

# REVIEWS

## SEEING THE INVISIBLE – by Alan Isaac

Coincidentally, the University of York hosted another gathering which providing stimulating news for those interested in damaged texts. The Festival of Science held in September heard about the new Diamond X-ray machine – a giant synchrotron ‘super-microscope’ sited close to Didcot, Oxfordshire- which will ‘enable researchers for the first time to read inside folded and rolled-up documents that are too fragile to open’.

The machine emits X-rays 100bn times more intense than a hospital X-ray machine. It will enable scientists in many fields to understand the structure of materials. However, ‘Tim Wess, head of Cardiff University’s Institute of Vision, who specialises in the scientific study of ancient documents, will be using Diamond to analyse parchment from several sources, from fragments of the Dead Sea Scrolls to 18<sup>th</sup> century Scottish legal documents’. Prof.Wess outlined the problem posed by the historic use of parchment as a recording material- the collagen, the main constiuent of parchment slowly changed into gelatine – which is brittle when dry and jelly-like when wet. Using X-rays from Diamond, Prof Wess is analysing the reaction that converts collagen to gelatine, commenting that, ‘this has aided our understanding of the deterioration process and allows us to advise on the way in which parchment can be preserved for future generations’, going on to state that where ‘precious parchments may be too damaged or at risk, we have developed techniques to image written work without unrolling the fragile documents’.

Within 3 to 4 years Prof Wess hopes that it will be possible to read writing through perhaps 20 unopened sheets of parchment. Although early tests have revealed no damage has been caused to the parchment through exposure to the intense X-rays, research proceeds on less valuable documents. ‘For the validation process, Prof. Wess’s team is using small fragments of Dead Sea Scrolls in the collection of Manchester University’s John Rylands Library’ and less important legal documents.

‘The research shows that documents written with “iron gall ink”, contain the seeds of their own destruction. The natural ingredients in the ink – tannin from the oak galls an iron sulphate – catalyse the chemical deterioration of parchment’.

Prof Wess concluded by saying that, ‘in addition identifying ways in which we might be able to prevent the loss of important records, our research aims to understand how we might recover documents damaged in natural disasters across the ages, such as the fire at the Library of Alexandria or more recent flooding in Europe’-a momentous and tantalising prospect.

The quotes are taken from a reports in the *Financial Times* of 13 Sept. 2007 ‘Modern hope for ancient scripts’.