particularly one in severe pain and with nails through the hands and feet - have the strength to straighten himself from a sagging position? This completely repudiates the theory of straightening and sagging as proposed by Barbet.

It is also of interest that in the numerous suspensions we conducted, there was never an attempt by the volunteers to lower the body because of the severe pain on the arms and shoulders and because of the increase in leg cramps with flexing (bending) of the knees. In the latter regard, instead, many of the volunteers arched their bodies back with their heads bent back against the cross to relieve the cramping in the legs and shoulders. Moreover, our finding that there was a bending at the lateral articulations between the radius-ulna and proximal carpal bones and in a few cases at the elbows without any change in the angle of the wrists when we physically straightened the knees of the volunteers, totally disproved Barbet's hypothesis that the 'V'-shaped blood-flow pattern supported his hypothesis that the crucifixion victim assumed two positions.

It may be of interest to note that even if the volunteers had been able to raise themselves up, this still would not support Barbet's hypothesis for the following reason. In the case of an actual crucifixion, the feet and hands would be swollen and exquisitely painful within minutes of nailing, becoming more swollen and painful with time. Any attempt to straighten by pushing against the nail would not be possible because the degree of pain would be exquisite and intolerable. After a short time, the victim would be suffering unbelievable pain and exhibiting increasing degrees of traumatic and hypovolemic shock.

Another fact to mull over is that the average respiratory rate is 12 to 16 beats per minute and that during our suspensions the volunteers started to hyperventilate several minutes of being suspended because the position on the cross causes a decrease in the vital capacity (determined by our Douglas bag studies). In the scenario proposed by Barbet, the victim would have had to straighten himself by pushing against the nails over 4000 times during the 6 hours on the cross even at a normal respiratory rate of 12. I don't think so.

Sources used:

Barbet, P. *Les cinq plaies du Christ*, 2nd ed. Paris., Procure du Carmel, 1937

" *Doctor at Calvary* New York, P.J.Kennedy & Sons, 1953; New York, Image Books, 1963

Zugibe, F.T. *The Cross and the Shroud. A Medical Examiner Investigates the Crucifixion*, Angelus Books; Garnerville, New York, 1982.

" 'Death by Crucifixion' *Canadian Forensic Science Journal* 17 (1983) pp.1-13

" 'Crucifixion of Jesus: Two Questions about Crucifixion: Does the victim die of Asphyxiation? Would Nails in the Hands Hold the weight of the body?' *Bible Review* 5: 34-43, 1989

" Barbet Revisited, *Sindon Nuovo* series, Quad no. 8, pp.109-121, 1995 (<http://www.shroud.com/zugibe/htm>)

" Forensic and Clinical Knowledge of the Practice of Crucifixion: A Forensic Way of the Cross in S. Scannerini & P. Savarino (eds.), *The Turin Shroud: Past, Present and Future* International Scientific Symposium, Turin, Italy, March 2000, Effata Editrice 2000.

Editor's Note: Dr. Frans Wijffels

The last issue of the Newsletter carried a major article by Dr. Frans Wijffels describing his researches on crucifixion, which differ from those of Dr. Zugibe. The reader may therefore evaluate for himself the merits of the different arguments presented. Dr. Wijffels article was long, and written in a rather

difficult style which necessitated pathologist/BSTS member Dr. John Sullivan and myself going to considerable lengths to make it presentable for the general reader. In the process a section that Dr. Wijffels considered essential to his argument - on the acidosis of the blood, which Dr. Wijffels believes killed Dachau victims and the man of the Shroud - became omitted. As Dr. Wijffels explains:

'It is the acidosis that caused the rigor mortis of the extremities - before the death of the individual. It is the acidosis that causes the high viscosity and the haemolysis (disintegration of the red cells) and the non-clotting of the post-mortal [sic] blood'.

It is hoped to include Dr. Wijffels' further comments on this in a future issue.

Tracing Possible Post-Resurrection Radiocarbon Anomalies

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Newsletter No 49 carried a n interview with Dr. Trenn in which he discussed his ideas of the physics behind the event that Christians call the Resurrection. Here he talks of what the effects this same event might have had on the radiocarbon content of the Shroud...

At least two *known* sources of post-resurrection radiocarbon are already confirmed. The famous fire of 1532 induced isotopic exchange in specific locations *differentially* throughout the folded cloth. The bio-plastic coating recently confirmed by Garza-Valdes is evidence for the continual presence of *living* organisms on that linen cloth, providing a continuous and renewable supply of additional radiocarbon. Both of these sources of modern radiocarbon "contamination" increase the relative amount of C-14 present in the cloth. It would be well worth mapping the overall radiocarbon profile if just for these two factors alone.

However, there are other *possible* sources of induced radiocarbon. If the Shroud or any portion thereof had ever been exposed to a thermal neutron flux, subsequent to that cloth's manufacture, nitrogen atoms fixed in its fibrils would have easily been converted to C-14 as normally occurs in the upper atmosphere.

There are at least two specific ways in which this could have occurred. First: If the Shroud or any portion thereof had been inadvertently exposed to a rogue thermal neutron flux, the resulting modern C-14, superimposed *uniformly* upon the original endowment, would contribute to a net *rejuvenation* of the sample in question. Second: If during the resurrection, "weak dematerialization" of the body occurred, accompanied by a release of thermal neutrons, these would easily produce excess radiocarbon distributed *non-uniformly*, denser along the central axis of the entire cloth.

This second way has been dealt with in considerable detail in "The Shroud of Turin: Resetting the Carbon-14 Clock" in *Facets of Faith* (1996) pp. 119-133, and was discussed in an interview, included in *BSTS Newsletter* 49 June 1999, pp. 16-22. In both of these *unknown* possibilities the same questions pertain as regards *overall* radiocarbon anomalies.

This report will dwell mainly on the second set of possibilities. One crucial question is whether *secondary* radiocarbon, once induced, would remain within a linen cloth. The prevailing view in 1988 was that any radiocarbon, possibly arising from *in situ* nitrogen would either conveniently just disap-

pear or else be removed by pre-cleaning the samples. One of the principal investigators at the Oxford testing site, Robert Hedges, fully expected that hypothetical radiocarbon, induced in a sample, would be in a “different chemical environment”, and so presumably unable to stay in the cloth. [Hedges, in *Nature*, 337 (16 February 1989) p. 594].

Just a few years later, actual scientific experimentation on another test piece of linen cloth disproved this crucial assumption. As reported at some length in *BSTS Newsletter* 38 [(1994) pp. 13-16] an ancient linen belonging to an Egyptian mummy, dated as 4,670 BP at Toronto’s Isotracer Laboratory, was irradiated in France at the Saclay “Orphee” reactor using a specified thermal neutron flux for 20 minutes. This mummy sample was then returned to Toronto for carbon re-dating by the AMS method. The new radiocarbon content was found to be “319 times the normal level. It was as if its age was 46,000 years into the future! The ‘rejuvenation’ obtained was more than five hundred centuries.” [op. cit. *BSTS Newsletter*, p.15]. “The results obtained show that a piece of linen can be enriched with radiocarbon by neutron flux, in a manner to falsify carbon dating calculations.” [ibid, p.15]

This scientific result has several important implications for the case of the Turin Shroud:

- 1.Secondary radiocarbon, once induced within a sample, **remains** in that sample. It does *not* just disappear as had once been assumed. Whether or not this extra radiocarbon could have been removed by pre-cleaning the mummy cloth remains an open question.
- 2.Secondary radiocarbon, being quite indistinguishable from the original C-14 endowment, does contribute to the overall radiocarbon content of the given sample. *A fortiori* that sample is effectively rejuvenated compared with its true age.
- 3.Even a brief exposure to a flux of thermal neutrons suffices to radically rejuvenate the sample’s age.

These conclusions, based upon the results cited above, can hardly be over-emphasized. Even from the limited data supplied in this particular mummy case, the selected flux effectively rejuvenated that cloth at a rate of well over 2,000 years per minute, assuming this process to be a simple *linear* function of exposure. But the thermal neutron capture cross-section is *high* for nitrogen, so it is unlikely that the full 20 minutes would have been required for total conversion of all nitrogen available *in situ*. And certainly that “radiative capture” process would have been *non-linear*, perhaps even exponential. We may therefore safely conclude that the first half of *in situ* N-14 would have been converted to C-14 well within the first minute of exposure! Accordingly, that mummy sample must have been rejuvenated by well over a thousand years within a few seconds of exposure to that neutron flux.

The cited experimental findings and summary analysis for the case of the mummy wrapping are of direct relevance to tracing post-resurrection radiocarbon anomalies in the Turin Shroud. As mentioned above, if the Turin Shroud, or any portion thereof, were ever exposed even to a *brief* thermal neutron flux then the resultant new radiocarbon would contribute significantly to the total radiocarbon content.

If the flux were *uniform* then mapping that specimen would yield no predictable *profile* other than an “elevated” state of radiocarbon throughout the sample. In quasi-geographical terms, it would appear rather as a high plain with probably few distinguishing elevation contours or features. However, if induced radiocarbon arose from a *differentiated* neutron flux, as postulated in the weak-dematerialization theory, then a significant and predictable “axial maximum” profile would be expected. Testing for post-resurrection anomalies could therefore help to clarify the presence and profile of any and all modern radiocarbon, the better to assess the various sources including fire, bioplastic coating, as well as other contaminants.

Conclusion:

Tracing possible post-resurrection radiocarbon anomalies would help to clarify the type of profile present. If the overall distribution were found to be lacking any significant profile then it would con-

stitute strong evidence against the sort of *differential* neutron flux arising from weak dematerialization of the body during the resurrection.

For Hedges, “whether the Shroud samples were irradiated by neutrons (which certainly could make a date appear younger than the true date)...is an idea “difficult to take seriously”. [*Approfondimento Sindone*, I(1997) p. 7]

Perhaps he is correct in his belief as regards a *non-uniform* neutron flux that could be associated with weak dematerialization. However, whether or not the Turin Shroud, or any portion thereof, could have been subjected to a *uniform* neutron flux, is quite a different matter, and one that Hedges claimed in 1988 to have taken very seriously indeed. He reported that the AMS team at Oxford took the precaution of anticipating the effect of such a neutron flux upon *in situ* nitrogen in the Shroud samples, [Hedges, “Reply” *Nature*, 337 (1989) p. 594] while placing their confidence in its prompt removal either by self-ejection or by pre-cleaning. Recent scientific evidence suggests that this confidence was misplaced, at least with respect to “self-ejection”. So, Hedges’ own insistence upon the alleged instability of secondary radiocarbon takes on a new significance for the Turin Shroud. Radiocarbon, once induced, actually remains in a piece of linen cloth. Whether or not this can be removed by the type of pre-treatment procedures employed in 1988 awaits scientific examination. When the testing was done in 1988, however, there simply was no way to guarantee that the entire Turin Shroud, or any selected portions thereof, had *not* been briefly exposed to a rogue thermal neutron flux.

Employing available tracing techniques on the entire cloth would thus go a long way towards resolving these issues. The lack of any significant profile across the width of the Shroud, for example, would fairly exclude the theory of “weak dematerialization” and associated non-uniform neutron flux. Tracing techniques could also yield further information about those *known* sources of radiocarbon contamination throughout the cloth. Most intriguing, the newer tracing technology might even be able to provide a relative “count” of C-14 with respect to stable C-12 in various locations throughout the Shroud, in effect by counting each atom. If so, this would give some indication of whether the 1988 samples were truly representative of the cloth, as claimed, when these were given over to the three testing laboratories. Such a refined tracing procedure, providing a means of comparison, could also eliminate from consideration the unlikely possibility, “difficult to take seriously”, that the 1988 test samples themselves had inadvertently been exposed to a thermal neutron flash.

Clues and confirmations towards the authentication of the Turin Shroud

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In *Shroud Newsletter* 51, dated June 2000, Ian Wilson reviewed my *New and Undisclosed Secrets of the Turin Shroud*. I full acknowledge that this was a very much abbreviated text of material I have gathered since 1992, the outcome of two previous books on the Mandeian-Nazarene connections translated into French by *Cahier d’Etudes Cathares* and latterly into Italian by *Cognoscenza*, a review published in Florence. It may well form the basis for a much more comprehensive study. However in 1997 I felt impelled by the news of the Turin Cathedral fire to publish this modest document, lest the information I had discovered should vanish along with the disappearance from public view of the Shroud itself.

I am convinced that unless we are prepared to consider the profound importance of the Nazarene connection, we will never precisely identify the man of the Shroud as Jesus himself rather than a man

crucified during that era, who nonetheless bore all the biblical marks of crucifixion. It is totally unlikely that he could be anyone other than Jesus. However we cannot be 100% certain unless:

- (1) We place the statement that Jesus was a *Nazarene* as central to our investigations.
- (2) We take into account the nature of Nazarene beliefs (synonymous with Mandeans) and their specific burial customs and
- (3) The highly controversial system of healing through Radionics, originally using blood samples sent by patients at a distance which were at one time photographed through an innovative camera to reveal elements of human anatomy and internal tissue never before seen or known.

Therefore, let us deal first with the question of the Nazarenes. They were known to be present in the Wadi Nasara area of Jordan and all over Petra during the time of Jesus, where there is evidence of baptismal water tanks, no doubt relating to the time and practice of John.

On this matter, I was in fact assured by the Director of the Aqaba Museum in Jordan last summer, that the caves of the Nazarenes (*Moghur Nazara*) were the dwellings of the Christians in that area – the word Christian was not in use at that time as it was of Greek origin and deriving from the word *Kristos* meaning the “anointed one”.

Moving on to Rome, the French archaeologist Jérôme Carcopino, when researching the site of St. Peter and St. Paul’s tombs between the two World Wars, suspected that the remains of these saints had been given to the Nazarenes during the early part of the 2nd century AD in order to hide them from the Roman authorities.

In Ian Wilson's 1978 book *Turin Shroud* book can be found reference to St Anthony the Martyr's account of the *sudarium* being present c.AD570 in a cave convent on the banks of the Jordan. This river is sacred to the Mandeans, i.e. the Nazarene community, and symbolises those limpid light worlds to which all souls must return after their death. Jordan was the original site from which the Semitic Mandaean-Nazarenes came from. Their migration from the Jordan valley in Palestine into the Eastern Territories of Iraq and Iran, brought about by their persecutions by the Orthodox Jews, probably took place during the 1st.and 2nd.Century AD.

It is quite vital that we look at the burial customs of this sect to which Jesus and John belonged, since all the recent conclusions regarding the death and burial of Jesus point to these rites, as scholarship has hugely moved on regarding our knowledge of this sect.

Secondly, let us look at the facts:

- (1) The corpse was unwashed, since it was the custom with these religious rites not to wash the body of someone who had died a violent death according to the conditions of ritual purity.
- (2) Instead the body would have been sluiced with water and a myrtle wreath emblem of healing and resurrection would have been put in place as for other heads of its priestly hierarchy. The Crown of Thorns, as I had already indicated in earlier publications, would, of course, have been removed and replaced by the Healing crown, known as *Asa* and interpreted as such.

This is evidenced by the position of the *Gundelia Tournefortii* (Crown of Thorn) pollens that Avinoam Danim so significantly identified, and which can be found rather on the periphery of the Shroud, whereas if it had remained on the head, would most certainly not have been the case. The myrtle, on the other hand, would account for the particular protrusion of foliage beyond the brow in the Secondo Pia photographs, as the Nazarenes plucked the lower leaves from the twigs so that they could be placed on a head filet surrounding the head.

Myrtle was used in all ceremonies of birth, marriage and death. And to quote Helen Frenkley, Director of Neot Kedumin, the Biblical Landscape reserve in Israel,

“In Jewish tradition dating back at least to the Mishnaic period the myrtle symbolises immortality and success, because of its ability to withstand extended periods of drought and to remain green and fragrant throughout the year. Sprigs of myrtle were held by brides under the

wedding canopy and conversely placed on the Shroud of the deceased before burial.” Unfortunately Max Frei was not allowed to take pollen samples from the precious brow and back of the head areas I have described. However, since the myrtle is indigenous to the Holy Land, it would be highly improbable, given the location of the Shroud, that such pollens would not be found. If they were not, one cannot but wonder why.

Now, as to the other plant pollens that also exist on the Shroud, a really remarkable further link exists with Mandaean-Nazarene burial customs. I was therefore deeply struck by the prominence of one other very important plant pollen that next to the *Gundelia Tournefortii* appeared to be most profuse. It was *Cistaceae* or rock rose. In Nazarene terms, this is particularly telling as I am reminded of their custom of covering the nose and mouth at funerals with a face scarf known as the *Pandama* and filling it with roses that they, rather unusually, released over the dead person. Only this particular sect conducted their funeral rites in this manner, which supports with a certain measure of conviction the discovery of *Cistaceae* pollens, providing a meaning and purpose for their existence on the Turin Shroud.

The next overwhelmingly significant feature of these burial rites was the placing of a face cloth, rather like a handkerchief over the face of the deceased before wrapping the body in a shroud. This was to prevent pollution for those handling the body and was known as the *Pâdan*, the second of the two grave cloths set aside in the tomb, as written in the John Gospel. This cloth has become renowned as the Mandylion and if found, should bear the same identical imprint, perhaps even more so, as it would have been in direct contact with the features and perhaps show more photographic details. On the Shroud image, it can be identified as the dark rectangle around the face.

For the last and by far the most incomprehensible aspect of the Shroud’s authentication elements, I must refer to Radionics. Just once only in the history of medical innovation were anatomical details and structural images of internal tissues actually derived from blood samples, photographed and registered on slides by a specially designed Radionic camera. These samples were sent by post to a Radionic specialist, Miss Lavender Dower, who later lent me these slides, which I regard as unique and representative of a new process as yet unknown to science.

As I have seen similar images with my own eyes, it does not therefore surprise me that from blood serum on the Turin Shroud, such extraordinary anatomical details should emerge and be defined. These are not to identified with X-ray processes but arise from unknown properties of the living blood. It also proves that a living being emerged from the Shroud able to replicate *in toto* one of the still unsolved mysteries of human consciousness.