

## LETTER FROM THE EDITOR



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Dear Readers,

### *The Problems of Specimen Preservation – a brief history*

Two dates stand out as milestones in the recent history of anatomy: 1869 and 1977. It was in 1869 that the German chemist August Wilhelm von Hofmann (1818-1892) formally identified formaldehyde (though its existence had been reported earlier); and in 1977 Gunther von Hagens published his seminal paper on the preservation of biological specimens by plastination (Bickley et al., 1981).

Prior to the discovery of formaldehyde, and its solution in water, formalin, anatomical examination of the human (or indeed any other) body, had to be carried out speedily and preferably in winter, so that the process of putrefaction was slowed. Bodies sold to the anatomy schools by the “resurrection men” (grave robbers) fetched higher prices in winter. Dissections usually lasted three days,

with the abdominal and chest cavities dissected on the first day, the head and cranial cavity on the second day, and the limbs on the third, following the body’s own, pre-ordained order of decay. The most celebrated depiction of a dissection, Rembrandt’s “The Anatomy Lesson of Dr Nicolaes Tulp” (1532) is remarkable for the fact that it shows the dissection of the left arm, while the rest of the body remains intact – clearly deviating from the accepted practice of the time for artistic effect (Afek et al., 2009); whereas “The Anatomy Lesson of Dr Deyman”, painted much later, suggests that in this case, the usual sequence has been followed (Fig 1).

The shortage of bodies for dissection and their rapid decomposition inevitably led to other avenues being explored in the quest for lasting anatomical specimens. Small specimens could be preserved in alcohol, suspended in glass jars (Fig 2.), though this method was unsuitable for large specimens or whole bodies (although in 1805, Admiral Nelson’s body was brought back to London from the battle of Trafalgar in a barrel of brandy) (Fig 3). There were attempts to preserve bodies by dehydration in alcohol, which met with varied success. The best-known exponent of this



Figure 1 - ‘Self-portrait with red brain’ (after Rembrandt), by Alex Rennie (original oil painting, based on Rembrandt’s ‘The Anatomy lesson of Dr Jan Deyman’), in the author’s collection



Figure 2- Specimen of a child’s arm prepared by Frederik Ruysch (1638-1731), Kunstkamera, St Petersburg. [http://www.kunstkamera.ru/en/museum\\_exhibitions/2floor/1st\\_collections/2\\_XIII\\_08/](http://www.kunstkamera.ru/en/museum_exhibitions/2floor/1st_collections/2_XIII_08/) (accessed 4/11/15)

technique was the French anatomist Honoré Fragonard, cousin of the more famous painter, Jean-Honoré. Fragonard injected the viscera and blood vessels of his subjects with coloured wax before dehydration, and then applied a secret varnish that greatly improved their preservation, to such an extent that specimens prepared in the 1790s can still be seen in the Fragonard Museum near Paris (Degueurce et al., 2010).

In the eighteenth and nineteenth centuries, there was, notably in Florence, a flourishing industry producing models in wax. Remarkable examples of the wax model-makers' art can be seen at *La Specola* in Florence, the *Josephinum* in Vienna, and in the Gordon Museum at Guy's Hospital in London where the great model maker Joseph Towne plied his trade – or more accurately, his art – for over 50 years (Fig 4). Attempts were also made to reproduce anatomical specimens in other materials such as wood (Fig 5) and papier mâché.

With the discovery of formalin, anatomical models became much less in demand, (though anatomical and clinical models have enjoyed something of a renaissance over the last twenty years or so). For nearly a century, nothing much changed in anatomy until Gunther von Hagens burst on to the scene in 1977. I think it would not be an exaggeration to say that anatomy has been transformed by these two events to a degree not seen since the advent of Vesalius nearly five hundred years ago.

In this issue of the Journal of Plastination, we publish papers reflecting on the history – and future of specimen preservation – from the days before formalin, when an enterprising French doctor starting mass-producing anatomical models of horses made of papier mâché, to the cutting edge of plastination technology today, with an account from China on the production of a real, plastinated horse. The impact of plastination on education, both medical and veterinary, has been immense, and this issue includes a paper looking into quantifying the learning experience using



**Figure 3 - The death of Admiral Lord Nelson at the battle of Trafalgar, 1805 (detail), by Daniel Maclise (1806-1870) <https://www.pinterest.com/pin/9288742958375634/> (accessed 4/11/15)**



**Figure 4 - An example of the anatomical modelling of Joseph Towne (1808-1879), image courtesy of the Gordon Museum, Guy's Campus, King's College, London.**



**Figure 5 - Example of a skull carved from wood by John Hogan (1800-1858). Examples of Hogan's work can be seen in the Crawford Art Gallery, Cork, Ireland <http://www.crawfordartgallery.ie/index.html>**

plastinated brain sections coupled with MRI images. Producing plastinated specimens such as brain slices is not always without its pitfalls however, and this issue contains an account from Egypt of problems encountered with long-term storage of plastinated specimens.

With best wishes,



Phil Adds, Editor, the Journal of Plastination

#### References

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