

## Conservation as both an art and a science

Taking care of objects is not an easy task. They do not move, they do not feel, yet giving them the appropriate treatment resembles a doctor's job, involving ethical consideration and surgical meticulousness. Like medicine, the science of conservation and restoration progresses. Museum objects are old and faithful patients, that have witnessed the evolution of therapies.

The Egyptian bronze torque from UCL Classical Archaeology collection has sat patiently in the waiting room for years. The necklace is made of twisted wire, with two large and four small hollow hemispheres, surrounded by crimped rings, held in position by a lead solder applied to reverse. Coils of wire are wound around the shaft on each side. The medallions of the torque are covered by an intriguing turquoise powder. At first sight, it resembles an outer layer of copper oxide, that quickly appears on copper-alloys when moisture is present, to protect the interior metal from further corrosion. 'Bronze disease' - named so independently of my opening metaphor - is indeed identifiable by a powdery pale green product on the surface of the object. However, the unusually bright blue is a symptom for which further investigations are prescribed.



Front and back of the torque<sup>1</sup>

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<sup>1</sup> All pictures have been taken by the author on the 11th and 14th of February 2019



The curator Mr. Ian Carroll, removing a little bit of the blue powder on the necklace.

Manipulating a toothpick like a makeshift scalpel, the curator gently scratched this blue haze. He realized that the metal was intact underneath. Diagnosis: this is a residue of a barrier wax applied to the object long ago. Ironically, the wax meant to prevent the object's deterioration has deteriorated before the later.

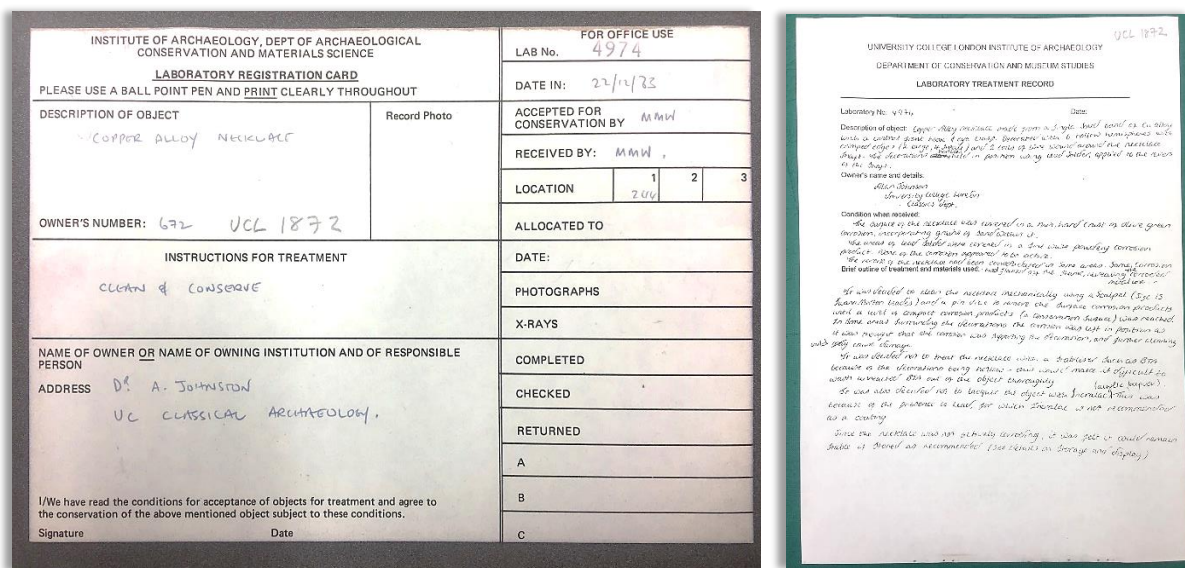
The use of protective wax coatings on metal objects has been common practice since the fifties. Synthetic, microcrystalline-polyethylene coatings were usually favoured, Incralac and Renaissance wax were most widely encountered. They aimed to prevent contamination by handling, exclude oxygen and humidity from the surface of the object, and cover anti-corrosion undercoating with an additional layer.

No surprise then that our torque has been subjected to such interventive methodology. Waxes are popular because they are more protective and longer-lasting than oil. However, they are not eternally stable, consequently, the coating of the necklace was probably meant to be renewed. Instead, it has been left deliberately abandoned. Nowadays, the use of waxes is no more advocated. First, their permeability to water has been called into question. Secondly, they may interfere with indigenous coatings or casting material that remains, causing aesthetic problems. Third, the relative humidity in museums environments is now easily controlled. A principle in conservation of cultural heritage is minimal intervention, hence the prudence not to re-apply wax as the necklace, given that the corrosion was inactive. Nonetheless, the question that arises then is: why not clean the blue wax?



Details of the wire (left) and the hemispheres (right)

Multiple factors motivate decisions by conservators. Often, they have to strike a balance between maintenance of original design, physical needs of the material, preservation of appearance, and reversibility. The latter, in other words the ability to return the object to the state in which it was prior to the intervention, is crucial, so as to minimize concerns with future treatment, investigation, and use. Ensues from it the necessity of carrying out full documentation of all work undertaken. The UCL Department of conservation and museum studies takes this ethical standard seriously. On the 8th of June 1995, it delivered a thoroughly detailed laboratory treatment record of the torque.



Laboratory registration card from 1983 (left) and laboratory treatment record form 1995 (right; bigger picture in appendix)

In addition to compliance with ethical guidelines, restoration involves cultural understanding of the object. Restoration is described as "the methodological moment in which the work of art is appreciated in its material form and in its historical and aesthetic duality, with a view to transmitting it to the future".<sup>2</sup>

"Historical and aesthetic duality" resonates surprisingly well with our object. The necklace was donated to UCL by Major R.G. Gayer-Anderson in 1945, as part of what he referred to as his 'classical collection' (Cf. figures 8 to 10 in appendix). It consists of approximately 800 unprovenanced Graeco-Roman objects, including many very well preserved terracotta and bronze anthropomorphic figurines. The orientalist purchased them in Egypt in the first half of the twentieth century, fascinated by their beauty. However, today they stimulate interest for the information they can provide about Graeco-Roman Egypt. The evaluation of this assortment of artefacts as a potential

<sup>2</sup> Brandi, C. (2005). *Theory of restoration*. Firenze: Nardini.

source of archaeological information raises the critical question: "Is it representative of any historical reality, or does it merely reflect the aesthetic taste of one individual?"<sup>3</sup>

Material	Type	Number	Displayed
Bone	Plaque with Human Figures	28	18
	Figurine	4	
Bronze	Anthropomorphic	96	2
	Animal	19	
	Jewellery	22	2
	Lamps	3	
	Vessel Fragments	6	
	Coins	56	
Ceramic	Lamps	22	4
	Anthropomorphic	107	14
Ceramic, Vessels	Byzantine Sherds (?)	70	
	Black/Red Figure	12	9
Gem	Engraved	13	
Glass Objects	Anthropomorphic	6	
	Animal	2	
	Spindle Whorl	5	
	Vessel	6	
Gold	Jewellery	33	16
Plaster	Anthropomorphic	13	1
Stone	Anthropomorphic	61	3
	Die	6	
Silver	Jewellery	11	2
Wood	Anthropomorphic	5	
	Chair Legs	2	

Summary of the most common objects in the Gayer-Anderson collection at the Institute of Archelogy, from Ellis, L. (n.d.). *Understanding the Gayer-Anderson 'Classical' Collection: A comparative approach*. Master's degree. UCL

I venture to answer this question by another question: what if both are compatible? Placed in the wider context of jewellery history, the purchase of the torque by Gayer-Anderson portrays the shift of paradigm from jewellery as an expression of status in society to jewellery as a statement of personality.

From an early date, jewellery was worn as a mark of rank, or for magical qualities such as personal protection from the dangers of life. Everyone -men, women, children- adorned themselves in ancient Egypt, to ward off evil or bring good fortune and health. It was also a convenient way to denote social role, to their peers and to superior beings. Besides, Romans in particular communicated their socioeconomic status through their wear of jewellery. We could hypothesize that the torque was worn as a status item. Roman jewellery was characterised by straightforward patterns and bold forms in design, because greater emphasis was placed upon size and weight than on sophisticated decoration. This depiction does not disqualify, on the contrary, our speculation that the torque comes from the Roman province of Egypt (30 BC–641) - or the Ptolemaic Kingdom (332–30 BC) it annexed -. Such a vague idea of the period is

<sup>3</sup> Warnken Johnson, E. (n.d.). *Archaeological Knowledge and the Gayer-Anderson Collection at the Institute of Archaeology*. Master's degree. UCL.

precisely linked to the fact that the torque was an heirloom passed from a man holding a certain position to his successor, over and over again during generations.

In medieval Europe, jewellery reflected an intensely hierarchical and status-conscious society. During the Renaissance, on the one hand many spectacular pieces were worn as a display of political strength, on the other hand the artistic awareness of the individual increased, ornaments became more personal. In the 19th century, the advent of machine-led factory systems allowed lower classes to wear and produce ornaments, attenuating social stratification as evidenced by jewellery. It triggered a conversion in jewellery representations, symbolically encompassed in the acquisition of the torque by Gayer-Anderson. The very second the necklace attracted the European's gaze on the barrow of an Egyptian antique dealer, shortly after 1900, it was cherished for its beautiful style and lost its signification of someone's rank to the rest of the population and the gods.

Enough said on the historical significance and aesthetic value of the torque, let's have a look at its material form.

Funnily enough, the fact that we can confirm its geographical origin, whereas we are unsure about the time, holds to a single explanation. Despite the contact with other civilizations, Egyptian jewellery is very homogenous, rendering it difficult to tell periods apart but straightforward to identify a piece as Egyptian. A fixed repertoire of decorative motives perpetuated. These iconographic and chromatic principles had a precise meaning, closely linked to the symbology of hieroglyphic writing. Creations were often symmetrical or based on the rhythmic repetition of shapes or colours. Noticeably, the torque corresponds to these criteria. In order to imitate gems such as carnelian, turquoise, and lapis lazuli, the half-spheres were probably painted, alternatively, covered with vitreous pastes or enamels - ground glasses fired at high temperature onto a metal surface -.

What makes no doubt is that the torque is made of bronze, an alloy of copper and tin. In the most remote times jewellery was made from shells, stone and bones. The discovery and advancement of metal-working techniques were revolutionary in the development of the art. The exact origin of the material of our torque is surrounded by mystery. This is a shame, but also an opportunity: as the necklace is now dedicated to educate future archaeologists, reconstruction of provenance is a good exercise, as this is a challenge they will often be faced with during excavations. With regard to Ancient Egypt, copper, as well as gold, were generally mined in Nubian deserts in abundant supply. It could also have been imported: in Roman times, much copper was mined in

Cyprus. Fun fact: consequently, copper was coined *aes Cyprium* in Latin. Later, the term became *cuprum*, which explains where Cu - the scientific element name - comes from.

Because of the difficulty of extraction and smelting, all metals were considered quite precious in Antiquity. Let me point out that the intrinsic value of the piece does not account for its total worth, far from it. Still nowadays, the modern discrimination between fashion jewellery, costume jewellery, fine jewellery or high jewellery rests upon the material and the level of craftsmanship, but collecting jewellery is nothing like stockpiling gold bars, it appeals to emotions. The value of a piece of jewellery is an intricate hotchpotch of the material it is made of, the process whereby it has been created, its rarity, its age, its social and cultural current and past contexts.

Bronze resists metal fatigue well, which justifies its use to create jewellery. Furthermore, it expands slightly when solidifying, a property desirable for casting, as it helps to fill a mould. This is how the intricate crimped rings around the hemispheres were obtained. One could object - excuse the pun - that the rigidity of bronze makes the necklace difficult to remove (not a big deal, as status items were designed for near-permanent wear). To counter-act this, the stiff neck ring is made from strands twisted together. Even though not all jewellery was worn, the fragility of its hinge testifies that the torque was opened and closed repeatedly. Additionally, the terminals form a central front hook and eye clasp: a superfluous practicality if it was simply destined to adorn a statue or accompany its owner into the afterlife. Indeed, it is worth mentioning that jewellery played a capital role in the burial rites of an individual. Countless pieces have been found in tombs, where paintings, sculptures and mosaics offer abundant testimony to the jewellery worn in various eras (please bear in mind that it comprises a bias because it shows the deceased at their best, not exactly dressed like they would in everyday life). As a matter of fact, thefts were quickly aware of these treasure reserves. It is tempting to think that the torque, like a large number of similar items, was recovered in a hoard.



Detail of the hinge



Detail of the hook

Should we restore these cracks on the hinge? No, as they illustrate what the object has experienced. So does the blue icing sugar-like material, I would argue. Actually, the object constitutes more evidence on habits of restoration in the past century than on the life in North Africa thousands of years ago. Besides, studying the history of restoration can increase the accuracy with which we view Graeco-Roman artefacts. We should embrace the multiple histories the necklace accumulated. "Objects become invested with meaning through the social interactions they are caught up in."<sup>4</sup> Conservation is one. "These meanings change and are renegotiated through the life of an object". The purpose of the torque was first social, then aesthetic, today it is adapted as teaching tool.

This necklace highlights the reciprocity in the museum-object relationship, while we intuitively consider it unequivocal - the museums inform us about the artefacts they own, not vice versa -. To conclude this chapter on another natural sciences analogy, I like to depict the relation between museums and objects as a mutualistic symbiosis: a close and long-term interaction between two different species, where both benefit from it. Survival of museums and objects are interdependent, respectively as actors and media of knowledge transmission. On the one hand, the museums treat the objects and put them in the spotlight. On the other hand, the objects are the very substance of the museum's existence in the first place and contribute to the museum's fame. Admittedly, neither museums nor objects are biological organisms, but in some instances, they each evolve. Museums grow and change, acquire artworks and lend theirs, integrate objects in narratives and present exhibitions, meanwhile objects, although they look frozen in time in their display cases, are the protagonists of an ongoing life, with a frantic past and, who knows, a future full of surprises.

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<sup>4</sup> Gosden, C. & Marshall, Y., 1999. The cultural biography of objects. *World Archaeology*, 31(2), pp.169–178.

## References and recommended readings (ordered by relevance)

### **Good starting points**

- Moffett D. *Wax Coatings on Ethnographic Metal Objects: Justifications for Allowing a Tradition to Wane*. Journal of the American Institute for Conservation [Internet]. 1996 [cited 1 February 2019];35(1):1. Available from: <http://cool.conservation-us.org/jaic/articles/jaic35-01-001.html>
- The Portable Antiquities Scheme (2018). *Conservation advice for finders*. [ebook] p.16. Available at: [https://finds.org.uk/documents/file/PAS\\_ConservationAdviceForFinders2018-all.pdf](https://finds.org.uk/documents/file/PAS_ConservationAdviceForFinders2018-all.pdf) [Accessed 2 Feb. 2019]
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- Encyclopedia Britannica. Available at: <https://www.britannica.com/art/jewelry/The-history-of-jewelry-design> [Accessed 2 Feb. 2019].
- Newman, H., 1987. *An illustrated dictionary of jewelry : 2530 terms relating to gemstones, jewels, materials, processes, styles, designers and makers from antiquity to the present day*, London: Thames & Hudson.

### **Delicious food for thoughts**

- Brewer, D.J. & Teeter, E., 2007. *Egypt and the Egyptians* 2nd ed., Cambridge: Cambridge University Press.
- Andrews, C. (1990). *Ancient Egyptian jewellery*. London: British Museum Press.
- Gregoriotti, G. (2019). *The history of jewelry design*. [online]

### **To (productively) stay inside on rainy days**


- Ogden, J., British Museum & British Library, 1992. *Ancient jewellery*, London: British Museum Press for the Trustees of the British Museum.
- Posener, G., 1962. *A dictionary of Egyptian civilization*, London: Methuen.
- British Museum, British Library & Cooney, John D., 1976. *Catalogue of Egyptian antiquities in the British Museum Vol.4, Glass*, London: British Museum.

Thanks to Professor Rachael Sparks and Mr. Ian Carroll for their time.




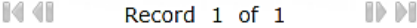
## Appendix


Figure 1: Extract of the online catalogue of the Institute of Archaeology Collections:



### The Institute of Archaeology Collections

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Record 1 of 1 

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**necklace**  
*UCL 1872*

Bronze torque, made of twisted wire with two large and four small medallions. Lead solder used to attach elements, applied to reverse.

**Material:** bronze  
**Object period:** Unknown


**Place:** Egypt (Egypt / Africa)

**Dimensions:**  
diameter: 190 mm

**Field collector:** Gayer-Anderson, Robert Grenville  
**Acquisition source:** Gayer-Anderson, Robert Grenville  
**Other object numbers:** 672 (previous owner's number)

No Picture

Figures 2 and 3: Pictures of the torque (front) with square and circular scales:



The image consists of two side-by-side photographs of a bronze torque. The left photograph shows the torque laid out against a square ruler. The ruler is marked in centimeters from 0 to 15. The torque is a circular band with several medallions hanging from it. The diameter of the torque is approximately 190 mm. The right photograph shows the torque laid out against a circular scale. The scale is marked in degrees from 0 to 350. The number 180 is visible on the scale. The torque is a circular band with several medallions hanging from it.

Figure 4: Detail of the blue wax deposit on the medallions (right side):



Figure 5: Focus on the lead soldier at the back:



Figure 6: Laboratory treatment record from 1995 (front)

UCL 1872

UNIVERSITY COLLEGE LONDON INSTITUTE OF ARCHAEOLOGY  
DEPARTMENT OF CONSERVATION AND MUSEUM STUDIES  
LABORATORY TREATMENT RECORD

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Laboratory No: 4974 Date:

Description of object: Copper Alloy necklace made from a single solid band of Cu alloy with a central front hook & eye clasp. Decorated with 6 hollow hemispheres with crimped edges (2 large, 4 small) and 2 coils of wire wound around the necklace shaft. The decorations ~~are~~<sup>held</sup> in position using lead solder, applied to the reverse of the shaft.

Owner's name and details:  
Alan Johnson  
University College London  
Classics dept.

Condition when received:  
The surface of the necklace was covered in a thin, hard crust of olive green corrosion, incorporating grains of sand within it.  
The areas of lead solder were covered in a fine white powdery corrosion product. None of the corrosion appeared to be active.  
The reverse of the necklace had been ~~conducted~~<sup>conducted</sup> in some areas. Some corrosion had flaked off the shaft, revealing <sup>the</sup> corroded metal core.

Brief outline of treatment and materials used:  
It was decided to clean the necklace mechanically using a scalpel (Size 15 Swann, Morton blades) and a pin vice to remove the surface corrosion products until a level of compact corrosion products (a conservation surface) was reached. In some areas surrounding the decorations the corrosion was left in position as it was thought that the corrosion was supporting the decoration, and further cleaning would ~~only~~<sup>only</sup> cause damage.  
It was decided not to treat the necklace with a stabiliser such as BTA because of the decorations being hollow - this would make it difficult to wash unreacted BTA out of the object thoroughly (anylyt paper).  
It was also decided not to lacquer the object with Incolac. This was because of the presence of lead, for which Incolac is not recommended as a coating.  
Since the necklace was not actively corroding, it was felt it could remain stable if stored as recommended (see details on storage and display)

Figure 7: Laboratory treatment record from 1995 (back)

Brief outline of treatment and materials used (cont)

Packing details: The necklace was placed into a recessed mount cut from Plastazote (expanded polystyrene foam) with a lining of acid free tissue. The mount was placed in a Stewart box containing perforated polyurethane bags filled with Blue indicating conditioned silica gel. This was to help desiccate the environment within the box, once it was sealed.

Recommendations for storage and display.

The necklace should be stored in its box and checked regularly to allow fresh silica gel to be put in if necessary.

If the necklace is to be displayed it should be monitored carefully for signs of deterioration, and kept if possible in a low RH display cabinet (less than 25% RH). The display backdrop should be tested for possible acids.

Documentation: before use.

Portfolio

Black & white negs

colour slides colour prints

Name of conservator: FRANCES COLE

Completed treatment approved by: O. Theoprop

Date: 8/6/95

NOTE: The brief conservation record carries the essential information relating to the treatment which the object has received, the materials used, the advice regarding storage and display. The Department also holds detailed documentation on microfiche, together with negatives and often analytical results. Where required, copies of such documentation can be supplied to the owners of objects at cost.

Figure 8: Receipt of the donation to the Institute of Archaeology by Gayer-Anderson, 1946.

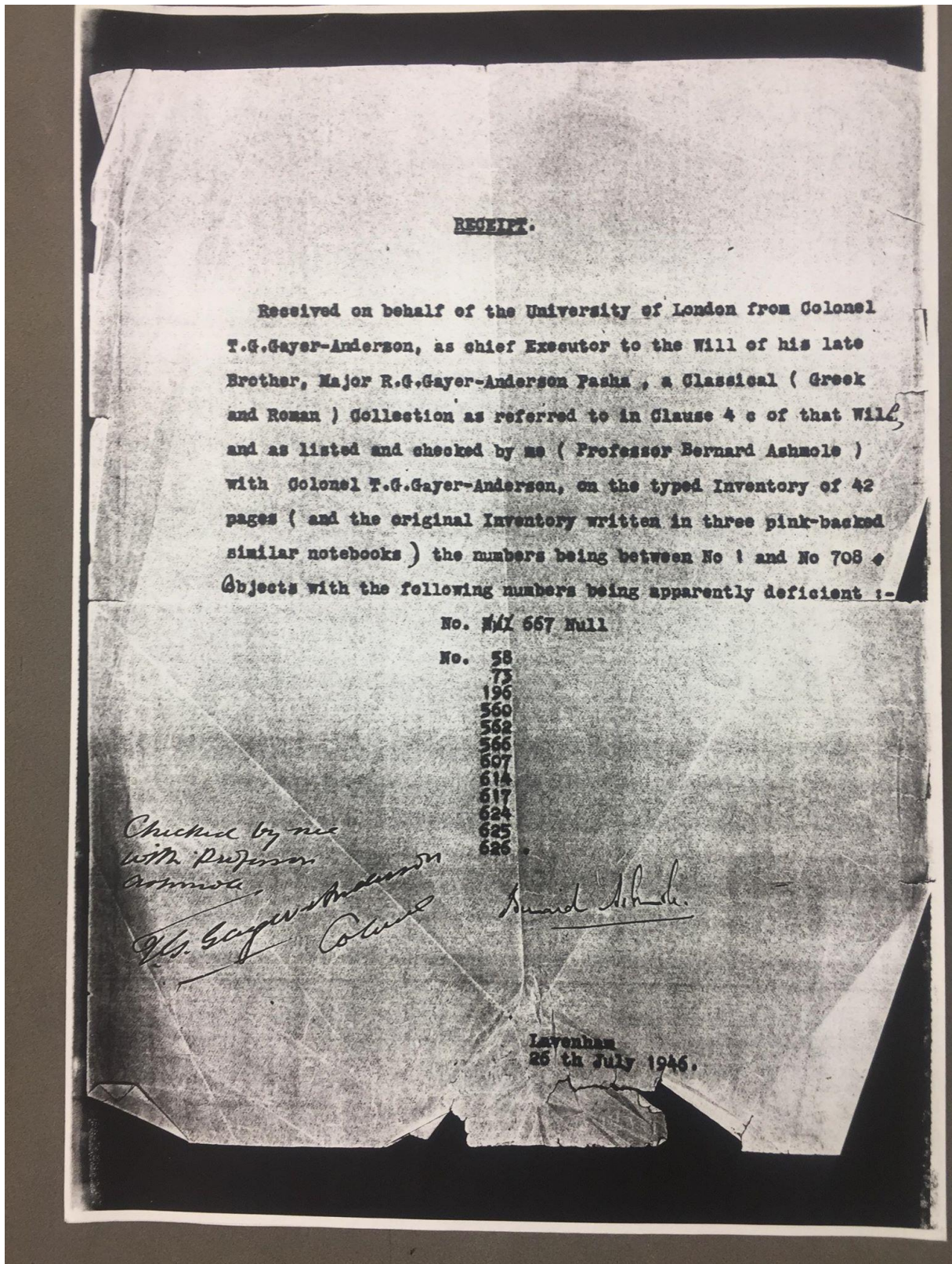


Figure 9: Receipt of the donation to the Institute of Archaeology by Gayer-Anderson, 1946 (continued).

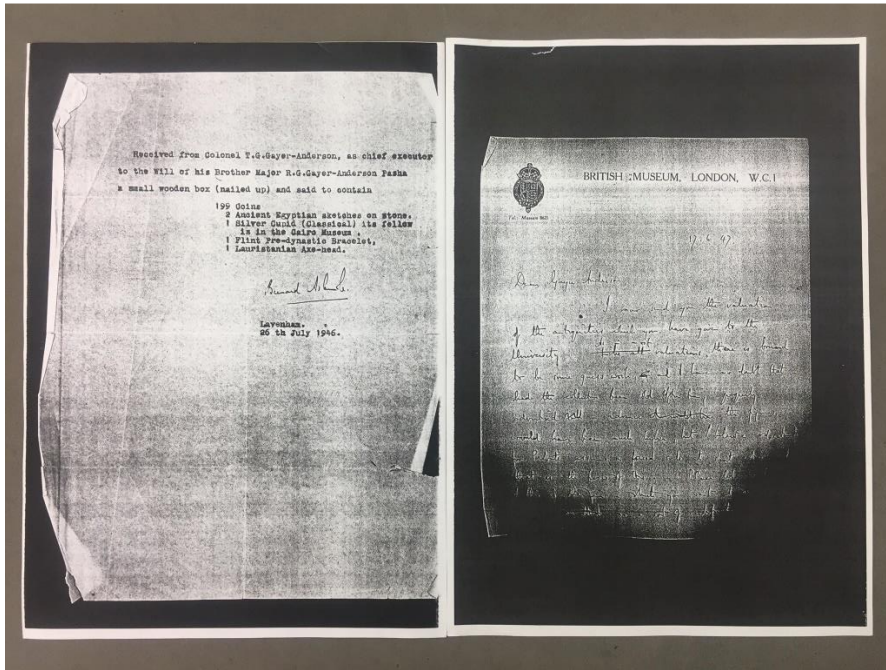


Figure 10: Page of the inventory where the torque is mentioned (last line)

40.

VARIOUS.

✓✓	660.	Eye paint Probe ( Kohl) bronze ending in a hand holding an apple.	13 cm
✓✓	661.	Do Do in bronze.	8.5 cm
✓	662.	Do Do in bone with contemporary gold band for repair.	10.5 cm.
✓✓	663.	Handle in Ivory - ending in Lion's head.	Length 9 cm.
✓✓	664.	6 Bronze pins.	3 to 4 cm.
✓	665.	Votive hand in hard material.	19 cm.
	666.	See page 27.	
	<del>667.</del>		
✓✓	668.	Circular theatre ticket in Terracotta inscribed.	
	669.	See page 26.	
✓	670.	Small yellow clay vase shaped as head of Beast.	5 cm.
✓✓	671.	Marble diamond shaped tile. "Taken from his nurse's villa near Rome where the Emperor Nero committed suicide."	14 cm.
✓	672.	Torque of twisted wire with two large and four small medallions.	19 cm.

A.D. [Signature]