

Review of “Test the Shroud” by Mark Antonacci

By Robert A. Rucker, October 11, 2016

Title: “Test the Shroud at the Atomic and Molecular Levels”

Author: Mark Antonacci, Publication date: October 2015, Published by LE Press, LLC
Hardback, 502 pages in the body of the book plus 16 pages of preliminary material, 223 pictures and figures, Size is 9.25 x 6.25 x 1.50 inches. The body of the book contains 15 chapters in 333 pages, 9 appendices in 79 pages, 689 endnotes of references and extended discussion in 79 pages, and 11 pages of miscellaneous material.

“Test the Shroud” by Mark Antonacci summarizes the current status of research on the Shroud of Turin and the need for, nature of and expected results of further testing. Writing for the layman, he covers all areas of the subject including the most difficult areas related to the C-14 dating, the image formation, and the blood transfer. His knowledge of references related to the Shroud is encyclopedic. And the main purpose of the book, to promote additional testing, is very timely.

Summary of the Contents of the Book

Mark Antonacci explains the nature of the image (Chap. 1), the nature of the blood marks (Chap. 2 and 3), and archeological evidences related to the Shroud of Turin (Chap. 4) which result in the conclusion, based on the preponderance of the evidence, that the Shroud of Turin is the authentic burial cloth of Jesus of Nazareth. The scientific evidence requires that the image is a radiation burn caused by radiation emitted from within the body (Chap. 5). This radiation was probably released when the body disappeared from within the Shroud. How the body disappeared is discussed in Appendix H (App. H). Protons or other charged particles probably caused the image on the Shroud and neutrons would have shifted the C-14 date from the first century to the Middle Ages (Chap. 6). Measuring the Cl-36 to Cl-35 ratio will prove whether neutrons have been absorbed by the Shroud (Chap. 7). Measurement procedures and the equations needed to analyze the results of the Cl-36 to Cl-35 ratio measurement results are given in Appendix A and B. The new developments in multi-spectral imaging measurements need to be applied to the Shroud to determine the detailed compositions throughout the Shroud (Chap. 8). It is very doubtful that the Shroud has been invisibly repaired in the C-14 sample area so that this should not be used to explain the C-14 dating of the Shroud to the Middle Ages (Chap. 9). The history of the Shroud of Turin connecting it to the actual burial cloth of Jesus is sufficiently well understood so that the history of the Shroud should no longer be considered an objection to the Shroud being the authentic burial cloth of Jesus (Chap. 10). Mark gives a detailed description of his “Historically Consistent Hypothesis” to explain how the image was formed on the Shroud (Chap. 11). Various other attempts to explain how the image was formed on the Shroud are summarized including the Maillard reaction (App. C), powder daubing/pigment rubbing techniques (App. D), corona discharge (App. E), and the effects of earthquakes (App. F). How the historically consistent hypothesis could explain the blood marks on the Shroud is discussed in Chapter 12. Chapter 13 is a summary of all the evidences related to the Shroud of Turin. Chapter 14 discusses why the C-14 dating of the Shroud that was done in 1988 did not obtain a correct value, and Chapter 15 discusses why the Shroud is extremely important to humanity and why further testing of the Shroud must be allowed. The Sudarium of Oviedo is regarded as the

authentic face cloth of Jesus (App. G) and a table listing Old Testament prophecies and their New Testament fulfillment is included (App. I).

I have been researching the Shroud of Turin for the last two years and I believe that Mark is using the correct approach to the study of the Shroud of Turin, and that he has come to the correct main conclusions regarding the Shroud of Turin:

- We should follow the scientific evidence where it leads apart from our presuppositions.
- The characteristics of the image are so bizarre that no one could have produced it either in ancient times or even today.
- It could not have been made in the Middle Ages.
- All artistic and naturalistic attempts to reproduce the Shroud fail to produce all of the characteristics of the image and the blood marks.
- The nature of the image and the blood marks indicate that the Shroud wrapped the dead body of a crucified man.
- This man died by crucifixion exactly as the gospels in the New Testament say that Jesus of Nazareth was crucified.
- The preponderance of the evidence indicates that the Shroud of Turin is the authentic burial cloth of Jesus from the first century.
- Based on the scientific evidence, the only option is that the image on the Shroud is a radiation burn.
- The image was formed by radiation emitted from within the body that was then absorbed onto the Shroud.
- This radiation must have been oriented vertically up and down to form the front and back images without forming side images.
- The image was probably encoded primarily by charged particles such as protons, and possibly electromagnetic radiation such as ultraviolet light.
- This radiation emitted from within the body evidently also included neutrons which shifted the C-14 date from the first century to the Middle Ages.
- The above indicates that this radiation emission event must have been a totally unique event that is outside of our current understanding of the laws of science.
- The above is consistent with the historical account of Jesus' resurrection.

Due to the encyclopedic nature of the discussion, the importance of promoting additional testing of the Shroud of Turin, and the validity of the approach and main conclusions, I give this book a 4.6 star rating. Of course as in any first edition book, there are a number of typos and a few phraseology issues, as well as a few debatable positions taken, e.g. details of encoding the image and the blood marks, but this is understandable given the subject matter. It would help if a bibliography and an index could be added to the book in a later edition. These issues do not detract significantly from the value of this book on what I regard as a tremendously interesting and important topic. I highly recommend this book for serious study. It establishes a new standard of excellence for the study of the Shroud of Turin.

Detailed Description of Each Chapter and Appendix

Chapter 1. Modern Technology and the Shroud of Turin, 16 pages:

This chapter summarizes the scientific results related to the nature of the image of the crucified man that can be seen on the Shroud, i.e. that the image is superficial, is a negative image, contains three-dimensional information, is directionless, does not consist of any substance that was added to the Shroud, and that it was formed along vertical lines from the body to the cloth. This bizarre nature of the image means that it could not have been produced by an artist or forger in the past for it could not be formed by anyone even today. Thus, the image must have been formed in some way by the body that was wrapped in the Shroud.

Chapter 2. The Condition of the Victim, 21 pages:

This chapter considers the wounds that are on the Shroud: scourge marks, wounds to the face and head, wounds to the hands and arms, shoulder injuries, wounds to the feet, and chest wounds. Scientific examination of the blood indicates that the blood is real human blood from a male. The process of death by crucifixion is also considered. Conclusion: The Shroud wrapped a real human body of a person that died in a vertical position by crucifixion. All wounds are consistent with those suffered by Jesus of Nazareth when he was crucified.

Chapter 3. Intricate Relationship between the Cloth and the Body Wrapped within It, 21 pages:

The blood from the many wounds coagulated and dried on the body, yet they were transferred in some unique way in the same shape and form onto and into the Shroud. There is no known experimental or natural process that could have accomplished this. All naturalistic attempts to reproduce the image and the blood marks have failed to reproduce their bizarre characteristics. Many researchers have reported that bones just below the surface of the body are encoded onto the Shroud including finger and hand bones, bones of the skull, the thumb under the left palm, teeth, and numerous vertebrae in the neck and backbone.

Chapter 4. Corroborating Archeological Evidence, 37 pages:

The linen cloth of the Shroud has no indication of anything that is inconsistent with textile manufacturing in the first century AD. The stitching that connects the side piece to the main Shroud is essentially the same as that found at Masada, which was destroyed 73 to 74 AD. Cotton impurities in the linen are distinctive to the Middle East. The many weaving defects are good evidence that the Shroud was made much earlier than the Middle Ages. Many details of the execution displayed on the Shroud indicate that it was from the Roman era. It is very possible that a coin dated to 29 to 32 AD has been identified over the right eye, but further research is needed to confirm it. Limestone dust, pollen, and flower images indicate that the burial took place in Jerusalem. Details of the burial are consistent with Jewish burial customs. Based on all the evidence, the image on the Shroud is most reasonably identified as that of Jesus of Nazareth.

Chapter 5. All Signs Point to a Unique Form of Radiation – From the Body, 15 pages:

The scientific evidence indicates that only radiation can account for all of the characteristics of the body image. This radiation must have originated inside the body and been vertically oriented to create the image that is on the Shroud. Experiments indicate that this radiation could have been photons of ultraviolet light or charged particles such as

protons. Either will create discoloration on linen similar to that found on the Shroud. It must have been a very unique event to cause a dead body to emit radiation.

Chapter 6. Unique Effects of Neutron Radiation, 17 pages:

Neutrons could also have been emitted in this very unique event. If 0.000000015% of the neutrons that were in the body of the man wrapped in the Shroud were emitted from the body, then enough neutrons would have been captured in nitrogen in the Shroud to shift the C-14 date from about 30 AD to the date measured by the three dating laboratories (1260 AD). Whether neutrons were emitted in the tomb and thus captured in the Shroud can be proved by measuring the Chlorine-36 to Chlorine-35 ratio. This ratio can then be used to back out the true date for the Shroud from the erroneous C-14 date measured in 1988.

Chapter 7. Testing the Shroud at the Atomic Level, 22 pages:

Further details are given on measuring the Cl-36 to Cl-35 ratio, as well as the Ca-41 to Ca-40 ratio of the linen. The variation of these ratios for various locations on the Shroud is discussed. It is also important to measure these ratios for the blood. It may be possible to determine the tomb in which this neutron release took place by measuring the radiation that could still be given off by certain radioactive isotopes in the limestone of the tomb.

Chapter 8. Molecular and Other Innovative Examinations of the Shroud, 18 pages:

Multi-spectral imaging includes attenuated total reflectance (ATR) spectroscopy; in particular Fourier transform infrared spectroscopy (ATR-FTIR), and Fourier transform Raman spectrometry. Equipment, such as the Cary 620 FTIR microscope and imaging system, and techniques of these processes as well as X-ray fluorescence are discussed for application to the Shroud to test every location for details of the composition. This can be used to identify contaminants on the Shroud such as starch, wax, and cotton in order to find the best locations for taking samples from the Shroud. New techniques recently developed to date linen based on reflectance and tensile strength give an average date of 33 BC \pm 250 years for the Shroud, which is consistent with the first century and contradicts the C-14 dating. Experiments indicate that absorption of neutrons and ultraviolet can cause old blood to maintain a reddish coloration.

Chapter 9. Was the Shroud Invisibly Repaired? 19 pages:

Since the C-14 dating tests were done in 1988, many different explanations have been offered as to why the Shroud dated to the Middle Ages instead of to about 30 AD. Currently, the most commonly held concept is that an invisible patch or reweave was done by an unknown person at an unknown time in the past in the same area from which the samples were taken for the C-14 dating. Thus, what was dated was actually a mixture of old original material and newer material woven into the old material. In this chapter, Mark argues (successfully I believe) that this is a false concept – that there was not an invisible reweave at the sample location. In fact, there is no such thing as an “invisible reweave” for it is simply not credible for someone hundreds of years ago to have rewoven the fabric so expertly that it could not be recognized today with use of a modern microscope. Instead, Mark concludes that the shift in the C-14 date from about 30 AD to the Middle Ages was due to neutrons captured in trace amounts of N-14 that would have been in the Shroud.

Chapter 10. The History of the Shroud, 46 pages:

Mark endorses what is now the most common view of the Shroud’s history – that the Shroud of Turin is the same as the Mandylion of Constantinople, which is the same as the Image of Edessa, which is the same as the burial shroud used to cover Jesus after his death. He discusses various options for how the Shroud went from Jerusalem to Edessa, Turkey,

and various options for how the Shroud went from Constantinople to northern France between 1204 AD and about 1355 AD. The face image from the Shroud was used for icons, paintings, and coins starting in the 6th century, indicating that the Shroud predated the Middle Ages by several hundred years. The lack of references in the Bible or other early historical accounts to an image on Jesus' burial shroud is used as evidence that the image developed over time. Pollen on the Shroud that is unique to Edessa and Constantinople confirms the history of the Shroud.

Chapter 11. The Historically Consistent Hypothesis, 17 pages:

One of the main questions to answer in the study of the Shroud is how the image of a crucified man got onto the linen cloth, but this is also one of the most difficult questions to answer. Mark presents what he calls his "historically consistent hypothesis" to answer this question. Recognizing that the image could not be the product of an artist or a forger, or the result of a natural process, Mark argues that radiation emitted from within the body that is then absorbed on the Shroud is the key to understanding how all the characteristics of the image can be explained, as well as explaining the reddish color of the blood on the Shroud. His theory is that the instantaneous disappearance of the body within the Shroud caused a short burst of radiation over a small fraction of a second that included a release of a very small fraction (0.000000015%) of the neutrons and protons that were in his body. Gravity and the vacuum created by the disappearance of the body caused the cloth that had been above and below the body to collapse through a "radiant region" where the body had been. The protons or other charged particles that were emitted from the disappearing body are absorbed in the Shroud as it passes through the radiant region. These absorbed particles change the covalent bonding of the carbon in the cellulose molecule to cause the image. A small fraction of the neutrons that are released in this radiation burst are absorbed in the trace amounts of nitrogen in the linen to create new C-14 atoms. The number of neutrons that are absorbed in the nitrogen are sufficient to shift the C-14 date from the first century to the Middle Ages. (It is my opinion that all of this is correct except that there would not have been enough time for the cloth to collapse due to the radiation burst probably being of very short duration, and the extremely rapid speed of the radiation. What is needed is that the radiation must be vertically collimated precisely up and down in order to cause the high resolution images of only the front and back of the body, rather than to assume that this verticality of the image formation process is caused by the vertical collapse of the cloth. I also think that photons of electromagnetic energy, such as ultra-violet light, should not be ruled out as a contributing factor in the image formation process.)

Chapter 12. Second Phase of the Historically Consistent Hypothesis, 27 pages:

The congealed human blood that is on the Shroud has many mysterious aspects. How did the blood marks that would have been dried on the body become embedded through the thickness of the Shroud with the appearance that they would have had on the body when many of the blood marks would not have even been touching the cloth? How could the scourge marks on the Shroud have serum-surrounding borders and clot retraction rings as they would have had on the body? How did the blood marks that were on the scalp under the hair get onto the cloth apparently on top of the hair? How could some of the blood marks be encoded onto the Shroud as degraded (oxidized dehydrated) cellulose? Mark attempts to explain these many mysteries using his historically consistent hypothesis discussed in the previous chapter. He postulates that the congealed blood on the outside of the body disappeared at the same instant that the body disappeared but that they reappeared

in their original locations a fraction of a second later, so that the collapsing cloth could acquire them as it collapsed into the volume vacated by the body. Due to the speculative nature of this chapter, Mark considers other alternatives such as the idea that the radiation burst may have forced the dried blood marks off of the body, heated and liquefied them, and then thrust them into the cloth.

Chapter 13. Incomparable Evidence, 20 pages:

This chapter is an excellent summary of all of the scientific and historical evidence related to the Shroud of Turin. Pages 286 to 291 is an excellent table comparing the New Testament manuscripts with 41 other authors of ancient writings, giving the time lapse between the events discussed and the earliest copies. This table shows that by historical criteria the New Testament ought to be regarded as far more reliable than any other ancient manuscript. This table was also given in chapter 11 of Mark's first book.

Chapter 14. Nine Year Carbon Dating Fiasco, 23 pages:

This chapter discusses the procedures that were developed over many years that would be required to properly C-14 date the Shroud of Turin, how those procedures were set aside by the C-14 dating laboratories based upon their assumption that the Shroud could not possibly be authentic, how those dating laboratories reneged on their own promises regarding the analysis and reporting of the data, how some of the experimental data that was reported was essentially fraudulent based on averaging of data pairs to hide the extreme values, and how the dating laboratories have still not reported the locations of their subsamples that they used in the C-14 dating process. Mark reports all eight of the long hidden values that were actually measured by the laboratory in Tucson.

Chapter 15. Humanity's Right, 14 pages:

With the many different ideologies and religious beliefs in the world, the only thing that is true about every single person alive today is that each of us is going to die. Therefore, the most basic need of every human being is to know for certain whether any part of the person, i.e. the soul, continues to exist after the death of the body. We are now at a crucial point in human history, where with our advanced technology, we will be able to test the Shroud of Turin to determine whether it is the authentic burial cloth of Jesus of Nazareth, whether it is thus good evidence that Jesus' resurrection was a real historical event, and thus whether it is possible that each of our souls can survive the death of our bodies. It is the most basic human right of all to know this, so that each of us can act upon this knowledge. As the title of the book indicates, we must be allowed to further "Test the Shroud."

Appendix A. Laboratory Requirements and Procedures to Capture and Measure Natural and Radioactive Chlorine in Linen, 4 pages:

Convinced that neutrons were released as part of a burst of radiation from the body, Mark discusses methods developed by Dr. Arthur Lind to measure the Cl-36/Cl-35 ratio in the Shroud of Turin. Cl-36 does not occur naturally, so that if a statistically significant amount of Cl-36 is measured on the Shroud, it would indicate that the Shroud has undergone an event where neutrons were absorbed in the Shroud. And if neutrons were absorbed in the Shroud, then the C-14 dating of the Shroud to the middle ages that was done in 1988 would be invalidated, and the case for a burst of radiation being emitted from the body would be strengthened. Some knowledge of chemistry would be helpful in understanding this appendix.

Appendix B. Measurements and Calculations Needed to Prove the Shroud was Neutron Irradiated and When it was Irradiated, 5 pages:

Even if the normal C-14 dating method is invalidated as in Appendix A, the date for the neutron irradiation of the Shroud can still be determined. This can be done by measuring the C-14/C-12 ratio and the Cl-36/Cl-35 ratio at two well separated locations on the Shroud. The new C-14 produced at each location can be determined from the Cl-36/Cl-35 ratio at each location. Then the date for the neutron irradiation of the Shroud can be determined using the equations in this appendix. Some knowledge of mathematics would be helpful in understanding this appendix. This appendix was contributed to the book by Dr. Arthur Lind.

Appendix C. Maillard Reaction, 4 pages:

Ray Rogers hypothesized that the image on the Shroud of Turin was caused by a chemical reaction (a Maillard reaction) between vapors from the decaying body and starches and sugars that may have been on the cloth. It is one of the main attempted naturalistic explanations for the image. Mark explains why this process can not possibly be the cause of the image. Mark also explains why Rogers' 2005 paper is wrong when it claims that formation of the image "could not have involved energetic radiation of any kind."

Appendix D. Powder Daubing/Pigment Rubbing Techniques, 5 pages:

One of the main artistic explanations for how the image was formed is by Professor Luigi Garlaschelli, who attempted a powder daubing process. Mark explains the many features of the image that are not explained by this process.

Appendix E. Corona Discharge, 2 pages:

This hypothesis for how the image was formed involves electrical discharges. Mark believes this may be part of the solution, but more research is needed.

Appendix F. Effects on Burial Cloths by Earthquakes, 3 pages:

There are many internet sites that promote the idea that the C-14 date for the Shroud of Turin was shifted by neutrons emitted from the limestone due to an earthquake that occurred while Jesus was in the tomb. This appendix is an excellent discussion on why this hypothesis could not possibly have any merit at all. The journal that published this hypothesis has withdrawn the original paper.

Appendix G. The Sudarium of Oviedo, 3 pages:

The face cloth of Jesus (John 20:7) is believed to be one and the same as the Sudarium of Oviedo. The word "Sudarium" comes from the Greek word translated "face cloth" in John 20:7. This 34x21 inch piece of cloth has been located in Oviedo, Spain, since the 9th century. This short appendix is the best summary on the Sudarium that I have seen. Mark makes many connections between the Shroud of Turin and the Sudarium: both contain human blood of the same type of blood, i.e. type AB, both contain the same type of pollen from a thorny plant that grows only in the Middle East, both have dirt that covered the man's nose that resembles limestone from Jerusalem, and both apparently have an anomalous C-14 date that was probably caused by neutron absorption.

Appendix H. The Disappearance of Jesus' Body, 48 pages:

This is an extensive discussion of how Jesus' body disappeared from within the Shroud in the resurrection. Biblical and theological considerations are synthesized to answer this question from an evangelical Christian perspective. Then nuclear science and modern physics are utilized to develop the pros and cons of seven different options for how the body physically disappeared from the tomb. The best option that is at least within an

extrapolation of modern physics is that when the body of Jesus disappeared from within the Shroud in the tomb, the atoms of Jesus' body transitioned into an alternate dimensionality. This is a much more detailed analysis than I have seen elsewhere. This appendix was contributed to the book by Robert A. Rucker.

Appendix I. Old Testament Prophecies of New Testament Events, 5 pages:

This is a brief table of 24 Old Testament prophecies compared to their New Testament fulfillment. Quotes of the Bible passages are from the New American Standard Bible (NASB). There is no discussion. This is the same as Appendix I in Mark's first book.

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