

herculaneum archaeology

the newsletter of the Herculaneum Society - Issue 25 Autumn 2020



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Equestrian statue of Marcus Nonius Balbus.

Marble. Second half of the 1st century BCE.

Head is a 18th century work.

Discovered: Herculaneum 1748

Naples, National Archaeological Museum.

News from Herculaneum

Bob Fowler, Chairman of Trustees

A Brain Turned to Glass

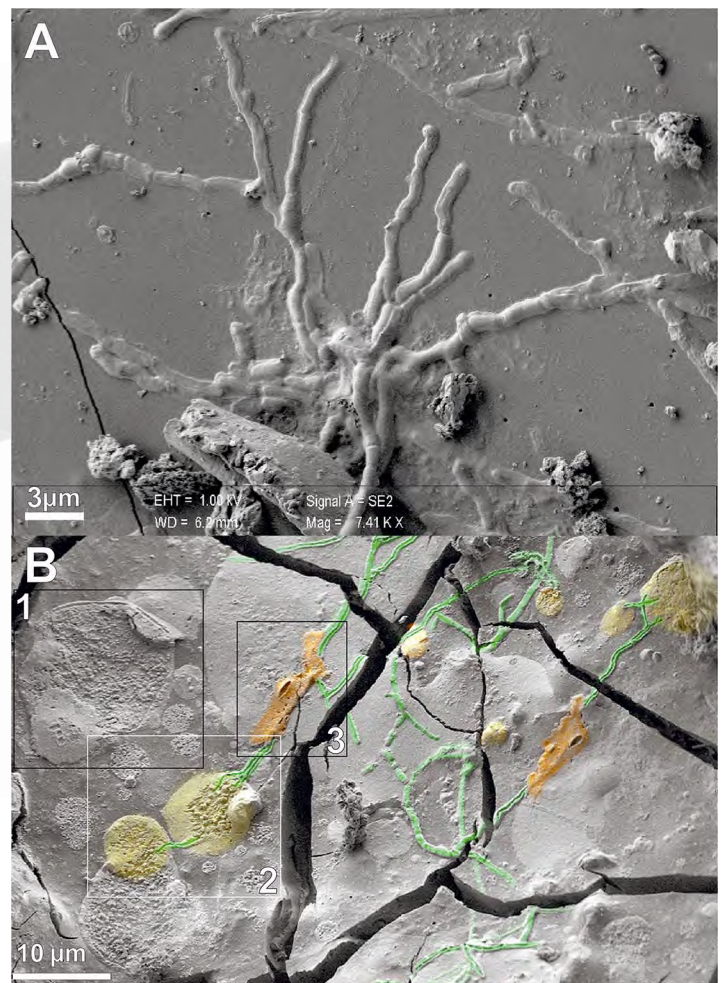
Prior to the excavation in the 1980s of the ancient waterfront, when the skeletons of several hundred victims of the eruption were found huddling together in the (so-called) boathouses, few skeletons had been found in Herculaneum. One belonged to a man of about 20 years of age dubbed the 'custodian' or 'caretaker' because of its location in a cubicle next to an entrance to the (also so-called) College of the Augustales (more probably the Curia or council house) at the corner of the Decumanus Maximus and Cardo III. With the improved techniques of analysis now available scientists have returned to the study of these remains. As reported in the *New England Journal of Medicine* of 23 January 2020, the remarkable discovery was made that shiny black fragments on the inside of the custodian's skull and elsewhere were in fact vitrified brain matter. Enzymes and proteins characteristic of the brain enabled the identification. This is a unique phenomenon in archaeology, for vitrification depends on rapid heating to the right temperature followed by rapid cooling. (If squeamish, look away now: usually the brain turns to soap when subjected to high temperatures.)

More recently, it has been announced that neural networks and brain cells can be discerned in the fragments. The full article in *PLOS One* of 6 October is freely available online at <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0240017>. The abstract reads in part:

Using scanning electron microscopy (SEM) and advanced image processing tools, we describe the direct visualization of neuronal tissue in vitrified brain and spinal cord remains which we discovered in a male victim of the AD 79 eruption in Herculaneum. We show exceptionally well preserved ancient neurons from different regions of the human CNS at unprecedented resolution. This tissue typically consists of organic matter, as detected using energy-dispersive X-ray spectroscopy. By means of a self-developed neural image processing network, we also show specific details of the neuronal nanomorphology, like the typical myelin periodicity evidenced in the brain axons.

The perfect state of preservation of these structures is due to the unique process of vitrification which occurred at Herculaneum. The discovery of proteins whose genes are expressed in the different region of the human adult brain further agree with the neuronal origin of the unusual archaeological find.

Further study could yield exciting discoveries not only about the conditions of the ancient eruption but about the human brain itself.



Structures of the central nervous system. A, SEM image of brain axons. B, SEM image of spinal cord axons (green) intercepting cell bodies and sheath-shaped structures (yellow and orange) (scale bars in micron). <https://doi.org/10.1371/journal.pone.0240017.g002>.

Honours for Two Friends



Direttore Francesco Sirano has been awarded the Concetta Barra Prize for services to culture. This prestigious award, named for a famed Neapolitan singer and actress, is bestowed annually by the University of Naples “Federico II”. The honour recognised Dr Sirano and his team not only for their work on the ancient site but for their energetic development of cultural partnerships and activities with many other organisations and individuals in the region.



Society Trustee **Gianluca Del Mastro** has been elected Sindaco (mayor) of Pomigliano d’Arco, an important town of some 40,000 people on the outskirts of Naples. He won by a decisive majority of 61% in the second round of voting over the former Deputy Mayor. We wish Gianluca every success in his new career!

Society YouTube channel launched

The Society has created a YouTube channel to publish relevant podcasts and videos. Our two bursary holders from last year, Marzia D’Angelo and Aude Durand, have posted podcasts about their work. You’ll find there also (under Playlists) the talks from the special conference at the Getty Museum last October, and other Herculaneum-related videos.

For videos directly from Herculaneum, visit the Parco Archeologico di Ercolano YouTube channel where you can find a large number of short interesting videos dealing with conservation issues, research, digital scanning and tours led by Direttore Francesco Sirano.

The Digital Recovery of Ancient Texts

Nigel Wilson
Trustee



One of the principal objectives of our Society, in fact the first objective that I had when I took steps leading to its foundation, is to promote the study of the books that belonged to the library of the Villa of the Papyri. The hope of finding more charred rolls through further excavation may be unrealistic, though I for one would not rule it out, but progress towards a more accurate decipherment of the rolls that have been recovered is now possible thanks to recently developed technology, as we have heard from our American colleagues.

In my presentation to the Society’s online conference of 7 November I drew attention to a not entirely dissimilar enterprise being conducted under the auspices of the Austrian Academy of Sciences.

The National Library in Vienna has a substantial collection of Greek manuscripts dating from the Middle Age and Renaissance. Among them are a number of palimpsests, manuscripts in which the original script has been washed off the parchment so that it could be reused, a procedure made necessary by the fairly frequent shortage of writing material (a problem that rarely if ever hampered book production in antiquity). In one of these palimpsests four folios have been found to contain part of a work by Dexippus, a historian of the 3rd century A.D., who described the Gothic invasion of Greece in the middle of the century. Some fragments of this text were already known from other sources, but this addition is very welcome.

Diet at 79 AD Herculaneum: a metabolic approach

Silvia Soncin
PH.D Candidate, Dept. of Archaeology
University of York



Part of the death assemblage from the Herculaneum *for-nici*, focus of this study. Photo from PaErco official website (<https://ercolano.beniculturali.it/la-catastrofe/>)

Today we live in a world that allows us to choose among an incredible variety of foodstuffs. In such availability, it might be difficult to remember that food consumption is, first of all, a biological necessity of animals. To survive, our body requires essential nutrients that can only be found in food. However, humans are a unique type of animal; whilst animals feed, we breakfast, dine and feast. Our diet can tell us a lot about who we are as people.

In 79 AD, Herculaneum was a vibrant town of the Roman Empire. Historical sources and archaeological evidence suggest that the town was experiencing rapid economic growth related to an overall increase of urban production as well as intensified trade networks with other areas of the Empire. The tragic event of the Mount Vesuvius eruption in 79 AD ended the prosperity of the town of Herculaneum forever, but it allows us today to gain unprecedented insights into dietary habits of its inhabitants. In addition to the abandoned city, the remains of over three hundred of the city's inhabitants were recovered. They were likely to have been going about their normal life until the moments before the eruption. These constitute an exceptional case because, as archaeologists, we usually deal with people buried in cemeteries over multiple time periods, many of whom were very ill before their deaths.

With my PhD project, I am studying specific chemical signatures from the bones of people who lived in Herculaneum until 79 AD. All kinds of foods are made of complex molecules, which contain atoms such as carbon and nitrogen. Carbon and nitrogen atoms exist in nature with different masses, called isotopes. These atoms are transferred from food to our body, which are then used by our metabolism to build up the organic molecules which our body is composed of. My study focuses on the relative abundance of carbon and nitrogen isotopes in the molecules that constitute proteins, called amino acids, as they vary according to food and metabolic pathways. Therefore, each amino acid has the potential to inform on specific aspects of diet. By statistically analysing the isotopic composition of amino acids, we are now gaining a much better resolution (measure of caloric intake, and thus a better ability to identify different foodstuffs) of

the diet of people living in the Empire, compared to previous dietary studies.

Ancient literary sources as well as historical studies suggest that cereals made up the majority of the Roman diet and that terrestrial animal products and marine fish only played a subordinate role. It is difficult to believe that this picture applies to everywhere and everyone in the Roman world. To what extent did the environmental and cultural landscapes influence the dietary habits of people living in the Empire? The new insights from the exceptional death assemblage of Herculaneum are a first step into a better understanding of such complex dynamics.



Silvia Soncin working on samples in the laboratory

The Full-Text Database of the Herculaneum Papyri: Achievements and Desiderata

Holger Essler
Trustee



A complete full-text database of all Herculaneum texts has long been a desideratum both for the editors of these texts themselves to search for parallel passages, and for classicists in general, who can often only consult the printed editions in specialized libraries. At present, the *Thesaurus Linguae Graecae* (TLG, the most widely used database of digitised Classical texts) contains about 30 works from Herculaneum, 15 of them by Philodemus. It is very gratifying that the number of these texts has been growing over the years, and we may be confident that in this way the Herculaneum texts can be read and used by all classicists.

Of course, the design of the TLG, without apparatus and metadata, is sometimes problematic for the papyri. Access is by subscription for a fee, which makes general use more difficult. As a rule, the texts are entered once. Thus, adding readings discovered later, a rather frequent case with Herculaneum texts, is difficult and rare. Apart from the bibliographical details of the edition, there is no information about the sources and the state of preservation of the individual fragments.

In 2008, on the initiative of Gianluca Del Mastro, the Centro Internazionale per lo Studio dei Papiri Ercolanesi began to build a full text database of the Herculaneum papyri (Thesaurus Herculansenisum Voluminum, THV). By 2013, colleagues in Naples and Würzburg had entered a total of 26 texts, which were then transferred to the new Digital Corpus of Literary Papyri (now on papyri.info). In the following years, I have been coordinating new text entry and by now, 149 texts of 268 inventory numbers are online, covering for the first time almost all Greek and some Latin papyri from Herculaneum. An overview on the texts entered – which is also the most complete overview on Herculaneum texts – is available online at <http://epikur-wuerzburg.de/thv/>.

The papyri.info platform has some advantages over the TLG, but is not ideal, especially since it was originally designed for documentary papyri and then adapted for literary papyri. On the other hand, the presence of the Herculaneum papyri on this platform reaffirm once again the unity of papyrology and guarantees long-term availability of the data. The main difference between papyri.info and the TLG is that its texts are completely open source, i.e. they can be consulted and reused without charge. Furthermore, papyri.info is an interactive database, so that every user can contribute further texts and new readings. An editorial board checks new entries to ensure quality control. In this way, each reader and editor of Herculaneum texts can make new suggestions directly available to everyone without having to wait for the publication of a complete edition - which in

The screenshot shows the website interface for the Herculaneum papyri database. At the top, there is a navigation bar with links for 'Startseite', 'Aktivitäten', 'Digitale Ressourcen', and 'Kontakt'. Below the navigation bar, the main content area is titled 'Chrysipp' and lists two entries:

1. Chrysippus: *Opus incertum 2* (PHerc. 1020), kodiert von Konstantin Heil, revidiert von Vincenzo Damiani und Holger Essler.
2. Chrysippus: *De providentia 2* (PHerc. 1038), kodiert von Christian Sailer, revidiert von Vincenzo Damiani und Holger Essler.

Below this, there is a section for 'Demetrius Lakon' with seven entries:

1. Demetrius Laco: *De anthropomorphia deorum* (PHerc. 124), kodiert von Marco Löw, revidiert von Holger Essler.
2. Demetrius Laco: *De elatione animi* (PHerc. 831), kodiert von Franziska Borsch, revidiert von Holger Essler.
3. Demetrius Laco: *De geometria* (PHerc. 1061), kodiert von Marcel Moser, revidiert von Vincenzo Damiani und Holger Essler.
4. Demetrius Laco: *De nonnullis Epicuri dogmatibus* (PHerc. 1786), kodiert von Konstantin Heil, revidiert von Vincenzo Damiani.
5. Demetrius Laco: *De poematis* (PHerc. 230), kodiert von Vanessa Zetzmann, revidiert von Holger Essler.
6. Demetrius Laco: *De poematis* (PHerc. 1113), kodiert von Marco Löw, revidiert von Holger Essler.
7. Demetrius Laco: *De quibusdam collegis* (PHerc. 1006), kodiert von Marco Löw, revidiert von Holger Essler.

Finally, there is a section for 'Epikur' with twenty entries:

1. Epicurus: *De natura 2* (PHerc. 1010, 1691, 1783), kodiert von Christian Sailer, revidiert von Vincenzo Damiani.
2. Epicurus: *De natura 2* (PHerc. 993, 1149), kodiert von Christian Sailer, revidiert von Vincenzo Damiani.
3. Epicurus: *De natura 11* (PHerc. 154), kodiert von Marcel Moser, revidiert von Vincenzo Damiani.
4. Epicurus: *De natura 11* (PHerc. 1042), kodiert von Marcel Moser, revidiert von Vincenzo Damiani.
5. Epicurus: *De natura 14* (PHerc. 1148), kodiert von Marcel Moser, revidiert von Vincenzo Damiani.
6. Epicurus: *De natura 15* (PHerc. 1151), kodiert von Christian Sailer, revidiert von Vincenzo Damiani.
7. Epicurus: *De natura 21* (PHerc. 362), kodiert von Christian Sailer, revidiert von Vincenzo Damiani.
8. Epicurus: *De natura 25* (PHerc. 419, 459, 697, 1634), kodiert von Christian Sailer, revidiert von Vincenzo Damiani.
9. Epicurus: *De natura 25* (PHerc. 454, 1056, 1420), kodiert von Vincenzo Damiani und Christian Sailer.
10. Epicurus: *De natura 25* (PHerc. 1191), kodiert von Christian Sailer, revidiert von Vincenzo Damiani.
11. Epicurus: *De natura 28* (PHerc. 1417, 1479), kodiert von Annemarie Frank, revidiert von Vincenzo Damiani.
12. Epicurus: *De natura 34* (PHerc. 998), kodiert von Vincenzo Damiani.
13. Epicurus: *De natura* (PHerc. 908, 1390), kodiert von Christian Sailer, revidiert von Vincenzo Damiani.
14. Epicurus: *De natura* (PHerc. 1385), kodiert von Vincenzo Damiani.
15. Epicurus: *De natura* (PHerc. 1398), kodiert von Vincenzo Damiani.
16. Epicurus: *De natura* (PHerc. 1639), kodiert von Corinna Lang, revidiert von Holger Essler.
17. Epicurus: *De natura* (PHerc. 1199), kodiert von Vincenzo Damiani.
18. Epicurus: *De natura – De tempore* (PHerc. 1413), kodiert von Christian Sailer.
19. Epicurus: *Echelaus* (PHerc. 566), kodiert von Vincenzo Damiani.
20. Epicurus: *Opus incertum* (PHerc. 996), kodiert von Vincenzo Damiani.

Figure 1. Overview of texts in the database.

the case of Herculaneum rolls can sometimes take decades. Another advantage is the possibility of adding metadata to the individual fragments about the sources and links to images available online. The last major text entered is Philodemus, *On Rhetoric I*, in the 2018 edition by F. Nicolardi.

Although in principle anyone can contribute texts, in practice it is often difficult to find volunteers to enter extensive works of over 100 columns. In these cases, we also rely on hiring students and graduates. Moreover, despite the large coverage, some gaps remain. The next big task will be the encoding of Philodemus, *On poems 2* according to the new Oxford edition by R. Janko, published in 2020. The ongoing work was supported by a donation from the Herculaneum Society this year, for which we are most grateful.

column 237	column 238
P.Herc. 1427 col. 6 <u>Sketched</u> 1786-1798 by Giovanni Battista Malesci <u>Engraved</u> 1798-1815 by Bartolomeo Orazi	P.Herc. 1427 col. 7 <u>Engraved</u> 1798-1815 by Bartolomeo Orazi <u>Sketched</u> 1786-1798 by Giovanni Battista Malesci
πιστήμη πραγμά- των. vac. 1 καὶ περὶ [τῆ]ς/ πολιτ. - —	μάζομεν ὡς ἐψύσυν- θεώρητον ἔχουσι τὴν διάπτωσιν, ἐ- πί τε τῆς διακοπῆς
5 κῆς δὲ ἐρωτώμενοι, πολλοὶ τὸ μὴ διὰ τῆς σοφιστικῆς αὐτὴν πε- ριγείνεσθαι προσάγου- σιν, ἂν εὐ βάλωσιν. ἄ	5 τῶν κατὰ μέρος λό- γων ἔνια τῶν νῦν παραλελειμμένων ἐπισημασίας ἀξιο- θήσεται. vac. 1 τοῖς δ' ἡμε - —
10 ξιὸν τε ἐπιστήσαι μήποτε οὐκ ἀπ[ι]θανος λέγη τις, ὥσπε[ρ] τὴν διαλεκτικὴν τέ- χνην ὑπάρχει ἵν, οὐ μὴν ἀπεργάζεσθαι τι κα- θ' ἑαυτήν, εἰ μὴ τοῖς	10 τέροις μεμπτέον ἂν εἴη καὶ περιττότε- ρον τοῖς γέ τοιοῖοι τοιοῦ- τοις, ὅσοι καὶ τὴν σοφισ- [τικὴν] ῥητορικὴν οὐ- κ εἶναι τέχνην διελη- φασι καὶ τούτοις σιστα- τικούς λόγους πεποιθ-
15 ἠθικοῖς καὶ φι[λο]σοφικοῖς (added at left: N) συνδεθεῖη λόγους, ὄν τρόπον καὶ τῶν Στω- ικῶν ἔνιοι διελάβον, οὕτω καὶ τὴν ῥητο- ρικὴν τέχνην μὲν	15 κ εἶναι τέχνην διελη- φασι καὶ τούτοις σιστα- τικούς λόγους πεποιθ- κασι. εἰ γὰρ Ἐπ[ι]κουρος καὶ Μητροδώρος ἔτι 20 δ' Ἐρμαρχος ἀποφαι- νονται τέχνην ὑπάρ- χειν τὴν τοῖα/ἰχθῶ/την ὡς ἐν τοῖς ἐξῆς ὑπο- μνήσομεν, οἱ τούτοις
20 ἵν εἶναι, δραστήριον δ' οὐδαμῶς τῶν ἔρ- γων, εἰ μὴ τοῖς πολιτι- κοῖς πράγμασ[ι]ν	25 ἀντιγράφοντες οὐ πάνυ τι μακρὰν τῆς τῶν πατραλοῖων καταδύκῃς ἀφες- τήκασιν.
25 συμπλακεῖη. vac. 1 τὸ μὲν — γὰρ ἐπακτικοῖς εἶ- ναι τοῖς πλείο[ν]ας τῶν λόγων οὐκ ἴσως λέληθεν οὐδὲ τοῖς- 30 μετρίως συνέγτας. —	fragment subscriptio P.Herc. 1427 subscriptio <u>Sketched</u> 1786-1798 by Giovanni Battista Malesci <u>Engraved</u> 1798-1815 by Bartolomeo Orazi <u>Sketched</u> 1807 by Antonio Lentari
30 τὰχα δ' ἴσως καὶ πλεί- ους ἄλλοι κακ[ι]ῶν χα- ρακτήρες διή[κο]υσιν διὰ τῶν συμμιλλ[λο]γι[σ]των/ων, 35 ἀλλ' οὔτε πρό[ς] ὄνου- (added at left: *)χα τὴν προσκ[α]ρτέ- ρησιν ποιῆσθαι δοκι -	Φιλοδήμου Περὶ ῥητορικῆς Ὑπομνηματικῶ[ν] α 5 ἀρι(θμός) XXXX σελ(ίδες) σλζ

Figure 2. The last columns of Philodemus, *On rhetoric I* on papyri.info.

Not immediately visible, but equally important is the lack of recording new readings: Since our priority was to complete the database in a reasonable time and to have some version of every text available, text entry and revision was done on the basis of the latest complete edition; later partial editions or single readings are listed in the bibliographical references, but not recorded in the text. This means that in some cases, our text may be outdated by a century and we will have to rely on volunteers to gradually add readings that are more accurate.

Papyri.info also allows you to add commentary and translations in different languages. We have therefore started to enter translations into a modern language wherever possible. However, a major problem is that many published translations are subject to copyright, while other texts have never been translated at all. In my opinion, the availability of free online translations would significantly increase the usability of the texts and their reception by literary scholars. Especially in this area, any help, be it in the form of providing your own translations, correcting existing ones or supporting student assistants, would be most welcome. We already have the most comprehensive online platform for the study of the Herculaneum papyri. Now the focus will have to be on completing it and on improving the reliability of the texts and their usability.

Drawings of Herculaneum papyri in Windsor Castle: The King's Book

Kilian Fleischer
Head of the DFG-project "Philodems Geschichte der Akademie (Index Academicorum)"
University of Würzburg



Not too long after their unrolling in the decades around 1800, most Herculaneum papyri were depicted in drawings, which scholars call *disegni*. These were executed in Naples by draughtsmen who were not capable of reading Greek (or Latin) so that they could not be psychologically misled by what they might think should be written into drawing or adding to letters which were in fact not written in the papyrus. The value of these *disegni* lies in the fact

that between their execution and today substantial portions of the papyri crumbled away, got lost or almost completely faded. Between 1802 and 1806 the Chaplain in Ordinary to the later King George IV,

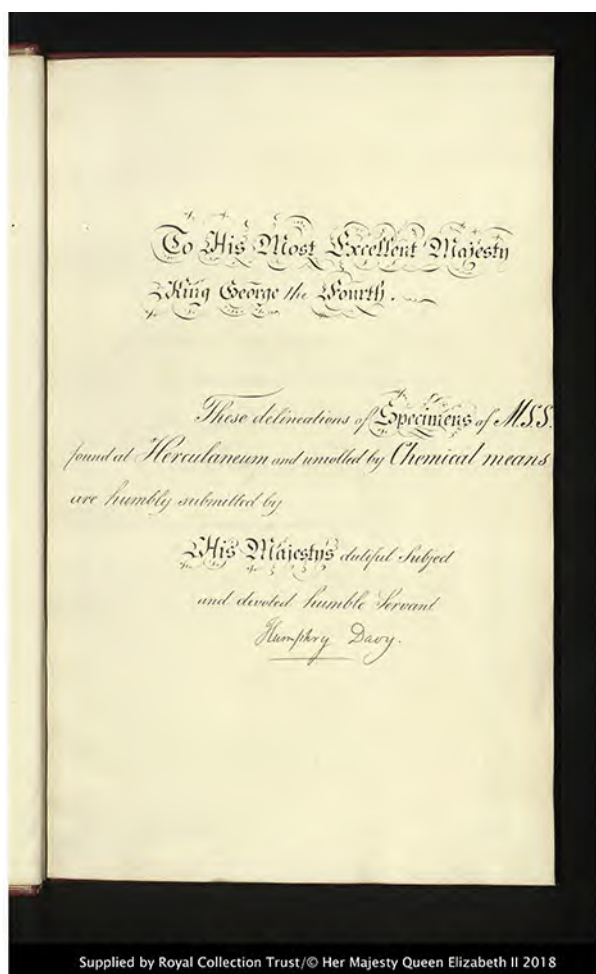
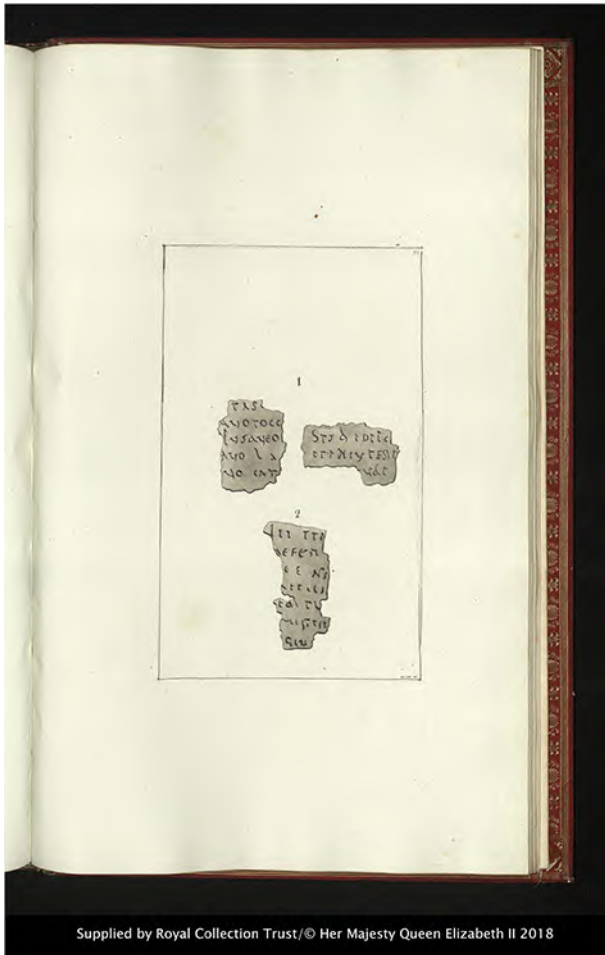


Figure 1. Introduction to The King's Book



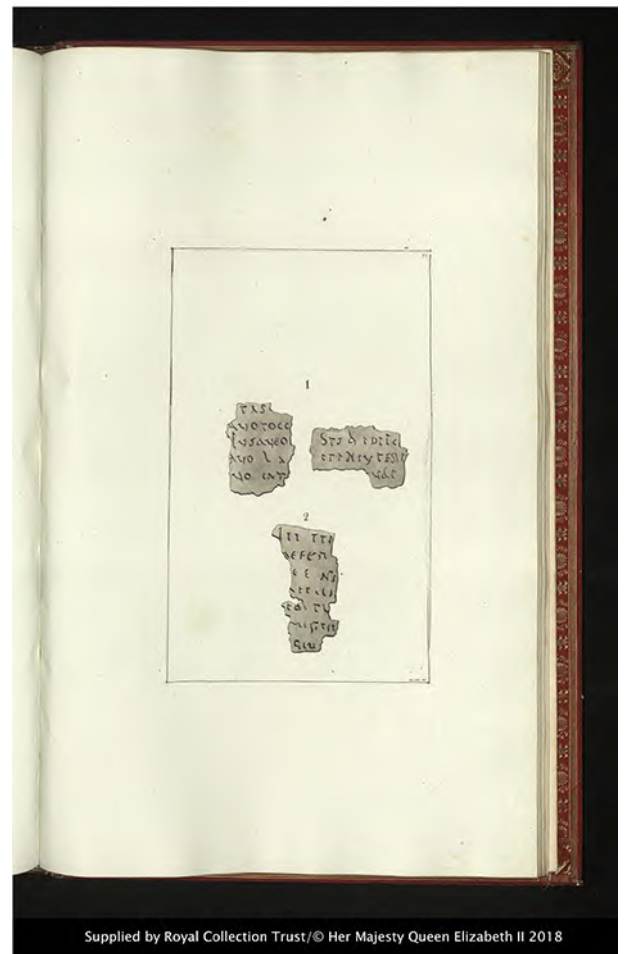
Supplied by Royal Collection Trust/© Her Majesty Queen Elizabeth II 2018

Figure 2. Drawing of Greek papyrus in The King's Book

John Hayter, supervised the works on the papyrus in Naples. Returning to England, he carried all the *disegni* made until then with him. Consequently, almost all the papyrus depicted before the departure of Hayter had to be drawn again in order to have *disegni* of the papyrus in Italy, too. Hence, papyrologists nowadays distinguish between so-called *Oxford disegni* and *Neapolitan disegni*. The designations derive from the present location of the drawings – the *Oxford disegni* are stored in Oxford (Bodleian Library/Weston Library), whereas the *Neapolitan disegni* can be consulted in the Biblioteca Nazionale di Napoli. In the early 2000s the so-called *Oxford disegni* were digitized and are accessible online via the Herculaneum Society homepage. Only rather recently, the *Neapolitan disegni* were also digitized. The online access has facilitated scholarly work on the *disegni*/papyrus to an extent which can be hardly overestimated. No doubt, without this online availability many discoveries and new textual reconstructions made within the last decade would not have been possible.

Now it is a little known fact that the famous Brit-

ish chemist Sir Humphrey Davy also worked on the Herculaneum papyrus in 1819/1820 in Naples, testing new scientific methods of unrolling. Basically, the experiments were not very successful and the textual outcome rather modest. Nevertheless, it was possible to acquire some fragments with a few lines of text. Since Davy's sponsor was no less than King George IV himself, there was some need to "spruce up" the poor results and show the king that his financial support was worth it. Therefore, Davy decided to create a special book for the king with drawings in *gouache* (and for him only, so that it is literally a unique copy). William Gell executed the drawings in this high quality, luxury book. It was "rediscovered" a few years ago by Richard Janko, who consulted it in the Queen's Library in Windsor Castle, but has not yet got a digital copy of the book. As it happens, in the course of my work on some Herculaneum papyrus dealing with history of philosophy (Socrates) I had to counter-check the original papyrus against some drawings included in the King's Book. Since it would have been rather disproportionate for my purposes to



Supplied by Royal Collection Trust/© Her Majesty Queen Elizabeth II 2018

Figure 3. Drawing of Latin papyrus in The King's Book

go to Windsor Castle in persona (although I would very much like to visit one day), I asked the former Curator of Books and Manuscripts at Windsor Castle, Bettina Gierke, whether she could provide digital images of the entire book and forward them to me. It was a pleasant surprise that just a few days later I received superb images and, an even greater, almost royal surprise, that I received them for free. Being at that time the only scholar possessing a digital copy of this wonderfully executed rarity, I felt a certain obligation to look for an opportunity to make this digitized copy available online to the scholarly community. The easiest way turned out to be to put the images on a website related to my Academic home institution, the University of Würzburg/Germany (<https://epikur-wuerzburg.de/>), of course with kind permission of the Royal Collection Trust. Conveniently, this website enjoys a certain popularity among Herculanean papyrologists and features, among others, the engravings of the *disegni* (*collectio prior* and *collectio altera*). With the support of my colleague Holger Essler, also a papyrologist and trustee of the Herculaneum Society, it was possible to upload the images in a way that guarantees easy access for all users (however, the files are not catalogued yet – in case someone is interested in getting involved). It is hoped that the corresponding *Davy disegni* – more or less the unpolished, “black-and-white” version of the King’s Book – can be uploaded in the near future, too. Such online-digitization does not seem spectacular, but is often crucial to putting scholars in a position to study a Herculaneum papyrus exhaustively and come up with new findings or textual restorations – without a journey to Windsor Castle. What was made for the King’s eyes only about 200 years ago, is now accessible for everybody.

COVID-19 and Research of the Herculaneum Papyri

Trevor Mathews
Undergraduate Senior
Brigham Young University
Utah, USA

BYU’s Ancient Textual Imaging Group (ATIG) are scholars who have engaged in various multi-spectral imaging (MSI) projects over the past 20 years. The largest of these projects has been imaging and

cataloguing the large collection of the Herculaneum papyri in Naples and at the British Library. MSI images, which allow scholars to see manuscript details not visible to the naked eye, have been collected and stored over the years in a dataset on BYU’s campus. When the Herculaneum Papyrus Project was originally begun, it was conceived by Marcello Gigante as an international collaboration. Access to the MSI enables scholars all over the world to delve deeper into the fragmented texts of the papyri. Giuliana Leone, professor at the Centro Internazionale per lo Studio dei Papiri Ercolanesi at the “Federico II” University of Naples, spoke highly of the image set in her monumental 2012 edition of Epicurus’ *Sulla Natura*:

“A boon even more valuable for the reading of the papyri, the condition of the conservation of which has been limited previously by the fading of the ink and the abrasion of the textual substrate, has been made available by the digital multi-spectral images. Especially useful for seeing the pieces on which the *sottoposti* and *sovrapposti* sit, where direct consultation allows one to discern them, are stitched multi-spectral images made available to me.”

Like Giuliana, many scholars have made great use of the MSI to access clear images of the papyri. However, due to the sweeping effects of COVID-19, many obstacles have arisen for researchers of the papyri. National governments across the globe have shut down, including Italy. There, many research institutions closed to slow the spread of the disease. Through a survey sent to several prominent scholars about their use of the MSI, many of these researchers explained the difficulties which they have encountered due to such closures. One of the largest of these frustrations has been the closure of the Biblioteca Nazionale di Napoli, where the bulk of the original papyri are stored. According to Professor Leone, the closure of the library has made the difficult task of accessing original sources nearly impossible for both herself and her masters and doctoral students, barring many of the students from necessary materials for their theses and dissertations. Likewise, for Professor Gianluca Del Mastro at the Vanvitelli University of Caserta, and also of CISPE, the lockdown of the BNN was problematic because it bars him and his colleagues from control studies (autopsy) of the original papyri, which is fundamental for his work on CHARTES, (www.chartes.it) the online informational catalogue of the Herculaneum Papyri. For

Professor Richard Janko at the University of Michigan, the closure of the Biblioteca Nazionale has made it more difficult to obtain permissions for publication of his work regarding the papyri.

While the MSI dataset has been invaluable to researchers in the past, its utility has grown tremendously since the arrival of the novel Coronavirus. Before the pandemic, the dataset was a convenient way to access the papyri. But during the closure of the Biblioteca Nazionale, the digitized MSI have become the only way to access the papyri. Professor Del Mastro remarked on his frequent use of the dataset during the closures. The MSI images in the dataset allow him to catalogue the individual fragments for CHARTES and make palaeographic comparisons and reconstructions of the rolls of papyri, even without the originals present. He also said that the MSI are “an essential support” for his work. In a similar fashion, Professor Holger Essler at the Institut für klassische Philologie at the University of Würzburg describes the need to see not only the traces of ink from home, but also to check spacing between inkstrokes on the papyri. Professor Leone also praised the work of ATIG which allowed her to access the MSI for PHerc 1042 during the pandemic, saying that “only through that access have I been able to write an article that will appear in *Cronache Ercolanesi* (2020) 50.”

The utility of ATIG’s MSI dataset is evident in the recent praise given by these scholars and is vital for the continued study of the papyri through various circumstances which make the originals inaccessible. Primarily, the MSI make the papyri available from any distance, not only in the libraries where they are found. For example, Professor James Brusuelas, a collaborator with the University of Kentucky’s Digital Restoration Initiative, called the BYU MSI data “indispensable in the study of the Herculaneum papyri,” and said that the team is “in the process of revealing new readings even now!” With the help of the MSI, Brusuelas’ team is able to advance the study of the papyri from their home offices, which is a great advantage for their research during the pandemic.

We have learned from the responses of our survey that, while autopsy of the papyrus is always critical, the pandemic’s pinch can be mitigated by high quality digital images. The added benefits of seeing the papyri through multiple filters and allowing decreased wear on the original sources make the dataset an indispensable tool for scholars, especially when the libraries are closed.

For more information about the Society, or if you have any comments, suggestions or ideas for articles for the next edition of *Herculaneum Archaeology*, please feel

free to contact the office at:

herculaneum@classics.ox.ac.uk or

krystyna.cech@classics.ox.ac.uk

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The Herculaneum Society, The Ioannou Centre for
Classical and Byzantine Studies,
66 St Giles, Oxford OX1 3LU, United Kingdom
Tel: (+44) (0) 1865 288260;
Email: herculaneum@classics.ox.ac.uk
Website: <http://www.herculaneum.ox.ac.uk/>