GANNAL JEAN-NICOLAS

HISTORY OF EMBALMING

Jean-Nicolas Gannal

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Gannal J.

History of Embalming / J. Gannal — «Public Domain»,

Содержание

J.-N. Gannal
History of Embalming / and of Preparations in Anatomy, Pathology, and Natural Hiistory

NOTE OF THE TRANSLATOR

It will be reasonably anticipated from the title of the present volume, that it embraces subjects of equal interest to the general and professional reader, as well as indispensable material for the researches of the practical anatomist and student of natural history.

The latter class will find in it all the requisite details for a successful prosecution of its arduous, intricate, but favorite pursuits; whilst those of its patrons of the former class, cannot fail to be interested in the various and important facts and discussions embraced in a general history of embalming from the earliest ages to the present period, so inseparably connected with the moral and physical history of our own species.

An additional subject of interest to all classes will be acknowledged in the facts and observations elicited by the arduous and industrious researches of the author, whilst investigating *the new process of embalming*, which has led to such happy results to the students of anatomy and natural history. The great importance, in all respects, of M. Gannal's discovery, has been fully and adequately acknowledged by the different commissions appointed by the Institute of France, and the Royal Academy of Medicine, who have awarded to its author both honour and profit, as a real benefactor to science, to the progress of which he has so substantially added. The current of the text, together with the notes and illustrations of the translator, embraces all the discoveries of the age, of this nature, of value to the practical anatomist and naturalist, consisting both of original observations, and of highly important information contained in the standard works of De Bils, Ruysch, Swammerdam, Clauderus, De Rasière, Dumèril, Hunter, Breschet, Pole, Margolin, Bell, Cloquet, Swan, Parsons, Horner, &c.

Concerning the nature, extent, and merits of the new discovery of M. Gannal, the translator, has spoken in the appendix, from a personal acquaintance with the author and a minute examination of the collection of embalmed objects contained in his cabinet at Paris.

Philadelphia, September, 1840.

To Messrs. Members of the Academy of Sciences

Gentlemen, – From the commencement of my researches upon the preservation of animal matters, you have encouraged me by extending your support to efforts which my own resources would not perhaps have enabled me to continue; in this path strewn with so many difficulties, and disgusts, I have endeavoured to show myself worthy of your high protection.

At a later period, when I was able to offer to physicians and naturalists methods of preservation superior to those previously known, you conferred upon me the prize founded by Monthyon. I have pursued my researches with the view of adapting my process to the art of embalming; the happy results which I have obtained have inspired me with the idea of comparing my mummies with those obtained by processes different from my own.

Finally, I have extended this parallel between my processes and those formerly applied, to preparations of healthy anatomy, to pathological anatomy, and to natural history.

My labour terminated, I have thought it my duty to dedicate to you a work the publication of which is due to the decision which your wisdom and justice have dictated.

Allow me, gentlemen, to consider this dedication as a new encouragement which you are willing to confer upon me, and trust in the respectful sentiments with which I have the honour to be, your very humble and very grateful servant,

Gannal.

PREFACE

I had terminated my first researches upon the preservation of animal matters, and proposed to publish them; my notes were collated and my work prepared, when the idea struck me that in place of confining myself to the exposition of the results which I had obtained, I might, with advantage to science, present a history of the art of embalming from the highest antiquity to our time, and compare my processes, with those in use for the preservation of objects of normal anatomy, pathological anatomy, and natural history.

This determination has decided me to publish a volume, in place of a pamphlet of fifty pages.

I had no model to follow, for no author had re-united in the same book, the elements of which I wished this might be composed. I found myself, therefore, necessitated to collect together in the following pages the materials scattered throughout numerous works.

For embalming, *Plutarch*, *Herodotus*, *Diodorus Sicculus*, *Stacy*, *Pliny*, *Cicero*, *Porphyrus*, *Prosper Alpin*, *Cassien*, *Clauderus*, *Penicher*, *Baricel*, *Rodiginus*, *Corippus*, *Gryphius*, *Crollius*, *the Reverend Fathers Kircher and Ménestrier*, *De Maillet*, *Volney*, *Rouelle*, *the Count de Caylus*, *MM. Pariset*, *Rouyer*, *Bory de Saint Vincent*, and numerous other authors, have furnished me with descriptions and materials, which I was obliged to put in order and bring before the eye of the reader, in order to present to him a useful lecture, and in some sort preparatory to my own ideas. As my point of departure was scientific data, opinions and facts have come in place as the recital needed them; and thanks to this idea, which has never abandoned me, the numerous materials from which, in the commencement, I feared disorder and confusion, have come, as if by consent to dispose themselves in order; so great is the influence of a general idea in the arrangement of facts. I believe that I have reduced to exact proportions the art of embalming among different nations. My predecessors had referred too little to *nature*, too much to *man*, in the appreciation of Egyptian embalming; they had not sufficiently estimated the difficulties of the same practice among nations less favoured by climate. Facts reconsidered and interrogated with the aid of lights afforded by the recent progress of physics and chemistry, have furnished us with consequences naturally resulting from their attentive examination.

When the history of an art is followed step by step, as we have done for that of embalming, one is astonished at a psychological fact, equally applicable to every case – we see how idle and common place the human mind is, and how little prone it is to spontaneous activity. The gross and inconsiderate imitation of the Egyptian processes during a long series of ages, is one of the most remarkable examples of this disposition.

Trials directed by a spirit of analysis and critical examination have enabled me to substitute for complex operations, for long difficult and expensive operations, most frequently inefficacious, a simple means, of a determined action, and submitted for several years to the examination of committees appointed by the Academy of Sciences and the Academy of Medicine.

In order to trace the history of the preservation of objects of anatomy and natural history I have had no occasion to go back to an epoch distant from our own; for this science is altogether new. Beyond the discoveries of Chaussier, on the preservative properties of the deuto-chloride of mercury, the labours of MM. Dumèril, Cloquet and Breschet, there is very little existing on this subject. So that I have concluded, after a complete exposition of the preservative means given by these authors, it only remained for me to propose the preservative substances which, after numerous experiments, have appeared to me preferable to those which they have recommended. They possess a peculiar merit for the formation of cabinets of natural history, that of reducing the expense to at least one-nineteenth.

I have considered it my duty to give here the details of the composition of the liquids employed, either as baths or injections, by the physician and naturalist; the interest of science imposing on me this obligation. But, as regards embalming, the same motive does not exist; I have consequently abstained

from giving in totality the means employed in this operation, reserving to myself the care of this process on the request of families or physicians.[1]

It was not until after many unsuccessful efforts that I succeeded in discovering a method capable of insuring the indefinite preservation of bodies deposited in the earth. A thousand unexpected difficulties arose in my path; and to cite only one, at the end of eight or nine months of preservation, a vegetable production, known to botanists under the name of byssus, for a long time embarrassed me; I tried numerous means, before discovering one capable of suppressing this formation.

The perfection to which I have brought the art of embalming, leaves little to desire. So convinced am I at length of the efficacy of the processes which I employ, that I shall be always ready, at the request of the authorities or of families, to exhume those bodies which I have already embalmed in great numbers, at any expressed period of time.

[1] This paragraph, evidently empyrical in its bearing, is derogatory to Gannal as a man of science. We further believe that the pretended secret of his manipulations is of little consequence to the success of the operation: it is generally understood that to the fluid acetate of alumine (produced by the chemical action induced by the mixture of the solutions of acetate of lead and alum,) to be injected, a little arsenic is added, to prevent the formation of the byssus, and attacks of insects, also some carmine, to give to the subject a healthy colour. —*Tr.*

INTRODUCTION

The Egyptians embalmed their dead, and the processes which they employed were sufficiently perfect to secure them an indefinite preservation. This is a fact of which the pyramids, the caverns, and all the sepultures of Egypt offer us irrefragible proofs. But what were the causes and the origin of this custom? We have in answer to this question only hypothesis and conjecture. In the absence of valid documents, each one explains according to the bias of his mind, or the nature of his studies, a usage, the origin of which is lost in the night of time. One of the ancients informs us that the Egyptians took so much pains for the preservation of the body, believing that the soul inhabited it so long as it subsisted. Cassien, on the other hand, assures us that they invented this method because they were unable to bury their dead during the period of inundation. Herodotus, in his third book, observes, that embalming had for its object the securing of bodies from the voracity of animals; *they did not bury them*, says he, *for fear they would be eaten by worms, and they did not burn them, because they considered fire like a wild beast that devours everything it can seize upon*. Filial piety and respect for the dead, according to Diodorus Sicculus, were the sentiments which inspired the Egyptians with the idea of embalming the dead bodies. De Maillet, in his tenth letter upon Egypt, refers only to a religious motive the origin of embalming: "The priests and sages of Egypt taught their fellow citizens that, after a certain number of ages, which they made to amount to thirty or forty thousand years, and at which they fixed the epoch of the great revolution when the earth would return to the point at which it commenced its existence, their souls would return to the same bodies which they formerly inhabited. But, in order to arrive, after death, to this wished for resurrection, two things were absolutely necessary; first, that the bodies should be absolutely carefully preserved from corruption, in order that the souls might re-inhabit them; secondly, that the penance submitted to during this long period of years, that the numerous sacrifices founded by the dead, or those offered to their manes by their relations or their friends, should expiate the crimes they had committed during the time of their first habitation on earth. With these conditions exactly observed, these souls, separated from their bodies, should be permitted to re-enter at the arrival of this grand revolution which they anticipated – remember all that had passed during their first sojourn, and become immortal like themselves. They had further the privilege of communicating this same happiness to the animals which they had cherished, provided that their bodies inclosed in the same tomb with themselves, were equally well preserved. It is in virtue of this belief that so many birds, cats, and other animals are found embalmed with almost the same care as the human bodies with which they have been deposited. Such was the idea of perfect happiness which they hoped to enjoy in this new life. In expectation of this resurrection, the souls inhabited the airs nearest the dwellings where reposed the bodies they had animated. But superstition alone, it could scarcely be believed, would induce men to save from destruction the mortal spoils of individuals whom they had loved whilst living. I much prefer looking for the source of this usage in the sentiment which survives a cherished object snatched from affection by the hand of death. Since death levels all distinctions – respecting neither love nor friendship, – since the dearest and most sacred ties are relentlessly broken asunder, it is the natural attribute of affection, to seek to avoid in some degree, a painful separation, by preserving the remains of those they love and by whom they were beloved. Love, tenderness, and friendship, do not terminate with the objects which gave them birth – they survive and follow them even beyond the tomb." – (*Bory de Saint Vincent, Essay on the Fortunate Islands. – Embalming of the Guanches.*) The same author adds: "The custom of preserving their dead, which was only national among the Egyptians and Guanches, that is to say, with men the least instructed, and a nation the most learned, is, as we have said above, proof of a profound sensibility among nations with whom it is general. Without doubt, an enlightened policy would contribute much to introduce, extend, and confirm the practice. It proves an intelligent government, one full of solicitude for the happiness of its subjects."

The opinion of Volney, revived and adopted by Pariset, in his memoir on the causes of the plague, is closely allied to the preceding. “In a numerous population, under a burning climate, and a soil profoundly drenched during many months of the year, the rapid putrefaction of bodies is a leaven for plague and disease. Stricken by these murderous pests, Egypt, at an early day, struggled to obviate them; hence have arisen, on the one hand, the custom of burying their dead at a distance from their habitations; and on the other, an art so ingenious and simple, to prevent putrefaction by embalming: a secondary precaution, more important and more efficacious, with which the primary could not dispense, and which, exacting attempts, trials, and experiments, could only be obtained as a last result – an art by no means expensive, of a simplicity and facility of execution, which rendered its immediate application popular, general, and, perhaps, uniform for all dead bodies. Research and luxury followed at a later period.” The sentiments to which the authors above cited attribute the origin of embalming among the Egyptians exist in every man, viewed either as a social or isolated being. One individual may be induced to embalm the bodies of his relatives or friends by motives of superstition; another from egotism or personal interest; a third from motives of salubrity or common interest; another, in fine, is impelled by an instinctive affection to perform the sacred duty of preserving the remains of those who were dear to him. But none of these motives possess a character of generality and perpetuity, which consecrates a usage and renders it popular; it was therefore left to government to interfere and give it the force of law.

The noble sentiments of affection, of respect, and of veneration, had then, without doubt, the priority; and everything proves to us that these inspired the admirable art of embalming, and that they were above all invoked by legislators.

Nature, besides, upon this torrid soil, gave the first idea of this mode of preserving the remains of men and animals: the mummy[2] of the sands, a natural phenomenon, was a revelation to a people so wise and industrious. The course of our work will demonstrate, we hope, the simple connection of these facts; it had already arrested M. le Comte de Caylus, who, in a memoir read to the Academy of Inscriptions and Belles-Lettres, in 1749, thus expresses himself: “The Egyptians, according to appearances, owe the idea of their mummies, to the dead bodies which they found buried in the burning sands which prevail in some parts of Egypt, and which, carried away by the winds, bury travellers and preserve their bodies, by consuming the fat and flesh without altering the skin.”

The same opinion is advanced by Rouelle. In our general history of the preservation of the human body, the mummy of the sand, and those induced by other local circumstances, will have the first place; and the art of embalming among the Egyptians and the Guanches will occupy the second. This art, we have already said, presents among these people, a general character, which does not appear in any other country. No where, indeed, are the processes of preservation so efficacious, and these two nations alone, have been able to endow their mummies with the power of resisting destruction.

We shall see in the sequel this custom establish itself among the Jews, the Greeks, the Romans and moderns – but it no longer displays a general character; it is no longer a law, a social institution; religious belief, superstition, personal interest, salubrity, no longer obliged them to recur to it. Sentiments of veneration, respect, and attachment, to which we have given the priority to all others, sufficed to perpetuate this custom, and have preserved it for a long series of ages, from the epoch of the Jews, down to our day.

Joseph commanded the physicians in his service to embalm the body of his father, which they executed according to order, in the space of forty days. – (*Genesis.*)

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[2] *Momie* or *mumie*: the etymology of this word is not well known: the Jesuit Kircher supposes that *mum* is a Persian word, and Pére Martini, an Arab name, signifying *a dried corpse*: other writers derive mummy from *ammomum*, the name of an aromatic plant. These conjectures I leave to the etymologists.

Saint John informs us, that Nicodemus took a hundred pounds of a mixture of myrrh and aloes, with which to embalm the body of Jesus Christ, which they enveloped in sheets with aromatics, according to the usual mode of burying the dead among the Jews.

Testimony of a similar nature, transmitted to us by historians, show us this usage in vigor among the Persians, the Arabians, the Ethiopians, &c.: for kings, princes, and persons of distinction, to whom they would not consider that they had rendered the respect due to their memories if they had failed to preserve preciously what remained of them.

Corippus, in his funeral oration on the Emperor Justinien, thus expresses himself on the embalming of this emperor:

> "Thura sabæa cremant, fragrantia mille
> Infundunt pateris, et odoro balsama succo, locatis
> Centum aliæ species; unguentaque mira feruntur
> Tempus in æternum sacrum servantia corpus."[3]

The Romans, nevertheless, often contented themselves, in washing and rubbing the body with certain perfumes.

> "Tarquinii corpus bona femina lavit et unxit."[4]

The Egyptian mummies, which are distinguished from those of other nations by the admirable state of preservation in which we find them at the present time, have been for the philosopher a subject of interesting study and research, – for the ignorant, a cause of astonishment and superstitious fear; for physicians, an empyrical remedy for a long time in vogue. The history of Razevil, the Pole, proves the evil influence attributed to mummies. He had purchased at Alexandria, two Egyptian mummies, one of a man, the other of a woman, in order to take them to Europe; he divided them into six pieces, which he separately enclosed in as many boxes, made of the bark of dried trees, and in a seventh box he placed idols discovered with the two bodies. But, as the Turks forbid the sale and transport of these mummies, fearing lest Christians might compose some sorcery of them to the injury of their nation, the Polonaise concluded to bribe the Jew commissioned to examine the bales and merchandise. The plan succeeded, the Jew shipped all the cases as shells, to be transported to Europe. Previous to setting sail, I found, says he, a priest returning from Jerusalem, and who could not accomplish his voyage without the aid which I gave him on this occasion, in inviting him to take passage in our ship. One day, whilst this good man was occupied in counting his breviary, there arose a furious tempest, and he warned us, that besides the danger, he perceived two great obstacles to our voyage in two spectres, which continually haunted him: the tempest over, I taunted him as a visionary, because I never imagined that my mummies could have been the cause of it. But I was obliged in the sequel to change my opinion, when there happened another storm, more violent and dangerous than the first, and when the spectres again appeared to our priest whilst he was saying his prayers, under the figures of a man and woman dressed as my mummies were.

When the tempest was partially appeased, I privately threw overboard the seven boxes, which was not so adroitly executed, however, but that the captain got notice of it, when, with great delight, he promised us that we should have no more storms; which effectively happened, and the good priest was troubled with no more visions. I had a severe reprimand from the captain for having embarked these mummies in his vessel, against which the sea had so great antipathy. The theologians of the isle of Crete, where we anchored, justified my conduct, acknowledging that it was lawful to Christians to transport these mummies for the assistance of the infirm, and that the church did not forbid the usage.

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[3] They burned the incense of Arabia, balms and perfumes of every kind filled a thousand vases, and the body is for ever preserved from corruption by essences possessing wonderful properties.

[4] A benevolent woman washed the body of Tarquin, and rubbed it with perfumes.

The judgment of the theologians of the isle of Crete, proves that the employment of the mummy as a medicine was universally admitted. According to Dioscorides, it is heating and drying in the second degree – it relieves the headach, cures megraim, palsy, and epilepsy – wonderful in relieving vertigo and drowsiness – an antidote against poisons of all kinds – the bite of venomous beasts – useful, according to Rhasis, in the spitting of blood, rupture of blood-vessels, wounds, &c.; – in one word, no remedy was esteemed more efficacious for the human body, than the human body taken as a medicine. One dram of the oil of mummy of Paracelsus, rendered all poisons innocuous for twenty-four hours; the formulæ of Crollius, of Fernel, of Clauderus, produced effects equally miraculous. The *divine water of Scroder*, was the touch-stone by whose aid the issue of a disorder could be known in advance: a dram of this liquor was mixed with nine drops of the blood of the patient, or with a double proportion of his urine; if these fluids did not mix, it was an infallible sign of approaching death; on the other hand, if they mixed readily, you might anticipate the health or cure of the patient in twenty-four hours. The great king, Francis 1st, wore around his neck a piece of mummy as a preservative against all evils. Powerless preservative!

I have designedly placed, after an example of superstition, facts which prove the stupidity, or charlatanism of the profession, it appearing to me instructive to preserve the progressive ascendency; the march from the little to the great, in ridicule, as in everything else, is absurd. The difficulty of obtaining mummies enough to satisfy the demand, gave rise to an abominable traffic, against which many physicians remonstrated. “The base avidity of gain increased daily, and they commenced embalming with salt and alum the bodies of those who had died of leprosy, of plague, or small pox, in order to obtain, in the course of a few months, the cadaverous rottenness which flowed from them, and to sell this for true and legitimate mummy; and even at the present time, they make no scruples to give the name of mummy to the dead bodies found in the Deserts of Arabia, and make patients take it internally.” – (*Durenou.*) The characters of a mummy of good quality, had, nevertheless, been well determined. “Those bodies are not mummies,” says Penicher, “dried by the sands of Lybia, nor those buried and preserved beneath the snow; nor those bodies submerged by the sea, thrown up and dried on the coast, even to the last degree of blackness; nor of criminals, hung and dried in the sun – for these are of no use.” – (*Ant. Santorel.*) The Pissasphaltum, which is the mummy of the Arabians and the ancients, according to Serapion and Avicenna, is not what we desire; because the odour is disagreeable, and it can possess no other virtue than a mixture of pitch and *asphaltum*. Neither is mummy a certain fluid which flows from the coffins of embalmed bodies, mentioned by Dioscorides and Mathioles, and which is only, properly speaking, a mixture of humours, mixed, soaked, and penetrated by aromatics, of which the embalming consists.

Andrew Gryphius teaches us, that a good mummy ought to be reddish, light, greasy, and with some odour, but as the embalming materials vary much, as well as their quality, the bodies being more or less well preserved, and it is even possible they may be poisonous, it has appeared expedient to compose a mummy methodically digested. Among the numerous formulæ for officinal *mummies*, we shall content ourselves with citing here that of *Crollius*.

Mummy of Crollius. “Choose the body of a hanged person, preferring one with red hair, because in this sort of temperament the blood is thinner; the flesh impregnated with aromatics is better, being filled with sulphur and balsamic salt; it ought to be about twenty-four years of age, healthy, whole, and of good constitution; you will take pieces of the flesh of this corpse, *they would be still better if taken from the body of a living man*; notably, from the thighs, buttocks, &c.; strip them of their arteries, nerves, veins, and fat, and then wash them well with spirits of wine; then expose them to the sun and moon for two days, during mild and dry weather, to the end that the action of the rays of light of these two planets, particularly of the sun, may exalt and liberate the principles concentered in the flesh; powder it with myrrh, styrax, aloes, saffron, which constitute the basis of the elixir proprietatis of Paracelsus; having previously rubbed the flesh with true balm, macerate it for twelve or fifteen days in a well corked vessel with first quality spirits of wine and salt, which form of themselves a

species of balm: at the end of this time withdraw the flesh, let it drain, and dry in the sun; let them again, for the same space of time, and in the same manner, macerate in a similar fluid, and expose it afterwards to the sun and fire, in the same manner they do hams; flesh thus prepared will be found to be an excellent mummy."

Conceding that the use of the mummy in medicine is one of the strangest and most extravagant abuses of empyricism, the officinal mummy of *Crollius* must be considered as an improvement, inasmuch as it is divested of the dangers attached to other mummies; it was even a benefit, for this remedy divested of the marvellous, reduced to the level of a common drug, was justly appreciated and soon forgotten. The art of embalming among the Egyptians and Guanches, was carried to a degree of perfection attained by no other nation who followed their example. And, nevertheless, what are the mummies of these countries? They are, according to the definition of R. P. Kircher, bodies stuffed and filled with odoriferant, aromatic, and balsamic drugs, capable of arresting the progress of putrid decomposition. Numerous incisions enabled the preservative matter to enter the cavities and deep tissues: agreeably to the relations of Herodotus, of Diodorus Sicculus, and of Porphyrus, the cranium was emptied either through the nostrils, or by an opening made in one of the orbits: the contents of the thorax and abdomen were withdrawn and placed in a trunk. "The Egyptians," says Plutarch, "drew the intestines from the dead bodies, and, after having exposed them to the sun, cast them away as the cause of all the sins committed by man."

The moderns have adopted an analogous mode of preparation, and in our days, previous to my researches on the preservation of animal matters, the processes of embalming were long and complicated.

In the Dictionary of Medicine, of twenty-five volumes, (*Paris*, 1835,) M. Murat traces in these terms the rules for embalming:

"Before commencing this operation, it is necessary to procure the following objects: alcohol saturated with camphor, camphorated vinegar, a varnish composed of the balsams of Perou and copaiba, fluid styrax, the oils of Muscat, of lavender, and of thyme, &c., alcohol saturated with protochloride of mercury, a powder composed of tan, of decrepitated salt, of quinquina, of cascarilla, of mint, of benzoin, of castor, of Jew's pitch, &c. – all these substances mixed and reduced to a fine powder, are sprinkled with essential oils. The powdered tan ought to form nearly half the weight, and the salt one-fourth; there ought also be placed, at the disposition of the embalmer, a certain number of bandages, linen, sponges, and waxed threads, also several basins filled with pure water, &c.

"The breast and belly must be opened by large incisions, and their contents extracted; the brain is removed after the necessary incisions of the scalp, and sawing circularly the bones of the cranium; deep and repeated incisions are to be made in the viscera. If we wish to preserve the intestinal tube, we must open it throughout its whole length, wash it well in water and compress it; wash it a second time in camphorated vinegar, and finally with camphorated alcohol. Large incisions must be multiplied on the interior surfaces of the great cavities, and along the extremities."

I stop at these details, because they suffice to prove that the art of embalming, down to the present, has had for its object, not the preservation of the whole subject intact, but the preparation of animal matters padded, stuffed with aromatics and salts: a preparation always incomplete, tedious, and expensive. This is the point from which I start in the preservation of animal matter, and the art of embalming. Have I the happiness of adding a step to science? my readers shall be the judges.

The Academy of Sciences, and the Royal Academy of Medicine, have proved that, by one of my processes, subjects destined for dissection can be preserved. Bodies kept for several months, and afterwards carried to the amphitheatre, have been found as fresh and as fit for dissection, as individuals dead only two days.[5]

[5] The colour of the tissues is changed, however, being bleached by the acetate of alumine – but this is far preferable to the black putridity, which renders the anatomical subject so disgusting and unhealthy, when subjects are scarce. —*Tr.*

These early successes, and the honourable encouragements which they have received, gave me the idea of bringing the art of embalming to perfection; and I have attained to the power of preserving bodies, *with all their parts, both internal and external, without any mutilation or extraction, and so as to admit of the contemplation of the person embalmed, with the countenance of one asleep*.

This discovery has been confirmed by a commission of the Academy of Sciences, who, in its public sitting in the month of August, 1837, conferred upon me the grand prize.

Having decided to publish the result of my researches, I thought it best to precede it by a general history of embalming, and it appeared to me that a book which would reunite so many interesting documents up to the present time scattered throughout so many works, would not be without interest. If my readers join with me in this opinion, I shall not have laboured in vain, and my work shall have received that recompense of which I am most ambitious.

Nevertheless, I conceived that my endeavour should not be restricted to the simple exposition of my researches, and that it was a duty I owed, to place at the disposition of my fellow citizens the means of continuing some relations with the remains of persons whom they had held dear. The sentiments of love, friendship, respect, and veneration, which preserves in our hearts as a sacred depôt, the memory of friends and relations, give, even to an indifferent portrait, which recalls their features to us, an inappreciable value. The heart warms and vivifies this faint image, and recalls to us the words and actions of those who have departed.

These same sentiments cause us painfully to experience the full rigour of that law of nature which condemns to the decomposition of the grave, remains so sacred to us. I have desired to offer to persons groaning under an afflicting loss, the means of preserving all that death has left them; with this intention I have founded an Embalming Society, and I have placed the price for this operation within the reach of the majority of persons. For men destitute of resources, who have rendered themselves worthy, by their talents or virtues, of the remembrance of their species, the public authorities may reclaim of us a gratuitous embalming. We shall be happy to preserve to society the mortal spoils of those who honour and are useful to it.

HISTORY OF EMBALMING

CHAPTER I.
OF EMBALMING IN GENERAL

As soon as life ceases in animal matter, disorganization commences; the constituent elements separate, to be variously recombined, and to give birth to new compounds.

The elevation of atmospheric temperature in certain determined hygrometric limits, and the action of oxygen, are those circumstances which lead necessarily to this decomposition. But, at a given temperature, the progress of putrid fermentation is not the same for all animals; this varies among different species, and different individuals of similar species, according to laws not well determined. But so important, however, are these laws, to the art of embalming, that processes which are sufficient for the preservation of one body, may fail in their application to others.

The ancients had well observed, it is true, that the diversity of climates contributed much to the difference in mummies, and to the success of embalming; for, according to *Camerarius*, great difference exists between the bodies of Europeans and Orientals; the latter, of a dryer temperament, are not exposed to so rapid a decomposition. The example related by *Ammian Marcellini* is a convincing proof. Four days, says he, after a combat between the Persians and Romans, the countenance of the latter could scarcely be recognised; the bodies of the Persians, on the contrary, were dry, without humidity, without sanies, and without any alteration.

If sufficient attention is given to this fact, and we consider further, that the thermometrical and hygrometrical conditions of the atmosphere were such in Egypt, that the bodies abandoned to themselves, become dried and formed natural mummies, we shall perceive how vain and unreasonable have been the attempts of those who, for a long series of ages, expected in the middle and northern portions of Europe to embalm human bodies by processes which are only an imperfect imitation of those of Egypt, even in what is defective. Finally, we shall understand how it happens that the sepulchres of the Guanches and Egyptians, yield bodies in such a perfect state of preservation, whilst those of our country offer only bones and dust.

Whilst according to the Egyptians the just tribute of admiration which their profound wisdom and extensive acquirements merit, we ought, in a scientific question, to defend ourselves from the infatuation of our predecessors, which led them into error, and appreciate at their just value facts badly observed.

We read in the letters of M. de Maillet, “the dry and nitrous earth of Egypt has the property of naturally preserving entire bodies without the aid of any art, especially in those countries at a distance from the Nile. This is a fact which experience does not permit us to doubt. Not long since, there were buried some Frenchmen, in a Coptic church which is in old Cairo, and those who descended the cavern found the bodies of others who had been previously deposited for some time, as perfect as they were the very day that they were inhumed: The clothes even of a Venetian consul, whose corpse had been here interred, were perfectly preserved. I have likewise visited several ancient Mosques, formerly celebrated, but now in ruins, which are situated on the road from Cairo to Suez; these edifices have served as tombs to some Mahommedan kings, whose bodies were here deposited, during the period when Egypt was subject to the Arabs. I investigated some of these caverns, and can assert that I observed bodies so light from desiccation that they could be raised with one hand as easily as if they were a walking stick. Among these bodies, was one which weighed less than four pounds; I saw also a thigh, which, although it appeared entire and full of flesh, with the leg and foot attached, did not weigh one pound. Finally, the same thing is daily observed by the caravans which go to Mecca.

There are none of these wanderers who have made this voyage, who could not testify that the bodies of those who die on the route, are dried to such a degree as to become as light as straw."

If, then, we would wish to judge *a priori* of the relative value of the processes of embalming, followed by the people of Asia and Africa, and of those employed by European nations, we ought to start from this double fact – that among the first, bodies abandoned to themselves have a tendency to dry and mummify, both on account of the small quantity of fluid they contain, and on account of atmospheric influences; whilst those of the second, rot and dissolve under the influence of contrary causes.

We think then, with M. Rouyer, member of the Egyptian commission, that the most efficacious cause of the perfection of the art of embalming of the Egyptians, and of the wonderful preservation of the mummies, was the climate of Egypt, and chiefly that elevated and equal temperature (20° R.) which exists in the interior of sepulchral chambers, and in all subterranean places specially consecrated to sepulchres. A fact which ought to be joined to this last, has been proved by MM. Docts. Boucherie, Bermont, and Gaubert, during a visit to the caves of St. Michel at Bordeaux. These caverns which contain seventy bodies, taken from the neighbouring sepulchres forty years ago, and mummified by causes of which we shall speak in the sequel, are of a temperature of eighteen degrees.

In order to terminate this discussion by a fact universally known, the mummies preserved untouched for several thousand years in the caverns of Egypt, become altered and destroyed very rapidly, when transported into Europe, and divested of their bandages, they are exposed to the influence of our atmosphere.[6]

These various observations convince me that a precise knowledge of the art of embalming among the ancients, would not suffice to preserve bodies in our country; and what we do know, decides me to push my researches in another direction.[7]

Besides, the methods for embalming have varied with time, place, and circumstances. The Ethiopians, inhabiting a country which furnishes in itself more gum than all the rest of the world, conceived the idea of enclosing the body in a melted mass of this transparent matter, and thus to preserve them like insects enveloped in fluid amber, and which are found uninjured and very visible in the middle of this substance when solidified. This mode of preservation has led some to suppose, that the Ethiopians preserved their dead bodies in glass. Honey was formerly used for embalming; the body of Alexander the Great was rubbed with honey, as the following verses prove:

"Duc et ad æmathios manes, ubi belliger urbis
Conditor hiblæo perfusus nectare durat."

[6] The above observations on the natural mummies of caverns, &c., apply equally to the numerous specimens of Indian mummies found in Peru, Brazil, the Western States of North America, &c. —*Tr.*

[7] In the autumn of 1839, in my journey down the Rhine, I visited Popplesdorf, near Bonn, where there is an ancient church, formerly a monastery, called "the Kreuzberg." It is situate on a high and dry hill. I descended its vault in order to examine some two dozen of mummified monks, some of them four centuries old. They were all habited in the costume of the period, and appeared to have died at an advanced age. These are natural mummies, or the result of simple desiccation, the skin resembling leather. It is probable that we may refer to similar causes, those interesting subjects discovered three or four years ago, in a cave of the church of St. Thomas, at Strasburg, viz., the mummified bodies of the Count de Naussau (*Sarsbruck*) and his daughter. These relics, six hundred years old, are both habited in the costume of that epoch; the coat, small-clothes, &c., of the father, have been replaced by exact imitations, but the habits of the daughter are actually those in which she was buried, consisting of a blue silk gown, richly ornamented with lace, with diamond rings on her fingers, and jewels on her breast. The body is well preserved, with the exception of the face: bunches of silvered flowers still adorn the top of the head, arms and shoulders. The features of the Count are almost perfect. I could not observe any external signs of artificial embalming having been resorted to. The skin was of a yellowish colour. The famous mummy of St. Carlo Boromeo, in the vault of the splendid Duomo di Milano, is another remarkable instance – the body is as black and solid as an Egyptian mummy; it was removed from a cemetery in the vicinity, after having remained there many years; no artificial means had been resorted to for its preservation.The climate and soil of Egypt have been equally efficient in preserving vegetable life. The French naturalists who accompanied the army to Egypt, sent home fruits, living seeds, and other portions of twenty different plants, including the common wheat and onion of the present day – as was proved by the germination of the seeds and roots in Europe. —*Tr.*

This use of honey is further confirmed by J. B. Baricel, André Rivin, and R. P. Mènestrier. Pliny, book xxii. chap. 24, says that honey is of such a nature, that bodies placed in it do not corrupt.

They made use also of wax for embalming, as we read in Emilius Probus, at the end of the life of Agésilas: "Having fallen sick, he died, and that his friends might the more conveniently carry him to Sparta, for want of honey they enveloped his body in wax." The Persians, on the report of Cicero, employed the same matter: Persæ jam cerà circumlitos condiunt, ut quam maximè permaneant diuturna corpora.

The ancients also made use of a sort of brine, the composition of which is unknown. Cœlius Rodiginus, in his book of antiquities, remarks that, during the pontificat of Sextus IV. they found on the Appien way the body of a girl, retaining still all the beauty of her face, the hair of a golden blond, and tied up with bands, also gilded – it was thus preserved in a brine, which entirely covered it, and it was thought to be the body of *Tulliola*, the daughter of Cicero. And Valateron assures us that, by a preparation of an unknown salt, the body of another female was also found entire in a mausoleum near Albania, in the time of Alexander VI.; this Pope ordered it to be thrown secretly into the Tiber, fearing the superstition of the people, who run from all parts to see it, because the body still retained its beauty, although thirteen centuries had elapsed since its deposition.

The Jews, after closing the mouth and eyes of the dead, shaved them, washed and rubbed them with perfumes, then enclosed them in a coffin along with myrrh, aloes, and other aromatics, in great profusion.

The Egyptians had a great number of processes for embalming. The valuable work of M. Rouyer places this fact beyond a doubt: *natron*, *cedria*, *bitumen*, *asphaltum*, *pisasphaltum*, different aromatic substances to drive off insects, varnishes, more or less costly, were used in their different preparations; finally, bandages multiplied, and endued with gum Arabic, closed all access to air and humidity. The mummies of the Guanches, which so closely resemble some of those of Egypt, were sewn up in skins, after having been stuffed with aromatics and dried in the sun.

The moderns have employed for the preservation of dead bodies, numerous substances both fluid and solid; spirits of wine, oils, tinctures, compound liniments, brines, etc., constitute the first class; powders, composed of all parts of balsamic and aromatic plants, form the second.

We shall examine, hereafter, more in detail these various systems of preservation – nevertheless, what we have mentioned, proves that they were only in a slight degree efficacious. And even the so much boasted methods of Clauderus, Derasieres, &c., and the wonderful secrets of Debils, Ruysh, Swammerdam, appear to us only applicable to retard a little while the progress of decomposition. The following is extracted from the article *Anatomical Preparations* of the Dictionary of Medical Sciences:

"It is said that Ruysh possessed the means of preserving the flexibility and other vital properties of the different tissues of our bodies. When the Dutch anatomist sold his cabinet to the Czar, Peter I., he gave a manuscript in which he made known the composition of a preservative fluid, expressly stating that this liquor was nothing more than spirits of wine; the spirit of malt, to which was only added, during distillation, a handful of white pepper. But it appeared that Ruysh had not given the true composition of his liquor, or rather, that he had exaggerated the virtues of it, for it is far from possessing the effects which have been attributed to it. After the death of Ruysh, they thought they had discovered his means of preserving. In 1731, Geoffroy was charged to make experiments; but the results did not correspond to the anticipations."

We find in a note added by Strader, at the end of his edition of the works of Harvey, another version relative to the proceedings of Swammerdam, which is as follows:

"It is with reason," says he, "that we prefer to the Egyptian method, an art which so hardens dead bodies, that they lose nothing of their substance, and change neither in colour, nor in form; that they leave to the anatomist all desirable leisure for examination, without presenting any effusion of

blood, nor that disgusting filth so repugnant to the delicate practitioner, and which frequently prevents the examination of the entrails of subjects.

"I shall publish, as was communicated to me, this admirable process, in which I was formerly liberally initiated by Cl. Dn. Swammerdam, which is beyond all praise. It is necessary, then, to obtain a pewter vessel of sufficient size to contain the body to be embalmed; place at the distance of about two fingers depth of the bottom, a hurdle of wood, pierced with many holes; place the body on this hurdle, and pour on oil of turpentine to the height of three fingers, keep the vessel quiet, tightly, and less and less hermetically covered during a certain space of time; in this manner the oil, of a penetrating nature, will infiltrate by degrees into the body on which it is poured, and will expel the aqueous portions, the principal cause of the fermentation which tends to corruption. This aqueous portion descending by its specific gravity, and distilling through the flesh, will, in time, occupy the space between this and the bottom, and during this time the more subtle part of the balm will exhale, as the vessel is less closely covered; the more it evaporates, the harder the body becomes, and will imbibe the thick lees of the oil, the effect of which may be compared to that of a gummy marrow: it can then, consequently, remain out of the liquor and in open air without corrupting, without any fear of putrefaction, or of the worms. As to the time necessary to allow the body to remain in the balm, this varies according to the nature of the subject to be preserved. The following rules on this head must be observed:

"The embalming of an embryon of six months, may be accomplished in about the same length of time.

"The skeleton of the same embryon requires only about two months.

"The membranes of the heart, three months.

"The vessels of the liver, and of the placenta, cleared of their flesh, one month.

"The vessels of the spleen, ten days.

"The intestines, one month.

"A certain time is thus assigned for other vessels, which would not be difficult to discover or determine by experiments.

"It is always necessary to pay attention, that during this operation, the parts be a little contracted and compressed in an equable and convenient proportion; the coction of the body prevents the skin forming wrinkles, whether it be made before the deposition in the oil, or after it has soaked there for two months. In order that the subject may retain all its beauty and whiteness, it must be macerated for several days in alum before embalming it. In order that the members may retain a convenient form and position, they ought to be plunged into the balm on the commencement of winter, about the month of November, to expose them afterwards to the cold, not to freeze, but to harden them lightly.

"In following this process, with care, we destroy entirely all the germs of putrefaction concealed in the body, to such a degree, that the entrails even are profoundly penetrated with this balm, and are able to resist the constant attacks of the air.

"If it is desired to preserve a part, without the process above mentioned, the blood must first be extracted by a brine, and the salt subsequently withdrawn by rain water, and, after having placed it in the shade to prevent its putrefying, endue it with a mixture composed of three quarts of oil of turpentine, and one quart of mastic, which will communicate a brilliant appearance to it, and even a sort of light crust, particularly if a greater quantity of mastic is used in the preparation.

"As regards the preparation of the members and their appendages, a particular process must be observed. The vessels must be well dried, of whatever matter they may consist, and afterwards place the rods in them well fitted to the cavity; and previously endued with suet, which is to be carefully withdrawn in a few days; thus the members, large and small, ought to be placed in cotton, well soaked in suet, to be stretched in the direction of their length, as, for example, we stretch the meshes of capillary vessels on sticks rubbed with suet, from whence they are readily detached by means of a little fire placed beneath, which causes the suet to melt.

"But sufficient has been said for the present; perhaps, hereafter I shall have a more favourable opportunity to relate other similar facts, or even more admirable; for I have seen with Swammerdam, of whom I have spoken above, various pieces embalmed with so much talent, that, besides all their natural properties, they possessed also that of being always soft and flexible; I must forbear transmitting for the present this process, in order not to lessen the èclat of the fine work I have just described, and in introducing a still more beautiful one on the scene, etc."

After so precise a description, I hoped to make something out of this process; but nevertheless, I must confess, that after having repeated these experiments with the greatest care, I was no more successful in my trials than Mr. Geoffroy was in 1731; only I have proved that, when bodies are prepared according to my process, and afterwards plunged into turpentine, they preserve a remarkable freshness and suppleness. After much reflection upon this subject, I have come to the conclusion, that Ruysh and Swammerdam have never made known but a part of their system of preservations, and that, previously to immersing the body in either of the two liquids of which we have spoken, they subjected them to some preparation. In fine, those very authors who boast of the admirable perfection of their processes, have not left a single preparation to show as an example to justify their praises; and, as a proof of their exaggeration, we have the testimony of an author (*Penicher*) profoundly versed in this matter. "Those authors," says he, "who boast of having embalmed without emptying the great cavities, and by confining themselves to injections by the mouth, by the anus, or by holes made in the armpits, would be embarrassed to show satisfactory results from such superficial embalming; for, sooner or later, these nuisances will overcome all the embalmer's industry, and all the expense he may have been at to conquer a bad impression. Could there exist a more singular proof of this, than what happened a few years ago in the church of R. R. P. P., respecting the body of a lady of first quality? The corpse had been placed in a leaden coffin, and enclosed in another of wood, and placed within a marble mausoleum well cemented; after which, in order to fulfil the will, it was embalmed, and enveloped in two hundred pounds of aromatics and perfumes; two kegs of aromatic spirits of wine were introduced through an opening, so that the body was completely submerged in it. Nevertheless, at the end of twelve years or thereabout, it produced so dangerous and malignant a stench through the cracks which occurred in the coffin, by the expansion of the drugs, that one of the priests, who chanced at the time to be saying mass in his chapel, fell extremely ill from this cause, and the assistants were obliged to withdraw, being unable to support the effluvia.

"The priests were under the necessity of exhuming the body, with the consent of the archbishop, and family of the deceased; they removed it to the garden, placed it in a ditch, and covered it with quick-lime, which not destroying the flesh, composed of oily, sulphurous, and resinous parts, it was found necessary to remove the flesh from the body, in order to replace the skeleton in the mausoleum; to such a degree did the bad qualities of the entrails and viscera, corrupted by disease, surpass the good qualities of the balms."

The imperfections of these methods grow out of their very nature. Along side of these embalmings, practised in an empyrical manner, without any reference to the qualities more or less efficacious, of the aromatic and balsamic substances, I can place infants several months old, subjects most susceptible of dissolution, *and which, after a simple injection, have remained exposed to the air in a moist room*. At the end of two years of this exposure, they displayed a great suppleness of the tissues, without the least trace of decomposition. Those which I enclosed in cases, in the midst of an atmosphere of my own discovery,[8] have preserved exactly the expression and colour of the face, that they had at the moment of death.

[8] This atmosphere, we have reason to believe, consists of the vapour of oil of turpentine. We examined some of these specimens, which, after a simple injection with the solution of the acetate of alumine, were exposed to a current of air, and found them as hard as horn and somewhat distorted. —*Tr.*

CHAPTER II.
NATURAL MUMMIES

Whilst man agitates and torments himself in employing all his activity to produce a feeble result, nature, all-powerful, by means of simple causes, produces wonderful effects. Man disputes with the rivers, the ocean's waves, some few acres of land, which he protects with great labour from their overwhelming influences. At the voice of nature, elements, until now foreign to each other, approximate, combine, and unite in the bosom of the earth, and suddenly throw up from the middle of the ocean vast isles and new continents. He has need of all his industry to make the sap circulate in a few etiolated plants; she, on the contrary, confers life and motion to all beings, or strikes them with torpor or death, according as she elevates or depresses the sun a few degrees in the horizon.

In order to preserve the bodies of his own image, man, stimulated by sentiments of religion, respect, or of love, mutilates in vain their inanimate spoils; in vain he penetrates with aromatics and preservative juices, remains, which putrefaction reclaims and seizes. Nature covers with a little snow the traveller who scales the mountain, then, after centuries, returns the body unaltered. She commands the winds to blow: the sands of the desert are agitated, and the soldiers of Cambyses, and the soldiers of Alexander, are dried in the dust; penetrating with some unknown bodies the entrails of the earth, she there preserves the generations which have preceded us.

Here is the art of embalming in its highest degree of perfection; here are mummies which we ought to desire to imitate. It must be acknowledged, that when the Egyptians and the Guanches transmitted to us their bodies in a state of preservation, which has been the admiration and astonishment of ages, they owed as much, at least, to the aid of nature, as to the perfection of their art, and the development of their industry. If, then, we wish to preserve the bodies of those who excited our admiration or our love, in place of despising the mummies[9] which nature presents us with, let us study them, let us seek with care, the cause of their preservation, and, by reasonable analyses, let us endeavour to penetrate the secret of her ways.

If this direction had been followed, convenient processes would doubtless have been discovered a long time ago; and it never would have been supposed possible to preserve a corpse with certainty, by stuffing it with sixty or eighty kinds of powdered aromatics. After such considerations, we, who have substituted an experimental for an empyrical method, and progressed from the known to the unknown, ought, to be consistent, to study natural mummies first.

Some have been formed by the general qualities of the air and earth, others, by purely local influences; in the first series, we include *the mummy of the sand, and those of avalanches; in the second, those discovered here and there in certain sepultures; in the convent of the Capuchins, near Palermo; in the caves of St. Michel, at Bordeaux; in the cemetery of the church of Saint Nicholas; the Museum; the cloister of the Carmes; the caves of the Jacobins and the Cordeliers, at Toulouse, &c.*

These last named mummies, the preservation of which is probably due to the particular properties of the soil in which they were deposited, have been, up to the present day, objects of vulgar curiosity, rather than of attentive examination.

Drs. Boucherie, Bermont, and Gaubert, have favoured me with some notes taken during a visit to the caves of St. Michel, at Bordeaux, (*August*, 1837.) I let them speak for themselves:

"The bodies exposed to view at Bordeaux, in the cavern situated beneath the tower of Saint Michel, were deposited there in 1793, nearly in the same state in which they appear at present, they

[9] The reverend Father Kircher in his chapter on mummies, thinks that these bodies do not merit the name; here is what he says in his chapter iii, §. 2. "But these bodies, dried and preserved in the sands of Lybia, should not receive the name of *mummy*, because a mummy is, properly speaking, a body prepared after a special process." Such ideas have caused much empyricism, and have been most powerful obstacles to the progress of the art of embalming.

came from the sepulchres of the church and the adjoining cemetery. A great number of bones, and the wreck of soft parts, dried and preserved like the whole bodies, form a layer of seventeen or eighteen feet, upon which are supported the inferior extremities of seventy subjects, arranged in a circle around the wall, and retained in a vertical position by the cords which bind them. Some of these, they say, had remained in the earth many centuries, others from sixty to eighty years or more.

"During our visit, 25th August, 1837, we determined to examine with care the state of these bodies, those of the middle, where they had remained for more than forty years, and above all, we procured strips of skin and muscle, in order to examine them at leisure, and to submit them to some chemical re-agent, which might reveal to us the presence of the preservative element. We could not hope to collect any of the earth that had originally covered them, since they were superposed on remnants thrown into this place at the time they were enclosed here.

"After having furnished ourselves with a thermometer at 24° R., and a hygrometer at 34°, both in the open air, we descended thirty or forty steps, which conducted us to the cave. The coolness did not appear to us very striking, as it commonly is at this depth during the heat of the dog-star. Placing our instruments on the soil, we proceeded to examine the bodies.

"It is an extraordinary aspect, by lamp-light, offered by this circular space, the walls of which are tapistried by dead bodies all standing erect; the eye wanders from one to the other involuntarily, and we view the whole before confining ourselves to details. Although the most of them are in the attitude of the buried dead, some differences in size, in the position and expression of the physiognomy, produce a strange and confused impression. There is one point, however, where our regards were particularly attracted, where the heart is chilled and troubled with deep emotion – here is beheld a miserable creature in a position violently contracted – the mouth open and horribly contracted, the inferior members strongly drawn to the body – the arms, one twisted by convulsions is thrown over the head, the other folded beneath the trunk, and fixed to the thigh by the nails, which are deeply implanted in the flesh; the forced inflexion of the whole body, gives the expression of ineffable pain, all announcing a violent death. Unfortunate wretch! had he died in this state, or rather, had he been buried alive, and assumed this position in the horrible agonies of awakening?

"The skin of all these mummies, of a more or less deep gray colour, dried and rather soft to the touch, gives the sensation of parchment slightly stretched upon the organs, dried, and of the consistence of amadou[10] or spunk; the articulations are stiff and inflexible; the chest, the abdomen, and the cranium, examined carefully, did not show any incision, any regular opening indicative of any trace of embalming, even the most imperfect. The different features of the face, still distinct among some of them, displayed a variety of physiognomy; two or three of them displayed the hair of the beard very well preserved, the teeth were healthy and covered with brilliant enamel. The upper and lower extremities entirely dried, and whole in many of the subjects, are provided with all the phalanges; the last, however, divested of its nail. On the body of the tallest figure is perceived enormous purses, with evident traces of a double scrotal hernia. The skin raised and viewed on its interior surface, is tanned like the exterior; all traces of cellular tissue has disappeared; the muscles, separated from the skin, have the colour and consistence, and almost the internal structure of amadou. On introducing the hand into the chest, some rudiment of lung was found, a net work very similar to that of leaves deprived of their fleshy part; they might be taken for a mass of leaves dissected by the caterpillars, and rendered adherent by the threads and viscous fluid that these insects deposit. The intestines, also dried, are nearly in the same state.

"Such are the principal details which presented themselves in the course of our examination: at first sight, it appeared astonishing that these bodies, removed for more than forty years from the medium in which they were desiccated, should have experienced no sensible alteration in a cavern situated deeply under the earth, and surmounted by a structure like that of the tower of St. Michel.

[10] A sort of tinder made of agaric. —*Tr.*

Let us return to our instruments, perhaps they will aid us in the explanation of the fact. After remaining an hour in this atmosphere, the thermometer passed from 24° to 18°, and the hygrometer, from 34° to 42°, which gives a difference for the first, of 6°, for the second of 8°, a very trifling difference, when compared to that of caves and other places in the same apparent position. This thermometrical and hygrometrical state of the air, always invariable, is, without doubt, one of the principal circumstances in maintaining the integrity of these mummies. To what cause, further, can be attributed this double state of the air in the cavern? A slow fermentation, movements of latent decomposition in the enormous mass of animal remains which form the bottom of this receptacle, are they not the probable cause? We think so, and we leave with confidence this idea, to the meditation of philosophers. Our end was attained, we had proved facts, and collected some parcels of the remains to subject them to analysis; after different trials without result, some portions of skin and muscular tissue, placed in weakened hydrochloric acid, and treated by ebullition, were totally dissolved in this liquid, to which they communicated a deep brown colour. This liquor filtered and treated by the yellow cyanate of potash, yielded a very abundant blue precipitate; and the presence of iron was thus indicated, from whence we thought that the preservation of these bodies was owing to the presence of a compound of iron in the earth, where they had been deposited. But the human blood yields iron also; was it a portion of this element of our tissues that our experiments brought into play? A suit of comparative experiments upon the tissues of mummies, on the one hand, and of the same tissues dried in the sun of subjects recently dead, on the other hand, have evidently proved the excess of iron in the first. Analogous circumstances doubtless, have determined the preservation of the bodies found at Toulouse, at Palermo, &c. We regret not to be able to transmit the suit of experiments made by our learned friend, Dr. Boucherie; these will form the subject of ulterior researches."

The same phenomenon still occurs in different parts of our country, under a moderate temperature: thus, about 1660, M. de La Visèe and his domestic, having been assassinated at Paris, and interred on the place where the crime was committed, their bodies were discovered after the lapse of a year, whole and readily recognisable; a cloak even, lined with plush, had not suffered the least alteration.

The mummy of the avalanches, and all those, the preservation of which is due to a constant low temperature, retain the freshness and plumpness of the tissues for years and for centuries, if the conditions of the medium remain the same; but, under these circumstances, the action of cold exerts no other influence than the suspension of decomposition; for the moment it ceases, the tissues are rapidly exposed to the laws of inorganic chemistry.

In those cases, however, where the bodies exposed to cold are subjected to a dry and lively wind, a real mummification may occur, as in the following example:

There is upon the summit of the Great Saint Bernard, a sort of morgue (*dead house*) in which have been deposited, from time immemorial, the bodies of those unfortunate persons who have perished upon this mountain by cold, or the fall of avalanches.

The study of the circumstances of locality, and of temperature, in which this establishment is placed, may, to a certain degree, indicate the most favourable conditions for the long preservation of bodies. Here they show to travellers, bodies, which they assert have been sufficiently well preserved to be recognisable after the lapse of two or three years. A physician, whose quality as ancient prosector of the faculty of Medicine of Paris, rendered him curious to visit this part of the hospital in all its details, has verified with his own eyes all that travellers have written, and has transmitted to us the following observation:

The hospital of Saint Bernard, is, as is well known, the most elevated habitation in Europe, being 7,200 feet above the level of the sea. The temperature of this part of the globe is always very low, rarely above zero, even during summer. This extensive establishment is built upon the borders of a little lake, at the bottom of a little gorge; the principal mass of the building represents a long parallelogram placed in the direction of the gorge, so that its two principal faces, pierced

with numerous windows, are sheltered from the wind by the rocks; whilst the two extremities, on the contrary, are exposed to all the violence of those which blow from one side of the gorge to the other. About fifty steps beyond this principal building, and a little out of a right line with it, is situated the *morgue*, a sort of square chamber, the walls of which, three or four feet thick, are constructed of good stone, and the arched roof of which is very solid. Two windows of about four feet square, are pierced in the direction of the breadth of the valley, directly facing each other, so that a perpetual current of cool air traverses the interior of the chamber. There is, further, but a single table in this morgue, upon which they place the bodies when first introduced; after a while they are arranged around the walls in an upright attitude. At the time of my passage of the Great Saint Bernard, (31st *August*, 1837,) there were several of these mummified bodies along the walls of the chamber, but a greater number were entirely divested of flesh, and lie scattered about the earthy floor of the room. They informed me, that decomposition only took place when the bodies fell by accident to the ground; which was owing to the humidity occasioned by the snow, which occasionally entered with the currents of air through the windows of the morgue.[11] (Note communicated by Dr. Lenoir.)

The existence of the mummies of the sands, is attested by numerous travellers, and all the authors who have written on embalming mention them. They are every where found, where an arid and burning atmosphere deeply penetrates the masses of fine sand, easily agitated by the winds. In Egypt, for example, Herodotus frequently speaks of these bodies dried by the sun. Cambyses, on the authority of this author, suffered horrible effects from these sands, driven before the wind; he lost almost his whole army during his expedition to the temple of Jupiter Ammon.

Pere Kircher gives us an interesting description of these sand storms: “In the countries of Africa situated beyond the Nile, is a vast desert of sand, the immense waves of which appear in the boundless horizon like those of the sea. Agitated by the winds, these sands produce such frightful tempests, that they swallow up under their enormous masses, travellers, beasts of burden, and merchandise. Bodies thus engulfed, become desiccated after a series of years, both by the ardour of the sun’s rays, and by virtue of the burning sand: this is the reason that some have asserted that mummies might be formed by natural causes only, &c.”[12] Penicher, Clauderus, De Maillet, Rouelle Le Comte de Caylus, cite examples of the same nature. A whole caravan, or some travellers, disappear under a mass of sand; years, centuries, pass by, then a new revolution in the disposition of these masses restores to the light of day, those bodies which a previous revolution had engulfed; blackened, dried, and lightened by the loss of all their fluids. In Mexico, Mr. Humboldt met with true mummies. Travellers have visited battlefields, situated on a soil deprived of rain, and in a burning atmosphere. They saw with astonishment, that these fields were covered with the dead bodies of Spaniards and Peruvians, dried

[11] Early in September, 1833, I had an opportunity of inspecting the contents of the morgue of Saint Bernard. Among the group of bodies of every age and sex, we were particularly struck with two figures, one, that of a man, whose countenance was horridly contorted by the act of desiccation; each limb, and every muscle of the body, had assumed the expression of a wretch in purgatory. The other was that of a mother holding her infant to her bosom, the latter, with an imploring expression, looking up to the face of the mother, whom it appeared to have survived some time, as is generally the case when mother and child are frozen together – a greater power of forming animal heat existing in children. —*Tr.*

[12] The following is the passage of P. Kircher, of which we gave only a few passages in our citation.“Est in Transpilana Africæ regione, desertum ingens sabuli, arenarumque cumulis in immensum exporrectum, unde et sabulosi maris non immerito nomen obtinuit; hæ siquidem arenæ ventis concitatæ tam sævas subinde tempestates movent, ut arenis in clivos aggestis, turbinum violentia, et jumenta et viatores una cum mercibus suis, nulla evadendi spe relicta, vivos sepiliant. Refert Pomponius Mela de rupe qua dam in hoc deserto existente, austro consecrata, quæ simul atque vel manu tacta fuerit, austro mox provocato, Sævissimas procellas moveat, sabulo in tantum intumescente, ut pelagus undarum vorticibus, fluctuumque æstibus concitatum videraqueat. Hanc rupem dum olim sylli inconsultius adeunt sive occultiori naturæ impetu, sive magicis incantationum præstigiis, vento mox exoriente, et sabulosos cogente montes, ad unum omnes extincti ferunter. Est et in hoc deserto, ammonium oraculum et serapium, sphyngesque ingentes quarum aleæ usque ad caput, aleæ ex dimidio arena obrutæ, strabone teste, spectantur. Hoc itaque celeberrimum oraculum consulturus olim Alexander Magnus, dum pleno aleæ itineri se accingit, ad illud quidem incolumis pervenit, sed quos milites ex suo exercita non sabulosi pelagi turbines, hos æstus, sitisque confecisse traditur. Sed ut unde digressus revertar, in hoc sabuloso deserto dicunt non nulli mumias solius naturæ industria confici; dum aiunt, viatorum deserti tempestatibus extinctorum corpora tum solis tunc ferventissimæ hugus arenæ pinguioris virtute, longo tempore siccata, tostaque, in hunc statum degenerare. Sed tametsi subinde, in hoc Lybiæ deserto hugusmodi a sole exsiccata corpora reperiantur, illa tamen minime mumiæ discendæ sunt.”

and preserved for a long time. At the side of these phenomena which nature offers us, come the mummies of which Maillet speaks in his letters on Egypt.

"There has been discovered," says he, "recently, in this plain of mummies, a mode of burying hitherto unknown. At the extremity of this vast open country, and towards the mountains, which bound it on the west, have been discovered beds of carbon, on which are laid bodies clothed only with some linen, and covered with a mat, upon which rests the sands seven or eight feet in thickness. Nevertheless, it is to be observed, that these bodies, although they were not embalmed, or at least but slightly so, the same as those that they have neglected to enclose in cases, were none the less beyond the reach of corruption."

I promised to demonstrate the simple connection which exists between the products of nature, and those of human industry, to show that the first were the origin of the second. The facts which I have just exposed, I think, place this proposition beyond a doubt.

The preservation of bodies among the Guanches, which is already a step advanced in the art, will form the subject of the following chapter.

CHAPTER III.
EMBALMING OF THE GUANCHES

The Guanches, with the Egyptians, are the only nation among whom embalming had become national, and there exists in the process and mode of preservation of both such striking analogy, that the study of the Guanch mummies is, probably, the surest means of arriving at some positive notions of their origin and relationship. To make ourselves understood in the subject which now occupies us, we ought to remark, that the details known of the mode of embalming among the Guanches, will enlighten and complete the descriptions that ancient authors have transmitted to us of the Egyptian processes: it is thus that it appears to us without a doubt, that their silence on desiccation in the act of mummification, is a simple omission on their part: that this desiccation was continued during the seventy days of preparation; that it constituted the principal part of the processes adopted; and that, because among the Guanches desiccation was placed in the first rank, if we are to credit the relations of authors. We see in this, one of the finest examples of the utility of the comparative study of the manners and usages of different nations: light is thrown on both by the comparison of facts.

The pains taken by the Guanches to evaporate the fluid parts of their dead bodies, is the cause which determines us to place their mummies immediately after those of the deserts of Lybia; because their processes approach nearest to that of nature. The details which we are about to give, are extracted from the excellent work of M. Bory de Saint Vincent on the Fortunate Isles.

"The arts of the Guanches were not numerous, the most singular without doubt is that of embalming.

"The Guanches preserved the remains of their relations in a scrupulous manner, and spared no pains to guarantee them from corruption. As a moral duty, each individual prepared for himself the skins of goats, in which his remains could be enveloped, and which might serve him for sepulture. These skins were often divested of their hair, at other times they permitted it to remain, when they placed indifferently the hairy side within or without. The processes to which they resorted to make perfect mummies, which they named *xaxos*, are nearly lost. Some writers have, nevertheless, left details on this subject, but perhaps they are not more exact than those which Herodotus has transmitted to us upon the embalming of the Egyptians.

"With the Guanches, the embalmers were abject beings; men and women filled this employment respectively, for their sexes; they were well paid, but their touch was considered contamination; and all who were occupied in preparing the xaxos lived retired, solitary, and out of sight. It is, then, out of place, that Sprats has advanced the idea, that embalming was confined to a tribe of priests, who made a sacred mystery of it, and that the secret died with the priests. There were several kinds of embalming, and several different employments for those who had charge of it. When they had need of the services of the embalmers, they carried the body to them to be preserved, and immediately retired. If the body belonged to persons capable of bearing the expenses, they extended it at first on a stone table; an operator then made an opening in the lower part of the belly with a sharpened flint, wrought into the form of a knife and called *tabona*; the intestines were withdrawn, which other operators afterwards washed and cleaned; they also washed the rest of the body, and particularly the delicate parts, as the eyes, interior of the mouth, the ears, and the nails, with fresh water saturated with salt. They filled the large cavities with aromatic plants; they then exposed the body to the hottest sun, or placed it in stoves, if the sun was not hot enough. During the exposition, they frequently endued the body with an ointment, composed of goats' grease, powder of odoriferous plants, pine bark, resin, tar, ponce stone, and other absorbing materials. Feuille thinks that these unctions were also made with a composition of butter, and desiccative and balsamic substances, among which are mentioned the resin of larch, and the leaves of pomegranate, which never possessed the property of preserving bodies.

"On the fifteenth day the embalming should be completely terminated; the mummy should be dry and light; the relatives send for it and establish the most magnificent obsequies in their power. They sew up the body in several folds of the skin, which they had prepared when living, and they bind it with straps, retained by running knots. The kings and the grandees were besides, placed in a case or coffin of a single piece, and hollowed out of the trunk of the juniper tree, the wood of which was held as incorruptible. They then finally, carried the xaxos, thus sown and encased, to inaccessible grottoes consecrated to this purpose.

"Another less expensive mode of preserving the dead, consisted in drying them in the sun, after having introduced into the belly a corrosive liquor: this liquor eats into the interior parts, where the sun does not act sufficiently to prevent their corruption. Like the other xaxos, the relatives sowed them in skins and carried them to the grottoes.

"These mummies, such as they are found at the present day, are dry and light; many have perfectly preserved their hair and beard, the nails are often wanting; the features of the face are distinct, but shrunken; the abdomen is contracted. In some, there exists no mark of incision, in others are observed the trace of a rather large opening on the flank. The xaxos are of a tanned colour, with generally an agreeable odour; exposed to the air, out of the sacks of goat skin, which are admirably preserved, they fall by degrees into dust; they are punctured in many places; surrounded by the chrysalides of flies, proceeding probably from maggots, deposited upon the body during its preparation: these larvæ and chrysalides, which could not be reproduced, are preserved whole and healthy like the mummies.

"The Chevalier Scory says, that these mummies are two thousand years old: it is difficult to determine how long they have been preserved; but we shall see in the sequel that it has been certainly more than two thousand years since the Guanches embalmed. I willingly believe that, in the corrosive composition which they employed in the second kind of embalming, and probably in all cases, the Guanches made use of the juice of the spurge; they doubtless employed the species proper to their climate, which is acrid and milky; I have recognised whole pieces in the chest of a mummy, in which, nevertheless, there existed no traces of an incision. Leaves, also, it is said, have been taken from the body in a good state of preservation, and have been recognised as those of the laurel. During the exposure of the body to the sun, they extend the arms of the men along the side of the trunk, and for the most part crossing those of the women before the lower part of the abdomen. From time to time new catacombs are discovered in the Canary islands. In 1758, they found one at Palma; but the mummies were either very old, or badly embalmed, they soon fell into powder. At Fer, there was found on the tables where the xaxos had laid, the furniture which the deceased had used during life. In this island they wall up these caverns, to prevent them being used as retreats for birds of prey and for crows.

"At the Canaries, they do not limit themselves always to placing the mummies in grottoes; they elevated special tombs to certain distinguished dead. These privileged dead, dressed in their garment, called tamareo, were placed upon elevated planks of pine wood, with the head turned towards the north; they afterwards constructed above, a monument of hard stone, pyramidal in form, and often very high. Many catacombs are known to exist in Teneriffe; the most celebrated is that of Baranco de Herque, between Arico and Guimar, in the Abona country: it was discovered during the time that Clarijo wrote his *Noticias*. He states that they there met with more than a thousand mummies, whilst in other cases only three or four hundred had been found at a time. From hence they brought the xaxos, which are in the cabinet of the King of Spain, and the two which M. de Chastenet-Puysegur sent in 1776, to the Garden of Plants: one of them unfortunately wants the feet."

We abstain from all reflection on the recital which precedes. Their analogy to the Egyptian process will occur of itself to the mind of the reader, in the description which follows. Nevertheless, we ought to indicate a fact observed of two Guanch mummies; a fact omitted in the preceding description.

M. Jouannet, a modest and laborious investigator, has proved, that two Guanch mummies that were in his possession, had the eyes, nose, and mouth, filled with bitumen, like some of the Egyptian mummies. The skins which enveloped them were carefully closed, and nothing indicated that the bitumen was an addition posterior to embalming.

CHAPTER IV.
EMBALMING AMONG THE ANCIENT EGYPTIANS

Since the ignorance we are in, relative to the language of this great nation, places it out of our power to know, of ourselves, the causes and processes for the preservation of dead bodies, let us follow the recital of ancient authors, let us endeavour to detect, not by the imagination, but by positive facts, by the study of invariable exterior conditions, the different data of the question of embalming among the Egyptians.

In the first place, if we make allowance for all that the successive perfection of the arts, luxury, or the love of distinction could add to simple preservation, we shall arrive, with Rouelle, to this conclusion, that the work of embalming is reduced to two essential parts: first, the drying of the body, that is to say, removing the fluids and grease which they contain; secondly, to protect the body thus prepared, from external humidity and contact of the air. We have already seen all the aid which they derived from their climate to fulfil the first condition: a detailed description will teach us what their industry enabled them to add to it. As to the second, the nature of their caverns powerfully contributed.

These vast cavities, says Pelletan, sheltered from the inundations of the Nile, have, without doubt, originally furnished the materials for the monuments of Thebes, and the architects of the day thus hollowed out the tombs of families in elevating their palaces. Their whole surface, from the entrance, even to the deepest recesses of these dark excavations, are covered with sepultures and fresco paintings. Each framed subject forms so many little pictures which touch each other, and the figures of which are not more than two or three inches in height, so that the whole extent of these double walls, the development of which is incalculable, has been the object of minute labour. The sculptures are in bas-relief, and covered with equable tints, but lively, *and in very good preservation*. The points of rock unconnected with the work, have been covered with a composition perfectly solid, and so durable, that, as yet, *no other degradation is observable, than that produced by the efforts of some travellers to carry off fragments of it.* Perspective is always wanting in these pictures; the bodies are viewed in full, the faces in profile; but the design is pure and the proportions just; we find nothing to indicate ignorance in the artist; which presumes for the Egyptians, if not great perfection in the arts, at least a great popularity in their practice. The subject of these paintings are domestic scenes, and generally followed by a funeral procession; from whence it may be inferred, that they refer to the life of the man enclosed in each of the lateral niches. The temperature of the caverns is 20° R.

It appeared to us convenient thus to give a summary of the conditions of drying, and of the ulterior preservation, before presenting descriptions which have been more or less accurately transmitted to us, of the part that man has had in this operation.

Herodotus, Diodorus Sicculus, and Porphyrus, who have written with the greatest detail on the funerals of the Egyptians, will afford us the first instructions.

Herodotus. “Mourning and funerals are conducted after this manner: when a man of consideration dies, all the women of his house (*oiketes*) cover the head and even the face with mud; they leave the deceased in the house, girdle the middle of their bodies, bare the bosom, strike the breast, and overrun the city, accompanied by their relations. On the other side, the men also girdle themselves and strike their breasts; after this ceremony, they carry the body to the place where it is to be embalmed.”

The following, after Diodorus Sicculus, (book 1st, vol. i. p. 102, § xcii.) is the ceremony of sepulture among the Egyptians: “The relatives fix the day for the obsequies, in order that the judges, the relations, and friends of the dead may be present, and they characterize it by saying, he is going to pass the lake; afterwards the judges, to the number of more than forty arriving, they place themselves in the form of a semi-circle beyond the lake. A batteau approaches the shore, carrying those who

have charge of this ceremony, and in which is a sailor, whom the Egyptians name in their language *Charon*. They say, further, that Orpheus having remarked this custom in his voyage in Egypt, took occasion from it to imagine the fable of hell, imitating a portion of these ceremonies, and adding to them others of his own invention. Before placing in the batteau the coffin containing the body of the deceased, it is lawful for each one present to accuse him. If they prove that he has led a sinful life, the judges condemn him, and he is excluded from the place of his sepulture. If it appear that he has been unjustly accused, they punish the accuser with severity. If no accuser presents himself, or if the one who does so is known as a calumniator, the relatives, putting aside the signs of their grief, deliver an eulogium on the deceased without mentioning his birth, as is practised among the Grecians, because they considered all Egyptians equally noble. They enlarge on the manner in which he has been schooled and instructed from his childhood; upon his piety, justice, temperance, and his other virtues since he attained manhood, and they pray the Gods of hell to admit him into the dwelling of the pious. The people applauded and glorified the dead who were to pass all eternity in the abodes of the happy. If any one has a monument destined for his sepulture, his body is there deposited; if he has none, they construct a room in his house, and place the bier upright against the most solid part of the wall. They place in their houses those to whom sepulture has not been awarded, either on account of crimes, of which they are accused, or on account of the debts which they may have contracted; and it happens sometimes in the end that they obtain honourable sepulture, their children or descendants becoming rich, pay their debts or absolve them." Orpheus communicated to the Greeks these usages of the Egyptians, applied to hell. Homer, following in his steps, adorned his poetry with them: "*Mercury*," says he, "his wand in his hand, convoked the souls of the candidates." And further on: "They traversed the ocean, passed near Leucadia, entered by the gate of the sun, (*Heliopolis*,) the country of dreams, and soon attained the fields of Asphodelia, where inhabit the souls who are the images of death."

But to return to the recital of Herodotus. "There are in Egypt, certain persons whom the law charges with embalming, and who make a profession of it.

"When a body is brought to them, they show the bearers models of the dead in wood. The most renowned represents, they say, *him whose name I am scrupulous to mention*; they show a second, which is inferior to the first, and which is not so costly; they again show a third of a lower price. They afterwards demand after which of the three models they wish the deceased to be embalmed. After agreeing about the price, the relatives retire; the embalmers work alone, and proceed as follows, in the most costly embalming. They first withdraw the brain through the nostrils, in part with a curved iron instrument, and in part by means of drugs, which they introduce into the head; they afterwards make an incision in the flank with a sharp Ethiopian stone.

"The body being extended upon the earth, the scribe traces on the left flank the portion to be cut out. He who is charged with making the incision, cuts with an Ethiopian stone, as much as the law allows; which having done, he runs off with all his might, the assistants follow, throwing stones after him, loading him with imprecations, as if they wished to put upon him this crime. They regard, indeed, with horror, whoever does violence to a body of the same nature as their own. Whoever wounds it, or in one word, whoever *offers it any harm*." (*Diodorus*, book I, t. i. p. 102.)

"They withdraw the intestines through this opening, clean them, and pass them through palm wine, place them in a trunk; and among other things they do for the deceased, they take this trunk, and calling the sun to witness, one of the embalmers on the part of the dead, addresses that luminary in the following words, which Euphantus has translated from his vernacular tongue. 'Sun, and ye too, Gods, who have given life to men, receive me, and grant that I may live with the eternal Gods; I have persisted all my life in the worship of those Gods, whom I hold from my fathers, I have ever honoured the Author of my being, I have killed no one, I have committed no breach of trust, I have done no other evil: if I have been guilty of any other fault during life, it was not on my own account, but for these things.' The embalmer, in finishing these words, shows the trunk containing the intestines,

and afterwards casts it into the river. As to the rest of the body, when it was pure, they embalmed it." (*Porphyr., De abstinentia ab esu animalium*, book 17, § 10, p. 329.)

"Afterwards they fill the body with pure bruised myrrh, with canella and other perfumes, excepting incense; it is then sown up. When that is done they salt the body in covering it with *natrum* for seventy days." (Natrum, with the intention of carrying off, and drying the oily, lymphatic, and greasy parts; but this ought to have been the first operation, for if they had commenced with filling the body with myrrh and aromatics, previous to salting it, the natrum, acting on the balsamic matters, and forming with their oils a soapy matter, very soluble and readily carried off by the lotions, would have destroyed the greater part of the aromatics. Besides, Diodorus does not mention natrum.) "It is not permitted to let them remain longer in the salt. The seventy days elapsed, they wash the body and entirely envelope it in linen and cotton bandages, soaked with gum Arabic, *commi*, which the Egyptians used generally in place of glue.[13] The relatives now reclaim the body; they have made a wooden case of the human form, in which they enclose the corpse, and put it in a chamber destined for this purpose, standing erect against the wall. Such is the most magnificent method of embalming the dead. Those who wish to avoid the expense choose this other method; they fill syringes with an unctuous liquor which they obtain from the cedar; with this they inject the belly of the corpse without making any incision, and without withdrawing the intestines; when this liquor has been introduced into the fundament they cork it, in order to prevent its ejectment; the body is then salted for the prescribed time. The last day, they draw off from the body the injected liquor; it has such strength that it dissolves the ventricles and intestines, which come away with the liquid. The natrum destroys the flesh, and there remains of the body, only the skin and bones. This operation finished, they return the body without doing anything further to it.

"The third kind of embalming is only for the poorer classes of society. They inject the body with a fluid named *surmata*; they put the body into *natrum* for seventy days, and they afterwards return it to those who brought it. As to ladies of quality, when they are dead, they are not immediately sent to the embalmers, any more than such as are beautiful or highly distinguished; these are reserved for three or four days after death. They take this precaution lest the embalmers might pollute the bodies confided to their care.

"It is reported that one was surprised in the act, with a woman recently dead, and that on the accusation of one of his comrades."

The preceding recitals have been the subject of numerous commentations, discussions, and researches. It is astonishing that Herodotus has omitted desiccation; but it naturally took place during the time consecrated to preparation. Some assert that the body was in the first place salted, and subsequently penetrated with resinous and balsamic substances, which, incorporating with the flesh, prevented putrefaction: others pretend that the body, after having been salted, was dried, and that it was not until after this desiccation that the resinous and balsamic substances were applied. A simple inspection of the mummies is sufficient to reject the first opinion. What union, indeed, could these last named matters have contracted with the fluids of the tissues? and how can we conceive from thence, that bodies often filled with corrupted serosity, could have resisted the intestine effects of such active causes in producing decomposition?

M. Rouelle thought that the *natrum* was a fixed alkali, which acted after the manner of quick-lime, despoiling the bodies of their lymphatic and greasy fluids, leaving only the fibrous and solid parts. Thus viewing in this manner the Egyptian process, it removes an error into which Herodotus has fallen on the subject of the first class of embalming. It is there stated, that they filled the belly of the corpse with myrrh, canella, and other perfumes, except *incense*, and that afterwards they put it into the *natrum* and then washed it. But of what use would have been these resinous matters, with

[13] It is not improbable that the use of these gummy bandages gave origin to the new and improved method of bandaging fractured limbs – the bandages being first soaked in a solution of gum Arabic, or in a preparation of starch, called dextrine. —*Tr.*

which the alkali of the *natrum* would soon form a soapy mass, which the lotions would have carried off, at least, in great part? It is much more reasonable to suppose that these balsamic and resinous substances were not applied to the bodies until after they were withdrawn from the *natrum*.

The same author points out another inaccuracy, in what Herodotus has taught us on the bandages of the mummies. Very few mummies, says he, are enveloped agreeably to the description of Herodotus, that is to say, the linen bandages are not glued together with gum alone, applied directly to the body when simply dried without any resinous substances. Such kind of embalming is the least costly, although Herodotus describes it as the richest and dearest. The mummy preserved in the cabinet of St. Geneviève, and the two which are in that of the Celestins, may throw some new light on this passage of Herodotus, and confirm my conjectures. These mummies have two kinds of bandages; the body and the limbs are each separately invested with linen bandages, endued with resin or bitumen, and they are so intimately united together that they form but one mass. This is doubtless the reason that some authors have believed that this thickness was only embalmed flesh. There are other linen bandages without any bituminous substance, which envelope the whole body; both the arms are crossed upon the stomach, and the legs are glued together; these mummies are swaddled in new bandages, or, if you please, by this last bandage, just as infants are swaddled; these bandages are yellow, particularly those of the mummy of the cabinet of Saint Geneviève, and are absolutely destitute of resinous substance. We may, then, readily conclude, that these bandages have been only simply invested with gum. It appears that Herodotus had forgotten to describe the use of the first bandage, employed to retain the resinous matter on the surface of the body, and having probably seen among the embalmers, or elsewhere, some bodies swaddled like infants, he only described the second bandage.

If we examine with attention, the mummy of Saint Geneviève, and those of the cabinet of the Celestins, it will be perceived that the second bandage is equally a suit of ordinary embalming; for the mummy of the Celestins, of which the first bandage has been removed, no doubt in order to see the process of embalming, has the bands of the first bandage of a very clear and coarse linen: the bands of that of Saint Geneviève, on the contrary, are much finer, whilst the substances of the embalming of the two mummies are the same.

I am persuaded that mummies seldom come to us with the second bandage, and that the preservation of those of the mummies of the cabinet of Saint Geneviève, and of the Celestins, is only due to the state of the cases which hold them, or to the peculiar care of those who sent them.

In fine, Rouelle has analysed the substance of embalmings, and the result of the analysis made on six mummies gave him for two, amber, for the four others, Jew's pitch or pisasphaltum, a mixture, into the composition of which, Jew's pitch enters. Rouelle met with no traces of myrrh in any mummy. From these facts he arrives at the following conclusion: "Our experiments, then, furnish us with three materially different embalmings. The first, with Jew's pitch; the second, with a mixture of bitumen, and the liquor of cedar, or *cedria*; and the third, with that mixture, to which they have added resinous and very aromatic matters."

We confine ourselves to these reflections upon the processes described by the ancients, and given by them as those alone practised in Egypt.

We are going to cite some passages from the very remarkable memoir of M. Rouyer, from which it will be readily perceived that they were ignorant of several methods in use among these people. Nevertheless, it is just to give here some explanations which throw new light upon the sources which we have reproduced; they are principally extracted from the memoir of the Count de Caylus.

The exhibition of models on the part of the embalmers, had reference to the richness of the work demanded, and to the expense of the chosen form. The first model, which Herodotus had scruples in naming, was probably the figure of some divinity, (*Isis.*

Конец ознакомительного фрагмента.