

## A SINGLET OXYGEN THEORY OF THE SHROUD IMAGING MECHANISM

Dr. Allan Mills (BSTS member)

On Wednesday 24 April Dr. Allan Mills, Senior Lecturer in the Dept of Physics and Astronomy at the University of Leicester, gave his scheduled talk to a sadly poorly attended meeting of the BSTS at London's Society of Authors at 84 Drayton Gardens, South Kensington, London. Since the definitive presentation of his arguments is given in the prestigious scientific journal *Interdisciplinary Science Reviews* [vol 20, no.4, Dec.1995, pp.319-327], only a summary is given here.

In brief, after dispassionately outlining the various theories so far advanced to account for the Shroud's image Dr. Mills has pointed out that it has several characteristics that any new explanatory hypothesis needs to account for. These include the absence of any distortions, as would be expected from any direct contact process; the absence of any apparent paint medium, as might be expected from an artist; the absence of any significant detectable silver or chromium as might be expected from some early photographic experiment; the image's apparent imprinting only one side of the cloth; the image's density as in inverse proportion to the cloth's distance from the body it theoretically wrapped; and the image's apparent varying sensitivity to the slightly differing batch qualities of the longitudinal lengths of thread used for the Shroud's weave.

Confronted with these most unusual characteristics Dr. Mills has looked at two potential explanatory processes - (1) the Volckringer effect, that is, the still little-understood phenomenon by which botanical specimens leave imprints of themselves on the paper in which they have been pressed; and (2) the Russell effect, a now early-forgotten nuisance during the early history of photography, by which certain materials could leave unwanted images of themselves on photographic plates, even if the plates had been kept in total darkness. According to W. J. Russell, the early researcher whose name this latter effect now carries, it probably derives from the release of traces of hydrogen peroxide, still the generally accepted explanation.

Turning his attention to French researcher Dr. Paul Vignon's early 'vaporographic' theory of 'ammoniacal vapours' from a crucified body having created the Shroud's image, Dr. Mills noted how this failed to gain credence largely because any such vapours would diffuse and therefore be most unlikely to have created anything with the shroud image's degree of definition. But could there be some other form of vapour or gas releasable from a traumatised body that might have the sort of smooth upward trajectory that could give rise to a distance modulated image? As recognized by Dr. Mills, only something highly unstable could work in this way, and as he knew, instability is a characteristic of reactive oxygen intermediates of the kind released by a body undergoing what has become termed 'oxidative stress', a stress triggerable by a variety of causes, from burns and oxygen excess, to connective tissue damage, injury to the central nervous system and shock.

As has recently become recognized, our living cells fight a constant battle against highly reactive molecule fragments that threaten their very lives, and there is one molecule in particular, known as singlet oxygen, that can be released as a gas. According to Dr. Mills, it is this gas, released by the cells from a traumatised plant, that creates the brownish

images to be observed of the Volckringer effect botanical specimens, and could well have been responsible, in like manner, for the image observable on the Shroud. As Dr. Mills has concluded his paper in *Interdisciplinary Science Reviews*:

*Although images of this nature associated with botanical specimens pressed on paper are not uncommon, that on the shroud of Turin appears to be unique because of the need for a highly unlikely combination of circumstances that are not individually demanding, namely: (1) a long shroud woven from fine linen (2) its hurried draping over the recently deceased (unwashed?) body of a tortured man in a sealed, thermally stable place (3) removal after some 30 hours; (4) storage in a dry, dark place for decades or centuries.*

**Postscript:** Serious Mis-Reporting of Dr. Mills' views in the U.K. Press

On 28 January of this year the U.K.'s Sunday Telegraph, generally regarded as one of the quality newspapers, published a report of Dr. Allan Mills's hypothesis. Written by Robert Matthews, the paper's Science Correspondent, this was based partly on Dr. Mills's *Interdisciplinary Science Review* article, and partly on personal interview. However, as published the article began: *'The mystery of the Turin Shroud... may finally have been solved'*. And at its end appeared the paragraph: *'Like most scientists, Dr. Mills supports the 1989 theory that the image was formed by the body of a dying crusader, tortured and crucified in a mockery of his religion by the Saracens.'*

Appearing in this form, the story caused headlines in Italy, prompting Professoressa Emanuela Marinelli of Rome's Collegamento Pro Sindone to fax Dr. Mills to determine if this was indeed his views. Dr. Mills responded by return fax: *'The newspaper report that your correspondents have probably seen is in error.... The last paragraph was inserted by a sub-editor - not Robert Matthews - and is totally incorrect. My research is entirely upon the imaging mechanism. The proposed scheme should be applicable to a corpse in any century, just as it is to dying vegetable tissue between paper (cellulose) in collections made at any time for herbarium purposes. I therefore prefer to say that I have no opinion on the age of the cloth, and that my proposed mechanism is unable to distinguish whether it is, or is not, the true Shroud of Christ.'* Accordingly it is sad reflection of the current state of U.K. journalism that someone at senior level, even on an ostensibly responsible newspaper, felt motivated to twist an original factual and broadly accurate report in such a way.