

Body petrification in Italy. Another recipe of the 19th century revealed

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Abstract. The embalming of bodies through various techniques and materials characterized the paths of some Italian scholars between the 19th and 20th century. The so-called petrifiers developed their own formulas and methods, which have so far remained mostly unknown. In this article, we present one of the formulas used in Italy between the 19th and 20th centuries. This recipe increases our knowledge of embalming practices and may well prove useful for the conservation and protection of ancient anatomical preparations, which should be regarded as unique and priceless assets.

Key words: embalming, petrification, formulae, Italy, 19th and 20th century

Embalming has always aroused great interest on the part of scientific and civil society. During ancient times, the main reasons for body embalming were related to the spiritual and/or religious sphere (1, 2). During the modern age, this field experienced a significant boost. Scientists, driven not only by a pure thirst for knowledge but also by the desire to refine the techniques preventing tissues from natural corruption, have sought many new embalming methods (1, 3-6). It goes without saying that the teaching of anatomy, pathology and of science, in general, has benefitted from their usage. These preparations were mandatory and essential tools for scientific, educational, anatomical and pathological practise (7).

Starting from the 17th century, the scientific and technological developments in Europe have opened up new opportunities for embalming (1). Indeed, new technologies, new discoveries, new compounds and lastly a scientific boost that previously would have been impossible are the ingredients of this new recipe (8).

A turning point in the embalming technique is represented by the creations of Fredrik Ruysch (1638-1731), whose works of art can be understood in the

context of Vanitas art and Renaissance culture. He was probably the first one to put successfully into practise the method of arterial injection in order to prevent tissue decay (9). Between the 18th and the 20th century, there were two main embalming techniques (1). In the first one, the body was gutted, the organs were treated separately and then repositioned to recompose the anatomy of the individual, while in the second one the corpse was treated in its entirety, by means of deep and diffuse injections of special chemical mixtures. In Italy, this practice was widespread and reached levels of technical perfection (10). Many ingredients and infinite ways to apply them are the basis of the recipes used during the last centuries also by the so-called petrifiers. Although we can still admire their work, we are hardly ever fully aware of ingredients and execution techniques (11). Among the most remarkable petrifiers, we recall Girolamo Segato (1792-1836), Bartolomeo Zanon (1792-1855), Giovan Battista Rini (1795-1856), Giuseppe Tranchina (1797-1837), Paolo Gorini (1813-1881), Lodovico Brunetti (1813-1899), Efsio Marini (1835-1900), Alfredo Salafia (1869-1933) and Giuseppe Paravicini (1871-1927). Some of

them have left memories of their techniques and preservatives, while others have jealously guarded them for their entire life.

In particular, in this contribution, we present the recipe and the procedure probably used in the north-eastern Italian area by some petrifiers, which was mentioned in an article in the "*Acts and Memoirs of the*

Virgilian Academy" of 1868-1870, signed by the Italian pharmacist Luigi Tommasi (12) (Fig. 1).

According to the recipe of Tommasi, the first step of the petrification process was the removal of the fat from the body using sulfuric ether. As in mummification, to stop the decomposition process, it was necessary to remove water and fat from the tissues,

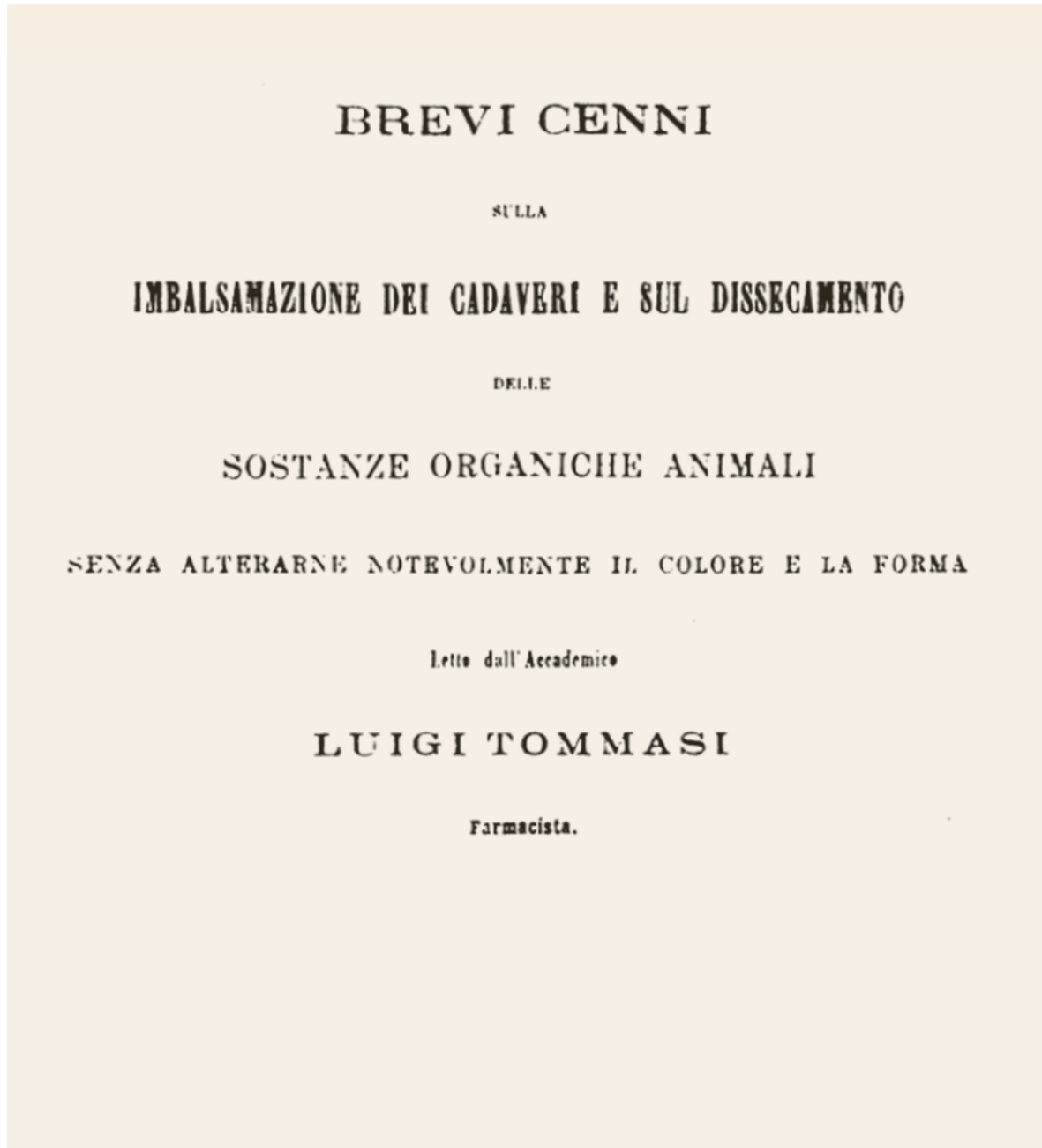


Figure 1. Cover page of the text by Luigi Tommasi on the technique of corpses embalming

the corpse would look dehydrated and emaciated. In particular, in the petrification process, this compound had the advantage of not altering visually the body. The corpse was properly washed with water and left to dry, and then it was soaked in sulfuric ether for a few hours until the fat had been digested. After that, the body was dried in order to proceed to the second step. The dry body was immersed in a hydroalcoholic solution of mercury dichloride in the proportion of 36 grams/litre. The process lasted from 20 to 30 days, during which, every three days, small doses of mercury dichloride were added to the solution. In fact, once degreased, the albumin coagulated using mercury dichloride. After the time necessary for the absorption of the mercury, the body was removed from the solution and left to drain in a room with a temperature above 77 °F, to drain the liquids in excess. Subsequently, a soft compound, consisting of dehydrated gypsum and dehydrated alcohol with potassium carbonate, was applied on the surface of the body which was wholly covered with this paste by a layer of about 0,8 inches and then had to rest for 8-10 days at 95 °F. Finally, the casing made of the dried paste was crushed and the extracted body was washed with ethyl alcohol and dried in the air.

By following this procedure, the body acquired exceptional hardness and extraordinary resistance, which allowed it to be preserved over time in an unchanged way. These preparations, in which the decomposing processes were overcome by means of the technique, were a source of pride for the petrifiers who created them. Although many petrifiers decided not to reveal the techniques and the preservatives used for their recipes, some formulas used by Italian researchers have been discovered, thanks to both accurate historical studies and advanced chemical analyses of their preparations (13). In this regard, we are aware of the formula used by Alfredo Salafia, which was a mixture consisting of a part of glycerine, one part of formalin saturated with zinc sulphate and chloride, and one part of an alcoholic solution saturated with salicylic acid (14). Some of the formulas used by Paolo Gorini have come down to us thanks to the writings of the Lombard petrifier. He made of an alcoholic solution of mercury bichloride and lime in the proportion of 1:10 (15). The techniques and compounds used by Giuseppe Paravicini are also well known. The scientist

preferred formaldehyde and glycerine based compounds (16). To conclude the brief overview, Giovan Battista Rini made use of arsenic and mercury (17).

The aforementioned preparations are some of the available formulas in order to better understand the work of the petrifiers. Indeed, the knowledge of the processes, elements and compounds used by petrifiers for the embalming of bodies is, to date, of fundamental importance for us. In fact, gaining an in-depth understanding of the variables involved in the petrification process, along with being in itself interesting from a historical perspective, it is fundamental in the context of corpse preservation. Moreover, formulas and methods used may represent useful tools for investigating the relationships between the different authors and schools, from a synchronic and diachronic point of view.

From a practical approach, the knowledge of the materials enables us to investigate the best conservation techniques and to identify the best restoration strategies for the preparations. Finally, the awareness about the presence of toxic and often volatile substances used in the ancient formulas may ensure more safety during the phases of restoration of human remains.

We believe that the rediscovery of this recipe and this method of body conservation will prove useful in the preservation and analysis of the anatomical preparations, which were the glory and pride of many petrifiers in Italy between the 19th and 20th century.

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