Furthermore, in spite of the outdated approach to the science of the Shroud, both halves of this book together do present a compelling case for the life, death and resurrection of Jesus, which is, after all, what the authors set out to achieve.

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REVIEWS - 2: (PAPERS)

SCANNING ELECTRON MICROSCOPIC CHARACTERISATION AND ELEMENTAL ANALYSIS ON ONE HAIR LOCATED ON THE FACE OF THE TURIN SHROUD

Gérard Lucotte & Thierry Thomasset (Archaeological Discovery, 2017, 5, 1-21)

This is the latest in Prof. Lucotte's trawl through the thousands of particles to be found on his tiny triangle of tape (see his paper above), and one of the most interesting. It focusses on a single speck, which Lucotte identifies as a tiny length of hair, about 14µm long and 9µm wide. Zooming in further with his electron microscope, he measures the distance between successive scales as about 2 µm, which indicates quite rapid growth. By visual inspection it appears a reddish-brown colour, an observation strengthened by the relative abundance of different types of melanosomes; about two to one type MS2 (phaeomelanin: red) to type MS1 (eumelanin: dark). A hair so thin cannot be from a normal scalp, eyebrow or beard hair, so Lucotte identifies it as 'down'. By chemical analysis, he finds a concentration of copper at both ends, which may indicate the use of a bronze razor, leading to the overall conclusion that the fragment is "probably some sort of down hair, regularly shaven, located between the two eyebrows." I hope I will not excite too much ire in saying that I find the idea of the long haired, long bearded, thick moustached Jesus regularly shaving the space between his eyebrows faintly ludicrous. Far more likely, in my opinion, is that this hair is from a forearm, regularly shaved to facilitate blood-letting.

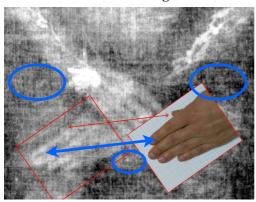
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TURIN SHROUD HANDS' REGION ANALYSIS REVEALS THE SCROTUM AND A PART OF THE RIGHT THUMB Liberato de Caro & Cinzia Gianni (Journal of Cultural Heritage, 2016)

Much can be made of a presumed correspondence between the intensity of the image colour on the Shroud and the distance between the cloth and the putative body it enfolded. Unfortunately, in detail there are numerous anomalies which have to be normalised before good 3D correlation can be visualised or measured, and even then extreme caution must be taken for a consistent assessment of the result.

As an example, take the image below, which is taken from the paper, although the blue lines are mine. While the authors precisely identify a tiny grey blob as a more or less hidden thumb (red arrows), they do not notice, let alone comment on, the huge discrepancy at the end of the first and second fingers (blue arrows). Similarly, they are pleased to



identify an apparent protuberant smudge below the crossed hands as the scrotum (small blue oval), without feeling the need to account for a large depression which appears almost to separate one leg from the rest of the body altogether (larger blue ovals -compare the two thighs for an extraordinary difference in image intensity).

Such selective observation of minutiae, at the expense of a wider appreciation of the whole, is sadly typical of much Shroud research, and although by no means to be rejected altogether, cannot be taken as anything more than vaguely circumstantial evidence one way or the other.

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NEW LIGHT ON THE SUFFERINGS AND THE BURIAL OF THE TURIN SHROUD MAN Matteo Bevilacqua, Giulio Fanti & Michele d'Arienzo (Open Journal of Trauma, May 2017)

Real experiments leading to actual data are always preferable to statements saying this or that "would have" happened - especially as these so often morph surreptitiously into "must have" without any justification at all - so it is good to see photos of one of the authors on his knees under the weight of a full-size cross, in an attempt to understand some aspects of the dorsal image on the Shroud. Pursuing some ideas developed in earlier papers, the authors consider that a T-shaped 'Tau' cross was the most probable design used for the crucifixion of Jesus. They decided on some suitable dimensions, and added some useful features of their own, such as a removable bar to facilitate extraction of the cross from the ground, a couple of iron rings at the ends of the crosspiece to assist with hoisting the body, and two diagonal braces to help keep the cross rigid. They assessed the weight of this structure at about 65kg.

A lifesize model was then made out of cardboard, which enabled the authors to visualise a number of possible scenarios regarding how it was carried, and the possible pathology of rough handling by soldiers, such as the tearing of the cervical nerve and dislocations of shoulders and elbows. The lengthening caused by this makes sense of the abnormally long appearance of the right arm on the shroud. Shifting the cross from shoulder to shoulder would account for the observed symmetrical bruises, until the pain was so great that Simon of Syrene was called in to assist.

Further experimentation suggested various new conceptions of the details of the trauma of nailing the hands and feet to the cross, and new explanations of various aspects of the Shroud's appearance, such as the exit hole in the back of the hand and the 'blood belt' across the back.

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THE POLITICS OF THE RADIOCARBON DATING OF THE TURIN SHROUD - IN THREE PARTS Joseph G. Marino (www.shroud.com)

For several years Joe Marino, who, with Sue Benford, pioneered the 'invisible mending hypothesis' to discredit the radiocarbon dating of the Shroud to the 14th century, has been compiling an exhaustive databank of primary and secondary sources relating to the planning, taking, and reporting of the radiocarbon investigation, with the honestly expressed intent of buttressing his original proposition, that the medieval date was at best suspicious, and at worst wholly unreliable. On the whole I don't think he succeeds, but such was the combination of conflicting interests and personalities that there is certainly a fascinating story to be told. Over the three sections the compendium is necessarily rather repetitive, and, given the inherent bias of the authors of the three principal sources, it would have been good if there had been more investigation into the primary sources, such as Walter McCrone's interest in radiocarbon dating the Shroud, which is expressed in detail in his book Judgment Day for the Turin Shroud, and in his letters to Father Rinaldi on the Holy Shroud Guild website. The oft-expressed sentiment that McCrone was out to prove the Shroud medieval from the start is not supported by the evidence.

Taken as a whole, there is no doubt that the management of the radiocarbon episode was clumsily handled by almost everybody who had anything to do with it regardless of their opinions, which has given emotional weight to the idea that the dates were false. It even gives credence to the bizarre conspiracy theories of Bruno Bonnet-Eymard and Stephen E. Jones, regardless of the paucity of their evidence and the vindictive nature of their accusations. Joe Marino's compendium is a salutary read.

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