Scientific research on the chemical origins of the imprints on the Holy Shroud has led to the study of the aromatic substances used in the burial of Christ and the properties of each of these. The desire has been expressed to compare the ancient Egyptian manner of embalmment with that of the Hebrews.

**Embalmment in Egypt**

In predynastic times, there was a natural mummification. In some places of our regions also, where particular conditions of the soil and atmosphere cause desiccation of corpses, natural mummification has occurred.

The English Egyptologist Smith made a detailed study on the evolution of embalming in Egypt; from his research it results that in the different historical eras, the practice of embalming was subject to developments and modifications.

Herodotus and Diodorus Siculus inform us that there were diverse procedures of embalming, more or less complicated and costly. We find important notices on this question from the works of the distinguished Egyptologists Rosellini, Maspero, Schiaparelli, Birch and Budge; and for the chemical and biological aspects there are the studies of Lucas and Schmidt, among others.¹

Herodotus² relates that when the relatives of a deceased decided that the body should be embalmed in the most accurate manner, professional embalmers proceeded first of all to extract the brain through the nostrils with a special iron hook, rinsing out the cavity with drugs. Then an incision was made in the side of the cadavre and the entrails extracted. The cavity was cleansed and filled with myrrh and aromatics. Afterwards the cadavre was immersed in natron, an alcaline salt, which absorbed the lymphatic liquids and the fat of solid and fibrous parts, reducing the cadavre to skin and bones. Herodotus remarks that this immersion lasted 70 days.

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The body was then turned over to the wrappers, who wound it in linen strips coated with gum.

Herodotus describes two other methods of embalmment, simpler and less costly; however they still include immersion in natron.

Diodorus Siculus records the three methods more briefly, noting in particular the lotions and the application of unguents of cedar, myrrh, cinnamon and the like. The duration of the work of embalming was not always the same, nor were the same preservative substances and aromatics used in every case. For persons of modest means, bitumen was substituted for the unguents and aromatics, which were too expensive.

This very succinct description is far from presenting a complete idea of the different systems and procedures; there is no reason to give a lengthy enumeration here.

I should add, however, that this operation was carried out in the enclosure of the cemeteries, where there were special laboratories with trained personnel to whom this art, in each of its divisions, was transmitted by tradition. There were the paraschisti, who made the abdominal incision for the extraction of the entrails; the taricheuti, embalmers who emptied and cleansed the cavities and sprinkled the deceased with various unguents; the choachiti, who wrapped the body in bands. Now and again, one finds bands on which are written some quotation from the "Book of the Dead".

The face and the members of the mummy were covered with a remarkable quantity of cloths, linens and bands, skillfully arranged in many layers. Over all, a shroud was tightly wrapped and sewn, taking on the bodily form. Sometimes the shroud was painted over with a thin strata of plaster. Finally, the mummy was closed in a case.

The work of embalming was accompanied by a multiplicity of complicated rites and by the recitation of deprecatory and magic formulae, performed by several categories of priests—the Cherbeh, the Sotem, the Amichenti, the Amiasi, the Semer, etc.

Papyrus 5158 of the Louvre, translated by Maspero, contains a long and detailed ritual of embalmment. Each band had its name; several oils and unguents are mentioned; given also are the deprecatory formulae which accompany the repeated anointing of the members and the different operations of wrapping the numerous layers of bands with special oils, resin and natron. Sometimes even flowers are placed between the layers.

On page v is mentioned the sacred band of Pa-Ra and the piece of cloth woven in the temples. Apropos of this, our unforgettable Prof. E. Schiaparelli reports that in the necropolis there was a population of weavers and artisans, employed in the confection of cloths and bands and the manufacture of statues, amulets and whatever might be needed for the diverse and complicated rites of embalmment and for the funeral ceremonials.
From what has been said, one can understand that in the cases of perfect and complete mummification, there would be no possibility of an imprint derived from evaporation of products from organic substances in decomposition. On the other hand, in those corpses treated in simpler and incomplete procedures, parts subject to organic dissolution would remain, and this could leave traces of decubitus or fluxes of decomposed matter. But an accurate examination is necessary to determine whether such traces originate from the corpse or from the unguents, aromatics, bitumen or other substances sprinkled on the bands or on the shroud.  

Examples of imperfect mummification are not lacking; on this subject we could recall what the renowned Maspero reports about the mummy of Pharaoh Saqounri III Tiouâqen, of the XVII Dynasty, discovered at Deîr-el-Bahari in Upper Egypt in 1881: "Two large shrouds of coarse cloth, badly attached, covered the body from the feet to the head; then we encountered several pieces of linen carelessly rolled and some wads of rags held by bandelettes, all greasy to the touch and permeated by a fetid odor. When these outer envelopes were removed, we came to a sort of spindle of cloth, about 1m 82cm long and so slim that it seemed impossible that a human body could be there. The last two layers of cloth were stuck together by aromatics and adhered to the skin; we slit the layers with a knife and the entire body came to light."

The body of Saqounri was not in the normal position of mummies; the arms and hands retained the position of someone in the spasms of agony. A sign that the embalmment was late, hurried, incomplete.

In Genesis (50:2,3), we read that Joseph ordered the doctors in his service to embalm the body of his father, and this task took 40 days and the mourning lasted 70 days. It is interesting to find here two periods of time referred to by Herodotus and Diodorus; it has been observed, correctly, that the period of 70 days does not strictly indicate the time of the bath in natron, but rather the entire complexus of the mourning ceremonies preceding the definitive burial.

It is also significant that ordinary embalmers were not employed. Joseph entrusted this operation to his own doctors, probably purposely to avoid the superstitious and magic rites which accompanied the customary Egyptian embalmment.

While this case does not seem to represent a general practice, in one way or another the Hebrews conserved a certain tradition, even though in simpler form, as indeed they did for other customs. The tenuous thread of union with Egyptian customs becomes ever more fragile in the first centuries of Christianity; it is extremely rare, quite exceptional, to find a semi-mummified body in the catacombs. But the corpses are still wrapped in a sheet and a semblance of embalmment is still practiced, almost in a symbolic way, according to the testimony of Prudentius (348-413):
(We shall cherish the buried bones with violets and many a green leaf, and sprinkle the cold stones and the epitaph with fragrant perfume.)

**Hebrew Embalmment**

Few notices have come down to us concerning the Israelites' customs in regard to the deceased, and particularly about embalmment, but we can affirm that a true and real comparison between the Hebrew customs and those of the ancient Egyptians cannot be established.

In Palestine of Jesus' time, from what is reported by the Holy Writers and various remaining texts, everything comes down to a few distinct actions, *sicut mos est Judaeis sepelire:* 1) The kinsmen washed the corpse after having closed the eyes and the mouth; 2) they anointed the corpse with aromatics; 3) they tied the hands and feet with bands and enveloped it in a shroud sprinkled with aromatics.

Such was also the custom adopted by the early Christians, as we read in St. John Chrysostom:

*Exinde cum reddiderit puer animam... manus cornponunt, pedes reducunt, lavant, sepulcro condigno, dignis funeribus condunt.*

(Then when the boy shall return his soul..., they arrange the hands decently, they bring his feet together, they wash [the body] and bury it in a suitable grave with proper ceremony.)

Nor are the aromatics lacking:

*Aspersaque mirra sabaeo\footnote{Aspersaque mirra sabaeo}\nCorpus medicamine servat.\footnote{Corpus medicamine servat}*

(And the sprinkled myrrh preserves the body with its Sheban drug.)

The Hebrews buried the body intact. No incisions were made, no extraction of the soft parts, nor desiccation of the muscles, etc.

The burial of Lazarus could be a typical example. Only four days after the burial, Martha advised against opening the tomb because the corpse would be in a state of advanced decomposition. That would not have been the case if a real mummification, according to Egyptian practice, had been performed.

Furthermore, we notice that between the death of Lazarus and his burial, only a short time had elapsed, certainly not enough for a true process of mummification. He was buried the same day he died, as the custom is in Palestine even now [1939] to proceed to burial a few hours after death. The high temperature of that latitude does not permit a long stay of the corpse in the home. I myself was in Jerusalem when a missionary died; three hours later he was already in the grave.
At the command of the Lord, the stone closing the sepulchre was removed and Lazarus redivivus comes to the threshold, "feet and hands tied with bands and a sudarium around his face" (Jn 11:44). Jesus says simply, "Untie him and let him go." It was easy to quickly free Lazarus, for there were only lax ties around his feet and hands, while Egyptian mummies were bound in numerous layers of bands, meticulously wrapped, first around each member separately, then around the entire body.

St. John also mentions the sudarium, or handkerchief, around the face, but he does not speak of the shroud. However, a shroud was always used for everybody, and when the ties were removed from Lazarus, the sheet would still have covered him.

We read sometimes that the hands and feet of a corpse were tied with bands before the body was covered with a shroud, this being the custom in some localities. Nevertheless, that does not preclude the use of other summary ties on the outside. On some Egyptian mummies, three or four simple bands are wrapped over the shroud, and we see the same represented on a sarcophagus fragment now conserved in the Cella Trichora of St. Calixtus in Rome. It is a far cry from the complicated wrapping of Egyptian mummies.

From what has been said, we can get an idea of the summary and incomplete burial of the body of Jesus, and of the manner the Shroud was spread under the body, then folded over it and tied with a few bands or linen strips. The bands used in the burial of Jesus would have been tied outside the Shroud, not around the hands and feet themselves, because had this been done the imprints of the sacred Body would have shown an interruption at the corresponding places, while on the Holy Shroud the entire body is marvelously imprinted without any interruption whatever, with all its wounds and blows. This demonstrates that the Shroud was laid in immediate contact with the Body.

Some authors insist on affirming that the washing of the Body of the Savior could not have been omitted. They fail to consider the urgency of the burial and the hour, which must have been already late, and the fact that the burial was not only hurried but unforeseen.

Besides, if the corpse had been washed the bloodclots and the wounds could not have been transferred; yet they are reproduced with impressive precision.

Everything, then, persuades us that the Body was laid intact in the Shroud. At dawn on the first day after the Sabbath, the women arrive with their ointments. Notice the circumstances of the Gospel accounts: there are no men, no teracheuti or choachiti, no doctors or any specialists in embalming.

The women worry about one thing only: that there are no strong men to remove the heavy stone which closes the entrance of the tomb. They are alone, the good disciples, animated by an heroic faithfulness, an ardent piety, with eyes hot with tears, as they come to render the last services to the Master. This service may perhaps have consisted in
the washing omitted the evening of the burial;* of anointing with aromatics and balsam and a final enveloping in the Shroud and tying with a few bands.

But their pious task was no longer necessary. The Risen and glorious Jesus appears to them, comforts them; and of his Passion and Death there remains, as supreme testimony and precious gift, the Holy Shroud, object of the most profound piety and devotion through the centuries, incomparable treasure of the Royal House of Savoy and of ancient Turin, illustrious for its history of saints and heroes.

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2. HERODOTUS: II, 86-88. [In HERODOTUS; The Histories, Penguin Classics 1954, the text is found on p. 133. Ed.)
3. DIODORUS, I, 91.
9. PRUDENTIUS; Cathemerinon, Hymn X.
10. MAIMONIDE; Trac. Ebel., chapt. IV.
11. CHRYSTOSTOM: Hom. in Job.

* For recent research on this question see: LAVOIE: "In Accordance with Jewish Burial Custom, the Body of Jesus was not Washed" Spectrum 3, June 1982.