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RESTORATION OF A PAPYRUS MASK

The following description concerns the restoration of a papyrus mask measuring 40×40 cm, (Plate I), donated to the Greek Papyrological Society by its honorary member Mr Alkis Oikonomides*.



*While this paper was in the printing-press Alkis Oikonomides died in Greece on the 1st of February (1991). It is the least I can do for him to dedicate this article to his memory.

The restoration was carried out by Dr Hermann Harrauer, Director of the *Papyrussammlung* of the National Library in Vienna. I myself had the opportunity and the means, thanks to a research programme scheme supported by the University of Athens, to attend, the various stages in the restoration of the mask, in the Laboratory of the Library. Consequently I benefited very much in knowledge and experience, which was the goal of my research. Dr Harrauer's contribution was of unprecedented value.

In ancient Egypt masks were made of papyrus leaves pressed together and stuck, either with pressure or glue. The final shape of a mask was formed on the face of the corpse after mummification¹. The mask was an indispensable means of restoring the face which suffered considerable disfigurement after the process of embalment.

It is obvious that small pieces of papyrus were used, so that the mask would easily fit the curves of the face. Then a coating of plaster was applied and painted. Masks of Kings, Princes, and very rich people were made of gold. The painting, of course, aimed at rendering the characteristics of the face.

With reference to this particular mask, we cannot define with certainty either the age or the sex of the dead person, a fact which suggests that masks were made in advance to general patterns, which could later be adjusted to fit any recipient. Nevertheless, the use of a mask inticates the high social and economic status of its owner. Mummies which did not possess a cartonnage belonged to a class of people who had no means of paying for the expenses incurred in the decoration of the dead.

Fortunately this mask has survived, but unfortunately, it is not in good condition. Age and mishaps during transportation have had a negative effect on its preservation.

The mask's preservation was confined to the colours, shape, and, in general, on the form of the mask, while, on the other hand, an effort was made to separate the papyrus to ascertain whether a written text had been hidden in between.

On first inspection, some writing was exposed due to the fading of the

I wish to acknowledge Dr Hermann Harrauer part, in the enterprise's who offered me assistance while I was in Vienna, and gave me access to material needed, so that I could complete this article. I am also indebted to the University of Athens for having approved my research programme in Vienna.

Certainly a recipient of more thanks must be Mr Alkis Oikonomides, who donated the mask to the Greek Papyrological Society. The Society has already expressed its thanks to him.

The Greek papyri are to be publish shortly in a series under the title *Papyri of the Greek Papyrological Society*.

1. On mummies in general see G. E. Smith and W. R. Dawson, *Egyptian Mummies*, London 1924.

colour. This was a demotic script. Other pieces were totally blank, since papyri used for mummies were, as a rule, useless remnants collected for the embalmer's workshop² by rag-and-bone-men. This, of course, does not exclude an exception to the rule or, occasionally, a surprise.

The first ascertainment was that large parts of the painting had been broken into tiny fragments scattered inside the paper in which the mask was wrapped. Many of them had been lost. Consequently, any effort to restore them would be futile, as it was impossible to discover their proper positions.

The rest of the colours were sufficiently intensive to make the painting look vivid and truthful; they show the painter's aesthetic ability. More precisely, the eyes, especially the left one was, preserved in good condition, displayed a dark grey shade, and betrayed cleanliness and sincerity. In general, a grey colour predominated all over the mask, particularly, on the cheeks, nose, and chin. The forehead, however, was reddish with a yellow circle in the middle, almost complete, arranged between two vertical lines of the same shade. Two horizontal coffee-coloured lines served as a frame for the forehead and gave the impression of a ribbon binding the head. Somewhat broader and darker lines formed the outline of the ears.

These colours were made of natural ingredients and consequently are soluble in water. This is why chemicals are used to preserve them. A solution of Planatol (= Polyvenylasetat [PVC]) and water (the proportion varies) is applied to the painted surfaces with a paint-brush. The liquid is milky, and care must be taken to prevent it coming into contact with the parts of the papyrus uncovered by a colouring substance. It can be dissolved by acetone.

After the liquid has been spread on the painted surfaces, the restoration of the original form of the mask is carried out. It has been said above that this mask, for various reasons, has lost its primal shape. Obviously, during its transportation, it was pressed carelessly (perhaps over - protectiveness on the part of the carrier) with the result that it was flattened, and its sides broken, and inevitably lost.

What remains now of the mask's sides can be considered as the «dried grass» of the mask. There are many tiny pieces and any attempt to bring them into their original position has proven unsuccessful.

With reference to the main mass of the mask we carried out the following steps. First we moistened the interior of the mask with warm water (temperature c. 50° C.) and left it for about 20 minutes, so that the water would take its effect. The moisture gradually permeated the mask giving it

2. On «Mummification» see D. E. Derry's work in *Annales du Service des Antiquités d'Égypte* 41 (1942), pp. 240 ff. So also A. Lucas, *Ancient Egyptian Materials and Industries* (4th ed. revised by J. R. Harris), London 1926, pp. 270 ff.

elasticity and allowing us to transform it by using small pieces of folded paper to fill the curves.

To return to the work of restoring the painting, the painted parts had already been permeated by the solution of PVC and water. We covered them with a special kind of paper known as «Japanese paper» (also referred to as «Japanese tissue») with the same solution as in the areas in contact with the painting of the mask. This allowed the paper to stick on to those areas. One thing must be made clear here: as the mask has many curves, it is hard for the paper to follow the shape. Therefore, the work must be done with very small triangular pieces of paper. This part of the work requires careful patience. The more we hurry, the less we are likely to succeed.

Before we applied the Japanese paper, it was advisable to dampen it on both sides, so that it could better adapt to the shape of the mask. It has been proven by experiment that there is no danger of the Japanese paper being penetrated by PVC, thereby allowing the surface to become saturated; if this should happen, any written text on the papyrus would be effaced. It is necessary, perhaps, to water the surfaces which should not come into contact with PVC.

When we had completed this stage of the work, we proceeded to the following activity aimed at strengthening the Japanese paper which had been applied to the painting. This is essential as will be seen later: we spread over a linen cloth moistened in the same solution of PVC and water in proportions of 1 to 3 up to 1 to 7.

As we intended to not only preserve the painting but also reshape the mask, it was necessary to make a matrix. For this purpose we used a silk paper³, which we watered and placed on the mask already covered by the linen cloth. Then we sprayed a porous foam all over the exterior surface of the mask⁴.

In 24 hours the foam would become dry, and the form would be steady.

Then came the process aimed at stripping off the papyrus layers. Turning the mask face down we poured warm water (c. 50° C.) inside it. The water penetrated the mask gradually, moistened it and helped effectively to unglue the painted surface from the rest of the papyrus mass. We should remember that we adopted a similar procedure at the beginning, when we wanted to reform the shape of the mask. The procedure of detachment of the papyrus mass from the interior of the mask does not require much time and is a rather relaxing business for the restorer.

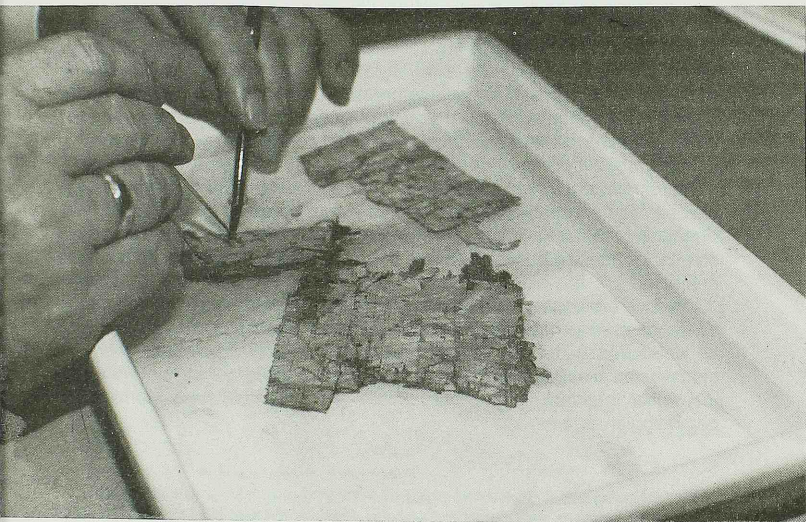
3. Silk papers are provided in shops of Graphic Arts.

4. This material is used in the car industry as well as in building to fill the gaps between embrasures and doors or windows. The foam becomes firm quickly. In addition it has an incalculable light weight and secures the form of the mask well. It is known in the market under different names, such as *Porovitran* etc.

By now we had reached the moment when we could proceed to the essential work of the detachment of the papyri used in the manufacture of the mask, and which were mixed in the papyrus mass we had at our disposal. The work demanded both patience and time, because of the delicacy required and the seriousness of the operation. We did not forget that we were explorers and that, at any moment, we could have some pleasant surprises.

At some point we would have to make up our mind as to whether to pay attention to the painting or to the papyrus leaves. It is up to the restorer himself to choose what his priorities are. There are no set rules in this matter. It must be stressed again that one must have patience, plenty of time, and be in good physical condition.

Next we had to deal with the painting surface which adhered to the interior of the matrix. Further work was twofold: to extract the painting from the interior of the matrix, and, at the same time, to arrange the papyrus leaves. We had to start with the latter, because the papyrus mass was still wet, and this helped the detachment of the papyri. However, moisture had already been reduced. Thence the mass was placed in a pan⁵ (Plate II) with hot



5. A frying-pan can be used if there is not at hand a pan used in photographic processing.

water (at hand temperature), for a few minutes. It was advisable to put in it a small quantity of cellulose (of L type) plus some drops of ethanole. This solution strengthens the papyrus resistance.

Then we took the mass out of the water carefully, using thin blotting-paper⁶ as a basis, so that the water would not sweep away the small pieces of the papyrus, which in this case⁷ are not a few.

The mass was then placed on an oil-paper which prolonged the moisture in the papyrus: so we were able to deal with the papyrus at ease, i.e. to proceed to the separation of the papyrus leaves.

It was necessary to carry out this stage of the work without a break, because, otherwise, we would have difficulties as soon as the papyrus started to become dry. If, however, for any reason, the process was delayed, we should have had to spray the same solution of water + cellulose + ethanole on the papyrus to bring it back to its original stage of dampness.

We could not, of course, say with certainty that we had separated all the papyrus pieces. In a further detailed processing we would execute, we might possibly discover that under a papyrus leaf there was a second one, and for us, sometimes more important.

The next step was the painting. Note that the work was being carried out in the interior of the mask which was now free of the papyrus mass.

We carefully moistened the painted surfaces, because they had by now become dry, using PVC neat or slightly diluted with water, exclusively on the parts still covered by plaster. This operation resulted in joining the whole surface of the interior of the mask. We repeated the moistening after 2-3 hours with the same solution, and left the object aside for 24 hours.

In the meantime, we returned to the restoration of the papyrus fragments.

We dipped each piece separately in the photo-pan which contained hot water with cellulose. By using a brush and tweezers we removed any remnant of plaster or lime, so that the papyrus, if written on, would reveal the script. For better results we could use a microscope or a table-lamp with a magnifier.

We took the papyrus out of the water using, as previously, blotting paper as the basis, as it was again feared that the loosened papyrus pieces might be detached under the running water. In the following operation these pieces were placed on dry paper. Then we exercised our ability to put the fragments together. It helps, essentially, if the restorer happens to be a papyrologist as well.

6. The blotting-paper must be thin, otherwise it can absorb the ink of the letters.

7. Perhaps words as such «attention», «labour», «time», are heard monotonously, but they are not sufficient even if they are used many times and often concerning the papyrus mask's restoration.

We then arranged the papyrus pieces in between blotting-paper which we strengthened by putting it between pieces of cardboard. The «sandwich» was then placed under a press⁸ for 4-5 minutes. Thus the papyrus became dry and smooth. We changed the blotting-paper and put it under the press again for a longer time: 48 hours is sufficient.

Yet, some pieces needed a detailed restoration, as mentioned above. In this case we again used the pan, in which we had prepared the solution of water + cellulose + ethanole. Our tools at hand were a brush, tweezers, microscope or electric lamp with a magnifier. Here we had to concentrate our attention to avoid losing anything, since the papyrus had already suffered from the previous operation. We still faced one difficulty; that was the fact that in meantime some pieces had become dry, while we were dealing with the others. A mask, like this one, consists of many papyrus pieces, and to arrange all at once the restorer must possess great self-control and good health, which are difficult to come by (!). However, the dryness of the papyrus did not have disastrous or harmful consequences. We could moisten it again following the same process.

There are no fixed prescriptions as to how one should handle the restoration of a papyrus piece. Experience is the best guide, provided that it has been obtained without harm. In general, one can say that calmness and patience are the prerequisite equipment, guided by self-control. The greater the level one possesses, the better the results.

In the meantime, we had interrupted the processing of the papyrus restoration to take care of the mask's interior. Now, we needed a new matrix, onto which we could transfer the painting from the first matrix. We moistened the interior of the mask, we covered it with a well watered silk paper, and filled it up with *Porovitrán*⁹.

When the foam became completely dry, we turned the mask upside down, to enable the interior matrix to be easily removed. It was now time to extract the materials, with which the mask had been covered: silk paper, linen cloth, and Japanese paper. Thus we could reach the painting.

To do this, we placed cotton-wool on the surface of the face and spread over much acetone. In sequence, we covered it with plastic bags to prevent the acetone evaporating and allowing it to act on the planatol¹⁰.

Acetone dissolves planatol quickly. Therefore, we slowly extracted all the substances covering the mask, and the painting remained in its positive

8. This is a table-press used in book-binding.

9. The instructions on the porovitrán bottle should be followed precisely. Care must be taken not to bring bare hands near the foam.

10. The bags should not have pictures or letters, as these can be dissolved by acetone, and then, possibly be transferred onto the 2.000 years old papyrus!

position on the interior matrix. The parts on which planatol had not acted effectively were covered again, and the processing with acetone repeated¹¹.

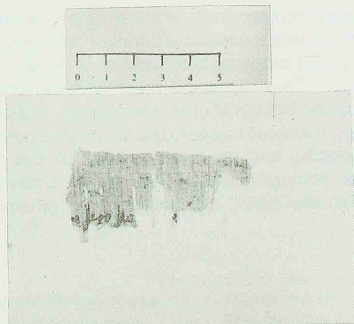
We had time now to return to the detailed processing of the papyrus fragments, especially of those with writing. Any trace of plaster remaining on the papyrus was removed with a bread crumb which we remoulded with 2-3 drops of cooking-oil. We gave this mixture a cylindrical shape and let it roll on the papyrus surface. This removed the remnants of plaster and lime; and also the letters became more intense, while the papyrus gained elasticity which was required in order to sustain it. It was recommended that the papyrus should remain a few days under the press with frequent changes of the blotting-paper in which it was placed. It was prudent, therefore, to then arrange it between sheets of glass (rather than plastic) with blotting paper on the back to absorb any humidity from the environment.

The whole work of the mask restoration was recorded on Video (E-180) at the initiative of Dr Harrauer and the indispensable assistance of the members of the scientific staff in the Laboratory.

The results were, in the first place, constructive, but not impressive with reference to the content of the papyri. Many tiny pieces consist merely of papyrus samples with no essential value. Some larger pieces have demotic script; no doubt worthy of study by specialists.

The Greek papyri, all of non-literary content, are publishable to some degree.

A small papyrus strip (3,4×6,4 cm) (Plate III) which a few letters can be read without difficulty, and completed as [ἐν] Κροκο[δίλω]ν [πόλει. This sentence gives the welcome information that the papyri used for the construction of the mask came from the Fayumic district, the ancient Arsinoite Nome.

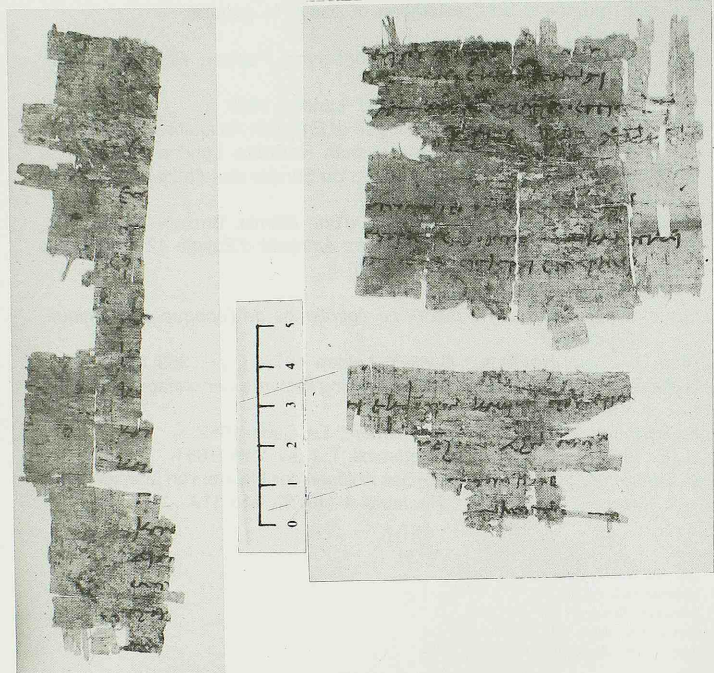


11. At this stage of work we kept the window open, and, of course, smoking was prohibited.

The best preserved papyrus (15,5×10,5 cm) is easily to decipher. It is a letter written by a wife to her husband who, being away from home, causes hardship and unease to his family. The form of the letters is indicative of 2nd century B.C. writing.

Another fragment of similar dimensions (12,5×14,5 cm) includes some numbers which represent amounts of money. This fact leads to the conclusion that the papyrus is a receipt.

A strip of 22,5×8 cm (Plate IV) has preserved a column with 2-4 letters at the beginning of each line. Perhaps it is not by chance that at least 4 lines begin with the same letter: ε 1-4, κ 6-9.



Another papyrus (6×16,3 cm) (Plate V) is certainly a receipt referring to agricultural products, as we can see from the clearly visible term *ἐκφόριον* written on the top of the papyrus.

Some other Greek texts are worthy of future study.

In general, the texts extracted from the mask are neither many nor impressive. In Dr Harrauer's estimation this mask is about average; there are better ones, but also worse.

Apart from the various works cited in footnotes the following deal with Egyptian mummies and restoration of papyri in general:

- W. E. H. Cockle, «Restoring and Conserving Papyri», *BISC* 30 (1983), 147-165.
- W. R. Dawson, *Magician and Leech*, London 1929.
- W. R. Dawson and P. Gray, *Catalogue of Egyptian Antiquities in the British Museum I. Mummies and Human Remains*, London 1968.
- R. Engelbach and D. E. Derry, *Annales du Service des Antiquités d'Égypte* 41 (1942), pp. 235-236.
- F. Jonckheere, *Autour de l'Autopsie d'une Momie*, Bruxelles 1942.
- Zaki Iskander, *Annales du Service des Antiquités d'Égypte* 42 (1943), pp. 247 ff. and 53 (1956), pp. 190 ff.
- F. Leek, *JEA* 55 (1969), pp. 112 ff.
- G. Lefebvre, *Essai sur la médecine égyptienne de l'époque pharaonique*, Paris 1956.
- Alan B. Lloyd, *Herodotus Book II*, Leiden 1976, I, pp. 353 ff.
- H. Maehler, «A New Method of Dismounting Papyrus Cartonnage», *BISC* 27 (1980), 120-124.
- S. Saunern, *Rituel de l'Embaumement*, Le Caire 1952.
- H. E. Sigerist, *A History of Medicine*, i, New York 1951.
- A. Zimmermann - H. Harrauer, «Das Ablösen der Malerei von Mumienkartonnage», *Maltechnik / Restaura* 4 (1979), 315-319.

Ancient Greek Sources:

- Herodotus II 85 ff.
 Diodorus Siculus I 91
 Plutarchus, *Mor.* 159
 Porphyrius, *Abst.* IV 10

ΠΕΡΙΛΗΨΗ

B. Μανδηλαράς, *Αποκατάσταση παπύρινου προσωπίου*

Η παρούσα εργασία αναφέρεται στην αποκατάσταση του παπύρινου προσωπίου, που δώρισε στην Ελληνική Παπυρολογική Εταιρεία ο 'Αλκης Οικονομίδης*.

Η αποκατάσταση έγινε στο Εργαστήριο της *Συλλογής των Παπύρων* της Βιβλιοθήκης της Αυστρίας (Βιέννη) από τον διευθυντή του Τμήματος Δ/ρα Hermann Harrauer, τον οποίο ο γράφων θέλει να ευχαριστήσει για την αμέριστη φροντίδα που επέδειξε σε όλα τα στάδια της εργασίας.

Τα προσωπεία χρησιμοποιούνταν στην αρχαία Αίγυπτο κατά τη μομοποίηση των νεκρών. Κατασκευάζονταν από παπύρινα φύλλα, μικρού μεγέθους, που κολλούσαν κατά τρόπον ώστε να σχηματισθεί η μορφή του προσώπου.

Το εν λόγω προσωπείο βρισκόταν σε άσχημη κατάσταση εξαιτίας ποικίλων συνθηκών (χρόνου, διατήρησης, μεταφοράς κ.λπ.), γεγονός που απαιτούσε την άμεση αποκατάστασή του.

Τα μέρη του προσώπου ήταν ζωγραφισμένα. Έτσι πρώτο μέλημα της αποκατάστασης ήταν η διατήρηση των χρωμάτων. Για τον σκοπό αυτό χρησιμοποιήθηκαν χημικά υλικά (PVC). Παράλληλα διευθετήθηκε το προσωπείο, ώστε να επανέλθει στο αρχικό του σχήμα. Τέλος, αποκολλήθηκαν τα παπύρινα φύλλα, οι γραμμένες επιφάνειες των οποίων θα αποτελέσουν αντικείμενο μελλοντικής μελέτης.

Η αποκατάσταση ενός προσωπίου, όπως του παρόντος, δεν παρέχει εκ των προτέρων βέβαια αποτελέσματα. Αποδείχθηκε εν των υστέρων πως πρόκειται για αντικείμενο μέσης αξίας: υπάρχουν καλύτερα, αλλά και χειρότερα.

Η γραφή στα φύλλα των παπύρων είναι, ως επί το πολύ, *δημοτική* (Αιγυπτιακή). Ωστόσο τα Ελληνικά κείμενα που βρίσκονται σε άλλα φύλλα παρέχουν αξιόλογο υλικό για περαιτέρω μελέτη. Πρόκειται για αποδείξεις, λογαριασμούς και επιστολές, όχι βέβαια σε εντυπωσιακό επίπεδο.

Το πρόγραμμα της αποκατάστασης πραγματοποιήθηκε χάρη στην έγκριση οικονομικής ενίσχυσης από την Επιτροπή Έρευνας του Πανεπιστημίου Αθηνών, προς τα μέλη της οποίας εκφράζω τις ευχαριστίες μου.

*Όταν το άρθρο τούτο εστάλη στο τυπογραφείο, συνέβη ο θάνατος του 'Αλκη Οικονομίδη, την 1 Φεβρουαρίου 1991. Ελάχιστο δείγμα φιλίας εκ μέρους μου αποτελεί να το αφιερώσω στη μνήμη του.