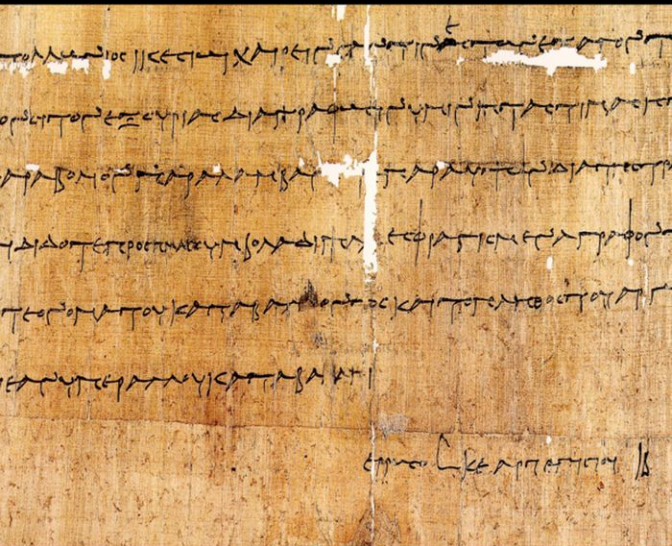


EDITED BY

ROGER S.

BAGNALL



≡ The Oxford Handbook of
PAPYROLOGY

THE OXFORD HANDBOOK OF

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PAPYROLOGY

Edited by
ROGER S. BAGNALL

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ABBREVIATIONS

AJA	<i>American Journal of Archaeology</i>
AncSoc	<i>Ancient Society</i>
ANRW	<i>Aufstieg und Niedergang der römischen Welt</i>
APF	<i>Archiv für Papyrusforschung und verwandte Gebiete</i>
ARAM	<i>ARAM periodical</i>
BASP	<i>Bulletin of the American Society of Papyrologists</i>
BCH	<i>Bulletin de correspondance hellénique</i>
BIFAO	<i>Bulletin de l'Institut français d'archéologie orientale</i>
BSAC	<i>Bulletin de la Société d'Archéologie Copte</i>
BSOAS	<i>Bulletin of the School of Oriental and African Studies</i>
Cd'É	<i>Chronique d'Égypte</i>
CErc	<i>Cronache ercolanesi</i>
CRAI	<i>Comptes rendus de l'Académie des Inscriptions et Belles-Lettres</i>
CRIPeL	<i>Cahiers de recherches de l'Institut de Papyrologie et d'Égyptologie de Lille III</i>
CSCA	<i>California Studies in Classical Antiquity</i>
EVO	<i>Egitto e vicino oriente</i>
GRBS	<i>Greek, Roman and Byzantine Studies</i>
JEA	<i>Journal of Egyptian Archaeology</i>
JHS	<i>Journal of Hellenic Studies</i>
JJP	<i>Journal of Juristic Papyrology</i>
JRA	<i>Journal of Roman Archaeology</i>
JRAS	<i>Journal of the Royal Asiatic Society</i>
JRS	<i>Journal of Roman Studies</i>
MBAH	<i>Münstersche Beiträge zur antiken Handelsgeschichte</i>
MDAIK	<i>Mitteilungen des Deutschen Archäologischen Instituts (Abt. Kairo)</i>
OLA	<i>Orientalia Lovaniensia analecta</i>
QDAP	<i>Quarterly of the Department of Antiquities of Palestine</i>

QS	<i>Quaderni di storia</i>
RAssyr	<i>Revue assyriologique</i>
RBi	<i>Revue biblique</i>
REB	<i>Revue des études byzantines</i>
RHR	<i>Revue de l'histoire des religions</i>
RIDA	<i>Revue internationale des droits d'antiquité</i>
SCI	<i>Scripta classica Israelica</i>
SDHI	<i>Studia et documenta historiae iuris</i>
TR	<i>Tijdschrift voor Rechtsgeschiedenis</i>
ZPE	<i>Zeitschrift für Papyrologie und Epigraphik</i>
ZSav	<i>Zeitschrift der Savigny-Stiftung für Rechtsgeschichte: Romanistische Abteilung</i>

INTERNET RESOURCES

The following list gives only a selection of tools mentioned in this volume. For lists of additional resources, with links, see the following two Web sites:

<http://www.columbia.edu/cu/lweb/digital/pn/resources.html>

<http://www.ulb.ac.be/assoc/aip/liens.htm>

Advanced Papyrological Information System (APIS). A union catalogue of metadata and images from many papyrus collections, including a set of links to other online catalogues of papyrus collections, <http://www.columbia.edu/cu/lweb/projects/digital/apis/index.html>; also through <http://www.papyri.info>

Catalogue of Paraliterary Papyri (CPP). Katholieke Universiteit Leuven, Departement Klassieke Studies. <http://cpp.arts.kuleuven.ac.be/>

Checklist of Arabic Documents. <http://www.ori.uzh.ch/isap/isapchecklist.html>

Checklist of Editions of Greek, Latin, Demotic, and Coptic Papyri, Ostraca, and Tablets. <http://scriptorium.lib.duke.edu/papyrus/texts/clist.html>

Cologne Mani-Codex. Images, <http://www.uni-koeln.de/phil-fak/ifa/NRWakademie/papyrologie/Manikodex/mani.html>

Demotistische Literaturübersicht, Katholieke Universiteit Leuven. <http://www.trismegistos.org/dl/index.html>

Duke Data Bank of Documentary Papyri. A full-text database only for Greek and Latin documents. <http://www.papyri.info>

Fayyum Villages Project. Now included in Trismegistos: places. <http://www.trismegistos.org/geo/index.php>

Heidelberger Gesamtverzeichnis der griechischen Papyrusurkunden aus Ägypten. A database (without texts) of Greek and Latin documentary papyri and ostraca. <http://www.rzuser.uni-heidelberg.de/~gvo/gvz.html>; also through <http://www.papyri.info>

Homer and the Papyri, Harvard Center for Hellenic Studies. http://chs.harvard.edu/chs/homer_the_papyri

Leuven Database of Ancient Books (LDAB). A guide to Greek, Latin, and Coptic literary texts, including school exercises. <http://www.trismegistos.org/ldab/index.php>

Mertens-Pack, 3d ed. A digital update of Roger A. Pack, *Index of Greek and Latin Literary Texts from Greco-Roman Egypt*, 2d ed. Ann Arbor: University of Michigan Press, 1965. A listing of literary papyri with full references. <http://www2.ulg.ac.be/facphl/services/cedopal/>

Nag Hammadi Library. <http://www.gnosis.org/naghamm/nhl.html>

Namen in koptischen dokumentarischen Texten (by M. Hasitzka). A repertory of personal names attested in Coptic documents. http://www.onb.ac.at/sammlungen/papyrus/publ/kopt_namen.pdf

Oxyrhynchus Papyri. Metadata and images of the more recent volumes. <http://www.papyrology.ox.ac.uk/POxy/>

Papyrus Archives in Graeco-Roman Egypt. Database with description of archives and dossiers. <http://www.trismegistos.org/arch/index.php>

Thesaurus Linguae Graecae. A comprehensive database of Greek literary texts from Homer to Byzantine times (license required). <http://www.tlg.uci.edu>

Vindolanda Tablets. Metadata, translations, and images. <http://vindolanda.csad.ox.ac.uk/>

INTRODUCTION

ROGER S. BAGNALL

In a broad sense, papyrology is a discipline concerned with the recovery and exploitation of ancient artifacts bearing writing and of the textual material preserved on such artifacts. For the most part it focuses on what can be called the spectrum of everyday writing rather than forms of writing intended for publicity and permanence, most of which were inscribed on stone or metal and belong to epigraphy, in the scholarly division of labor. The edges of these domains, however, are fuzzy. Papyrology cannot actually be defined by the material support: Potsherds can belong to epigraphy or papyrology, depending on their origin and nature, while the great parchment codices of the fourth and fifth centuries are not usually thought of as papyrological texts. Technique of writing is not an adequate discriminant, for not all epigraphical texts are incised, and some papyrological texts are. A public/private dichotomy is undermined by papyri put up as public notices, and many types of content are found in both epigraphical and papyrological texts—edicts of Roman governors, to give only one obvious example. Nor does geography divide the fields: Both papyrological and epigraphical texts can be found from Britain to Afghanistan, although, for environmental reasons, most papyrological material comes from Egypt. Material that in Egypt would be considered papyrological finds a home in the *Corpus inscriptionum iranicarum* when written in a Persian language. In one sense, none of this is a problem unless one wants to close oneself into a discipline with clear boundaries. But for the editor of a handbook it poses certain challenges.

Publishing a handbook for a field such as papyrology presupposes some sense of approximate boundaries. A generation ago, “papyrology” meant Greek and Latin papyrology, and the borders were thus clear at least in linguistic terms. Neither Coptic nor Arabic papyrology had more than a handful of practitioners, and demotic Egyptian unquestionably belonged to the Egyptologists. In the summer seminar in papyrology in 1968, at which I received my first training, I think none of these languages was ever mentioned. The papyrology of the rest of the ancient world was hardly an issue, either; apart from Herculaneum, Dura-Europos, and a scattering of other texts, papyrology meant Egypt. The papyrological textbooks of that era, most notably Turner (1968, 1980²) and Montevicchi (1973, 1988²), are essentially and even avowedly about the Greek (and Latin, to some extent) papyri of Egypt, just as had been the case already for Mitteis and Wilcken (1912), and the same is explicitly true of Rupprecht (1994).

Today, a broader concept, already partly visible long ago in Peremans and Vergote (1942), is unavoidable. One may trace the change in the *Checklist of Editions*, which between its first edition in 1974 and its most recent in 2001 (Oates et al. 2001) has added demotic and Coptic, and an analogous Arabic checklist has come into being (online). It seems only a matter of time before the papyri in other Semitic languages are added. Will the Bactrian documents (Sims-Williams 2000) be next? Papyrologists trained on Egyptian material have found themselves working on papyri from Petra and tablets from Vindolanda. Several volumes of one papyrological series have now been titled “From Herculaneum to Egypt” (*Papyrologica lupiensia*). All of this has in some ways not so much left behind the old contest between methodological and substantive concepts of the field of papyrology as relocated them to a broader plane.

It is, however, all too easy to see these developments uncritically as the papyrological manifestations of the egalitarian, multicultural spirit of the present. No matter how fuzzy a set papyrological texts constitute, they do have a core. Greek is still the dominant language of papyrology, and the Roman empire its fulcrum. Nearly 80 percent of published papyri are Greek and Latin (mostly Greek; cf. chapter 27), texts from the period of Roman rule greatly outnumber those of the Hellenistic period, and the numbers among the unpublished may not be vastly different. The “normality” of the Roman period for papyrology is probably not just a matter of the chance of survivals, however; or, to look at it from another point of view, the survival of documents is probably not simply the product of archaeological contingency. Roman rule brought with it the development of a society of “notables,” the prosperous elites of both villages and cities who governed them—the cities especially after Septimius Severus granted them city councils. These groups, the property they owned, and the public duties they carried out generated an immense amount of paperwork, much of which had not been there in the Ptolemaic period, and these papyri are a large part of what gives us our impression of the “middle-class” (but really upper middle or lower upper class) society to which the modern middle-class reader connects so easily. It is the village societies of the Fayyum and the bourgeoisie of Oxyrhynchos that have generated most of the stories papyrologists tell about life in Graeco-Roman Egypt. Greek was the language of power and business in these societies.

The Roman Empire—in an expansive sense, including late antiquity—is also the period in which the geographical range of papyrological finds outside Egypt is at its greatest. From the first to the early second centuries there are important finds from the pre-Hadrianic forts at Vindolanda in northern Britain (*Tab. Vindol.* I–III), with their snapshot of frontier military life, and the fort of Masada by the Dead Sea, where, near the other end of the empire, the Roman army was engaged in putting down a rebellion (*Doc. Masada*). Second- and third-century documents from the Dead Sea (*P. Yadin*) and the Euphrates valley (*P. Euphr.*, *P. Dura*) have also helped prevent too Egyptocentric a view of the papyrological world, as the interplay of

Roman, Greek, and local languages and legal norms has given more specificity, bite, and controversy to questions all too easily buried in generalizations. The army is documented again in third-century Libya with a large find of ostraca (*O.Bu Njem*). Later still, Petra and Nessana give us city and village documents linked to church and military but also highly revealing about private property transactions in the sixth and seventh centuries (*P.Petra*, *P.Ness.*). Yet none of this takes away from the overwhelming numerical dominance of Egyptian texts.

This handbook reflects these changes in papyrology over the last third of a century; it also reflects the lack of any universally accepted view of the discipline to replace the consensus of the past. The Greek papyri still dominate the book, just as they do the subject. Limitations of space, differences in the developmental stages of various fields, and sometimes a lack of available contributors have made it impossible to treat all possible subjects. I particularly regret the absence of any substantial discussion of Coptic palaeography, a subject much in need of systematic treatment, and the lack of a planned chapter on hieratic and demotic papyri (although chapters 12 and 17 deal with part of that territory). Fortunately, these topics will be treated extensively in the forthcoming *Oxford Handbook of Egyptology* and *Oxford Handbook of Coptic Studies*. Readers should in any case recognize that any seeming incoherences of boundaries and coverage accurately reflect the nature of papyrology today in the midst of change.

The divide between the methodological and substantive sides of the discipline will also be evident. Some chapters are more practical in character, aiming to help the reader understand how papyrologists go about reading, editing, and making sense of their texts. Others give some of the results of that process. This divide too was evident in Peremans and Vergote's *Handboek*, which contained an entire chapter on the definition of the subject, then other chapters on writing material, conservation, and decipherment, as well as chapters on political history, language, administration, law, religion, social life, economy, culture, and private life. The balance is clearly toward the results of papyrology, perhaps not a surprising outcome in a book written by two scholars who were not editors of papyri. If the present handbook attempted to cover the full range of these subjects, it would have required at least two volumes (if it could have been produced at all). It has no sections on class, ethnicity, economy, trade, gender, family, Hellenization, Romanization, and many other subjects on which a great deal of good work has been done in recent decades. Space has been used instead to widen the linguistic range and break "religion" out into more of its varied constituents. This was hardly an inevitable choice, but it seemed to me more important to cover papyrology's development into those directions, even if incompletely, than to try to provide a history of Egypt (let alone the entire ancient world) through the lens of the papyri.

As a collective work, this handbook has of necessity a different character from previous handbooks or textbooks of papyrology. The twenty-seven authors represented here and their subjects overlap from time to time, and they do not agree

about everything. Although some repetition has been excised, some remains, and contention remains, too. There would be no point in pretending that all of the authors speak with the same voice. One of the purposes of a multiauthor volume of this kind, in fact, is to give the reader a sense of the debates that animate the field. Moreover, different authors have different conceptions of their audience; that again seems to me inevitable in such a work and perhaps even desirable. Most of the chapters require no knowledge of any ancient language, but it was hard to imagine a chapter on the Greek and Latin of the papyri addressed to an audience that knew nothing of either language.

Handbooks tend to be consulted or read in part rather than continuously. Many different arrangements of the chapters could have been envisaged, naturally; the one adopted here made sense to me, but nothing prevents readers from reading chapters in any order they find helpful.

This is certainly the first papyrological handbook in which electronic research tools play a significant part. There are few chapters not marked in one way or another by the availability of major resources in digital form, mainly on the World Wide Web but some still only on CD-ROM. The authors have somewhat diverse things to say about this revolution, and I have thought that here particularly some repetition was a good thing. The addresses of these tools are given above (pages xv–xvi), where the reader will find all of these resources listed with information on access to them.

This book has benefited from the help of many individuals. I want to acknowledge particularly the valuable comments of the participants in the Summer Seminar in Papyrology held at Columbia University in 2006, who had drafts of the volume available to them. Eduard Iricinschi, of Princeton University, read the entire copyedited volume and improved it in many particulars, a service for which I am deeply grateful. The financial support of the Andrew W. Mellon Foundation and of the Institute for the Study of the Ancient World of New York University has made possible the seminar and this editorial work.

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THE OXFORD HANDBOOK OF

PAPYROLOGY

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CHAPTER 1

WRITING MATERIALS IN THE ANCIENT WORLD

ADAM BÜLOW-JACOBSEN

Paper, as we know it today, did not exist in the ancient Mediterranean world.¹ Instead, people wrote on an enormous variety of other materials. While almost every substance imaginable has been used as writing material at one time or another,² in this chapter I focus on the common ones. First, I naturally consider papyrus since the overwhelming majority of ancient texts are written on this material. Parchment, ostraca, and wooden tablets also receive considerable attention, while linen (e.g., mummy bandages) and stone (mainly Coptic limestone ostraca inscribed with ink) receive minimal attention.

An overall view of the use of various writing materials for Greek documentary texts can easily be acquired from the *Heidelberger Gesamtverzeichnis der griechischen Papyrusurkunden Ägyptens einschließlich der Ostraka usw., der lateinischen Texte, sowie der entsprechenden Urkunden aus benachbarten Regionen* (hereinafter *HGV*).³ Out of a total (as of April 2004) of 54,312 published documents, the distribution on writing materials is given in table 1.1. In columns 4 and 5 I have added the figures and percentages for literary texts, which are taken from the total of 9,875 items incorporated in the *Leuven Database of Ancient Books* (hereinafter *LDAB*).⁴

The aforementioned figures are for texts in Greek and Latin. If we look at Coptic documentary texts,⁵ which extend past the end of antiquity, ostraca are the most important medium (47.5 percent), while papyrus is second (40.5 percent). Limestone accounts for 10.5 percent, while skin (leather/parchment), paper, and wood represent less than 1 percent each.

Table 1.1. The Frequency of Various Writing Materials

Material	Documents	% of Documents	Literary Texts	% of Literary Texts
papyrus	35,591	65%	7,100	71%
ostraca ¹	15,195	28%	339	3%
wood ²	2,500	5%	148	1%
parchment	349	0.6%	2,575	25%
graffiti	234	0.4%		
linen	84			
wax tablet	73			
stone	67		30	
cloth (mummy linen, etc.)	30			
leather, etc.	25			
various semiprecious stones	9			
limestone	7			
bone	7			
gold and silver	6			
bronze	6			
lead	1			
iron	1			
schist	1			
reed	1			

1. This category includes fragments of ceramic on which the text is written in ink or engraved after firing.
2. A good many of these are mummy labels. One could also include wax tablets and the description *Klapptafel* (4 items in *HGV*). For reasons of geography the *HGV* includes neither the Vindolanda (*T.Vindol.*, 853 items) nor the Vindonissa tablets (*T.Vindon.*, 90 items). Otherwise, the wooden tablets would account for 6 percent of the total.

PAPYRUS

Where and How Did Papyrus Grow?

According to Theophrastus, whom Pliny copies without acknowledgement,⁶ papyrus grew in water no deeper than 90 centimeters (two cubits). Pliny adds on his own account (or from another source) that it grows in the swamps of Egypt, which are stagnant after the floods. This was certainly true in his day and at the time of

Theophrastus as well, but before man interfered with the floods of the Nile, where would papyrus have grown in Egypt? Without human intervention, the floods did not leave stagnant pools for very long, and the annual change in the water level would not have agreed with the papyrus plant. It is thus no surprise that *Cyperus papyrus L.* died out in Egypt when it was no longer cultivated for paper making, and I suspect that it never grew there spontaneously but was imported from tropical Africa at a very early period. In the 1960s a surviving specimen was discovered in Wadi Natrun but typically not on the Nile.⁷ The papyrus that now grows in Egypt and is used by modern papyrus makers was imported from the Jardin du Luxembourg, Paris, in 1872 and planted in front of the Egyptian Museum in Cairo. From there, a number of plants came to the Cairo Zoo and were in turn transplanted by Dr. Hassan Ragab to his plantation on Jacob's Island. The origin of these plants appears to be Syracuse, where papyrus was introduced (or rediscovered) by the Arabs during the Middle Ages. In any case, the origin of the plants must have been Egypt.⁸ Pliny (*HN* 13, 72–73) also mentions papyrus in Syria and Mesopotamia.

How Was Papyrus Made?

We have three sources of information on papyrus making: analysis of ancient papyri, ancient descriptions, and modern experiments with manufacture. If we start with the simplest form of analysis, looking at a piece of papyrus paper, it is obvious that it is made of two layers of fibers placed perpendicularly to one another. As for descriptions, I consider that we have no good description from antiquity of how papyrus was made. The Egyptians apparently never recorded the process, and the only classical author who describes it is Pliny (*HN* 13, 74–82), whose account is problematical in several ways. The principles of textual criticism dictate that we try to reconstitute what the author wrote, but our natural tendency is to try to make sense of what Pliny wrote since we tend to assume that he knew what he was talking about. This is, however, not necessarily the case, since Pliny had never been to Egypt and papyrus paper must be made from fresh papyrus; thus, it can be made only where papyrus grows. It is therefore almost certain that he had never witnessed the manufacture of a papyrus sheet, and it is consequently difficult to determine how we should deal with the obvious shortcomings of Pliny's text. He must have been excerpting a written source, but we have no idea what it was or whether it was correct. So, in general, emendations of Pliny's text should be avoided. What we can do (and what several commentators, including myself, have done) is to try to interpret the words in such a way that they can be harmonized with what we believe to be the truth. This procedure contains an obvious danger of circular argumentation. To complicate matters, I believe that Pliny is mixing personal experience of papyrus he had bought and used in Rome with whatever source he was using to describe its manufacture, and I believe that, while his source

must have given an account of papyrus making in pharaonic times, his own experience was, of course, of papyrus as produced in his own day.⁹

I quote a translation of the relevant passage, adapted from Lewis (1974: 37–41):

74. Paper is made from the papyrus plant by separating it carefully¹⁰ into very thin strips as broad as possible. The choice quality comes from the middle, and after that come the other cuts in order. The (choice) quality, in former times called “hieratic” because it was devoted only to religious books has, out of flattery, taken on the name of Augustus, and the next quality that of Livia, after his wife, so that the “hieratic” has dropped to third rank.

75. The next had been named “amphitheatric” from its place of manufacture. At Rome, Fannius’ clever workshop took it up and refined it by careful processing, thus making a first-class paper out of a common one and renaming it after him; the paper not so reworked remained in its original grade as “amphitheatric.”

76. Next is the “Saitic,” so called after the town where it is most abundant, made from inferior scraps, and, even more like bark, there is the “Taeneotic,” named after a nearby place (this is sold, in fact, by weight, not by quality). The “emporitic,” being useless for writing, provides envelopes for papers and wrappings for merchandise, and its name accordingly comes from [the Greek for] merchants. After this there is the end of the papyrus stalk, which is similar to a rush and useless even for rope except in moisture.

77. Paper of whatever grade is fabricated on a board moistened with water from the Nile: the muddy liquid serves as the bonding force. First there is spread flat on the board and quite straight a layer consisting of strips of papyrus of whatever length they may be. When the ends are squared off a cross layer completes the construction. Then it is pressed in presses, and the sheets thus formed are dried in the sun and joined one to another, in declining order of excellence down to the poorest. There are never more than twenty sheets in a roll.

78. There is great variation in their breadth, the best thirteen digits, the “hieratic” two less, the “Fannian” measures ten, the “amphitheatric” one less, the “Saitic” a few less—and it is not strong enough for malletting—and the narrow “emporitic” does not exceed six digits. Beyond that, the qualities esteemed in paper are fineness, firmness, whiteness, and smoothness.

79. The Emperor Claudius changed the order of preference. The “Augustan” paper was too thin for writing with a pen; in addition, as it let the ink through there was always the fear of a blot from the back, and in other respects it was unattractive in appearance because excessively translucent. Consequently the vertical (under) layer was made of second-grade material and the horizontal layer of first-grade. He also increased its width to measure a foot.

80. There was also the “macrocolumn,” a cubit wide, but experience revealed the defect that when one strip tears off it damages several columns of writing. For these reasons the “Claudian” paper is preferred to all others; the “Augustan” retains its importance for correspondence, and the “Livian,” which never had any first-grade elements but was all second-grade, retains its same place.

81. Rough spots are rubbed smooth with ivory or shell, but then the writing is apt to become scaly: the polished paper is shinier and less absorptive. Writing is also impeded if (in manufacture) the liquid was negligently applied in the first place; this fault is detected with the mallet, or even by odour if the application was too careless. Spots, too, are easily detected by the eye, but a strip inserted between two others, though bibulous from the sponginess of (such) papyrus, can scarcely be detected except when the writing runs—there is so much trickery in the business! The result is the additional labour of reprocessing.

82. Common paste made from finest flour is dissolved in boiling water with the merest sprinkle of vinegar, for carpenter's glue and gum are too brittle. A more painstaking process percolates boiling water through the crumb of leavened bread; by this method the substance of the intervening paste is so minimal that even the suppleness of linen is surpassed. Whatever paste is used ought to be no more or less than a day old. Afterwards it is flattened with the mallet and gone over with paste, and wrinkles are again removed and smoothed out with the mallet.

In general this description corresponds well to what we may deduce from observation of existing papyri, but a few obscure points remain. The papyrus stalk was harvested and cut into sections, separating sections from the lower, the middle, or the upper parts. Pliny becomes a little confusing when describing the qualities resulting from these various cuts because the criteria for the qualities combined both the firmness and opacity of the writing material and the width of the sheets. The lower part of the stalk contains relatively more pulp between the fibers than the higher part, so the sections from the lower part of the stem produce a thinner papyrus sheet than the middle.¹¹ Because of the change of writing implements from reed brush (as used for Egyptian) to reed pen (*κάλαμος*) (as used for Greek and Latin), the very fine papyrus favored in pharaonic times was less attractive for the Greeks and Romans.¹² However, the qualities also differed in the width of the individual sheets.¹³ When the papyrus was sold in roll form, one asked for a roll of a given quality, and since the width of the twenty sheets was fixed, the length of the roll (i.e. twenty sheets of the width appropriate to that quality) was also known for every quality. The height, on the other hand, could vary. The somewhat confusing statement in 77 would give the impression that every roll contained all the qualities, which of course is nonsense. What Pliny means is that the best sheets of the quality in question were put first in the roll for the customer to see, rather as strawberries tend to be arranged for sale in the punnet.¹⁴

Another point that may need some explanation concerns the procedures of "Fannius's clever workshop." The posttreatment of Fannius has long excited commentators. Pliny does not tell us what the method involved and the reason may be that he did not know. The only thing Pliny *does* say is that the sheets or rolls were made larger. Fannius presumably guarded his professional secret. Lewis "speculates within

the bounds of reason” that Fannius may have added a third layer of better quality in order to produce a better writing surface.¹⁵ I find it difficult to see how this would enlarge the sheets. C. H. Roberts is quoted by Lewis for a similar idea, namely that the original papyrus was split and a layer of better quality was substituted as writing surface.¹⁶ Again, I do not see that this would enlarge the sheet/roll. Besides, such a procedure would have been difficult, not to say impossible. If I, too, may be allowed to speculate within reason, I believe that the only way to make an existing sheet or roll larger is to beat it with a mallet.¹⁷ This would inevitably make a dry papyrus sheet more brittle, but if the sheet was first moistened, it might be possible to increase its size by about 10 percent while making the paper thinner. The main risk when moistening papyrus, as all restorers know, is that the ink may run, which is not pertinent in this case. Anyone who has tried his hand at restoration will have noticed that the fibers regain much of their original flexibility when wet. In fact, I believe that in 78 Pliny is telling us that the paper was hammered out; he writes that the Saitic quality is even smaller *nec malleo sufficit* (and is not strong enough to be malletted). Why else would he mention the mallet in connection with the size?

Modern Experiments

The best-known modern experiments are those of Hassan Ragab, Cairo, and Corrado Basile, Syracuse. Both have produced papyrus of a useable quality, and both are sure they have recreated the ancient procedure, although it is obvious to anyone who handles their paper that something is wrong. The few examples I have seen of the Sicilian papyrus are very soft, white, and pliable but do not feel like papyrus at all. The Ragab papyrus feels like ancient papyrus but has the characteristic “grid pattern,” that is, the individual strips are seen very clearly, which is not the case with ancient papyrus. The problem is whether to place the strips side by side (with the risk of gaps forming between them as they dry), or placing them with an overlap, as Ragab did, thus producing the grid pattern. Pliny’s description (given earlier) does not mention any overlap, and the ancient papyri do not show any grid pattern. So we still do not know exactly how papyrus was made. In an attempt to find a solution, I. Hendriks proposed that Pliny’s *diviso acu* meant exactly that—with a needle—and that the papyrus stalk was unrolled by the so-called peeling method.¹⁸ The theory created a certain amount of interest at the time,¹⁹ but as I have shown, Pliny’s text contains too many counterindications. Besides, having tried it myself, I know that a papyrus stalk does not react kindly to being peeled. It breaks whenever one tries to “go around a corner” in order to open the next side of the triangle, and using a needle instead of a knife tends to tear the pulp. Besides, it has never been clear to me why using a needle would lead to the peeling method (see figures 1.1–1.4).

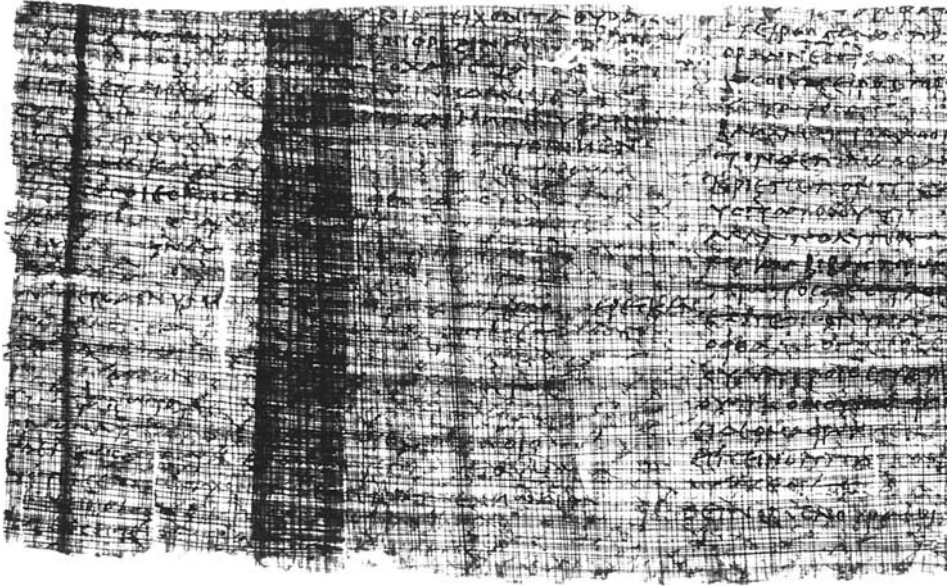


Figure 1.1. An ancient papyrus on the lightbox (*P.Sorb. inv. 2245*). There are no overlaps or bare patches between the papyrus strips. We clearly see a *koll  sis* somewhat to the left of the middle of the image. Photo by Adam B  low-Jacobsen.

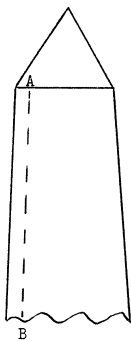


fig. 1

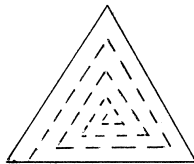


fig. 2

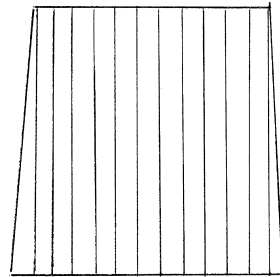


fig. 3

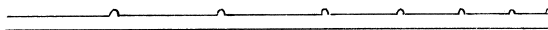


Figure 1.2. Diagrams from Hendriks's original article: 1. the initial cut into the triangular stem; 2. the peeling schematized on a cross-section of the stalk; 3. the peeled section; 4. a peeled section seen from the edge. Reproduced courtesy of Habelt Verlag.

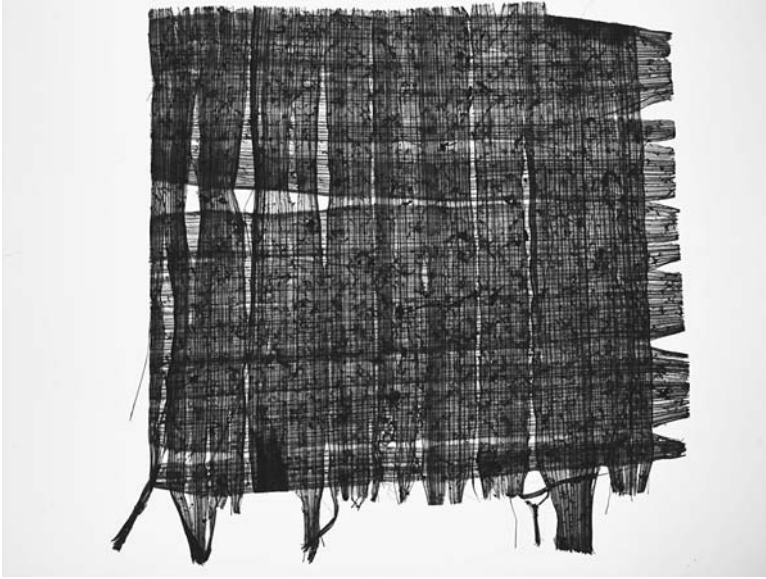


Figure 1.3. Papyrus made by Hendriks's peeling method. Overlapping between the strips has been avoided, but there are far too many holes in the sheet where the fibers have shrunk while drying. Photo by Adam Bülow-Jacobsen.

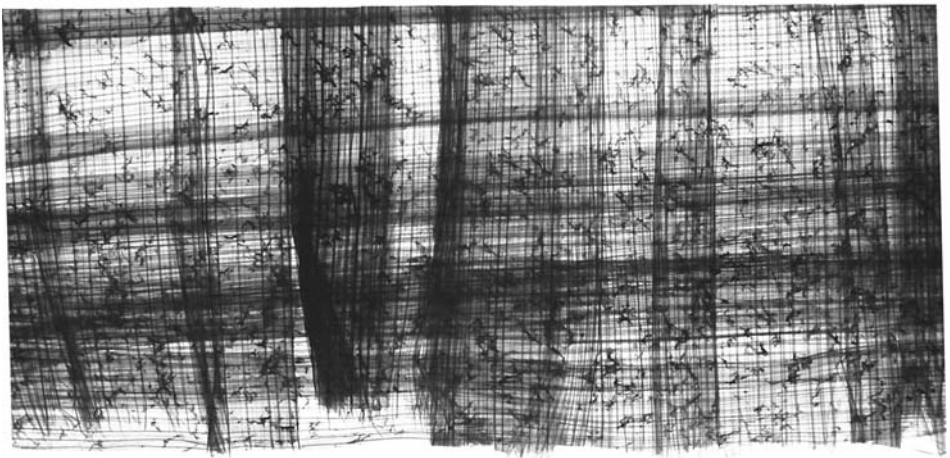


Figure 1.4. Papyrus made by H. Ragab. The overlaps between the strips are much too obvious. Photo by Adam Bülow-Jacobsen.

PARCHMENT

In Latin, parchment was called *pergamena* (n. pl.) or, much more often, *membrana* (f.). The most common Greek word is *διφθέρα*, but in the fourth century *περγαμηνή* (*διφθέρα*) and *δέρμα* were also used.²⁰ The word *parchment* comes from the name of the city of Pergamon in Asia Minor, and the ancients believed that the use of untanned skins originated there. Pliny quotes Varro as the origin of the following well-known story: King Ptolemy (V Epiphanes, 205–180 BCE) of Egypt and King Eumenes (II, 197–159 BCE) of Pergamon competed on creating the best library. To thwart his adversary, Ptolemy stopped the exportation of papyrus, and so the Pergamenes invented parchment.²¹ The story is unlikely to be true, however, for skins were used for writing long before that period: Aramaic parchment documents from Bactria from the fourth century BCE have been found (Shaked 2004), and documents on parchment from the early second century BCE have been found at Dura-Europos.²²

Contrary to papyrus, the method of making parchment is well known. Skins, mostly of calf, goat, or sheep, are cleaned, scraped free of hair, stretched while drying, and treated with alum and chalk.²³ Parchment, or vellum, as it is also called, is different from leather in that it is not tanned.

When looking at a parchment codex, it is a sobering thought that every double folio page represents a whole sheep or goat.

WOOD

Wood in several forms was regularly used for writing.²⁴ Wax tablets, wooden boards (whitened or not), and concertina leaves are the most important of these. In Greek a wooden tablet is called *πίναξ*, *πινακίς*, *δελτίον*, *δελτίδιον*, *πυκτίον*, or *γραμματεῖον*. In Latin *tabula* or *tabella* is used, or, for a wax tablet, *cera*.

Wax Tablets

The surface of a wooden board was gouged out, leaving a border at the edge, and the hollow thus created was filled with beeswax. The writing was scratched into the wax with a *γραφίς* (Latin *stilus*), which was a pointed pin of wood, bone, or bronze, whose opposite end was normally formed as a spatula for smoothing out when the scribe wanted to correct something.²⁵ Quintilian recommends writing on wax tablets, although older people may have difficulties because of the low contrast between the writing and the background. Writing on parchment with a pen and

ink, however, disturbs the flow of thought—so Quintilian says—because of the frequent need to dip the pen. Also, he says, it is easier to correct on wax tablets.²⁶ Wax tablets were clearly the everyday notebook for bookkeeping, business correspondence, and literary drafts. The problem is that the wax does not often survive, and the writing is then preserved only in the scratchings left in the wood underneath the wax.²⁷ If holes were drilled in the edge and a string passed through them, wax tablets could be arranged in a kind of codex. The “pages” between the first and the last tablet could be hollowed out and waxed on both sides.

Wax tablets were often written in lines parallel to the long side of the tablet. Thus, when they were bound together into a codex, the notebook would not open with a left and a right page, but with an upper and a lower page.

Wooden Boards

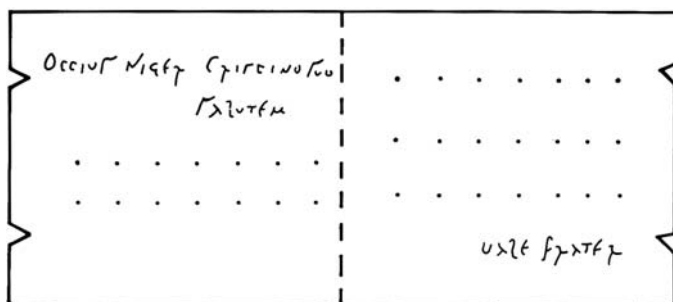
A wooden board covered with white paint presents a very good writing surface for pen and ink and must always have been used. We know that such boards, *σανίδες*, were used in Athens for the publication of official texts, either impermanent ones or before they could be carved in stone.²⁸

In Egypt such boards, whitened or not, are found occasionally, first of all as mummy labels; these are small wooden tablets (never whitened as far as I know) on which the name of the deceased was written in pen and ink or very occasionally incised. The label was attached to the mummy with a piece of string that passed through a hole in the label. Labels of similar design were also attached to sacks or baskets that were sent, for example, to people working away from their families (figure 1.5).

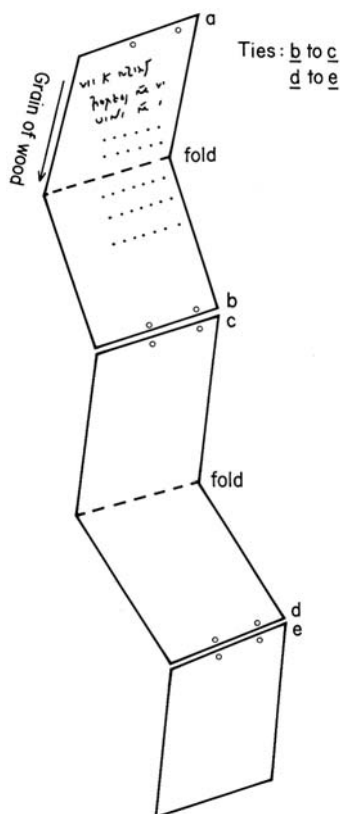
The most spectacular wooden tablets are the codices from the oasis of Dakhla.²⁹ These recent finds are unique in their genre so far and also interesting because of their perfect condition. They are sawn from a block of acacia wood, the



Figure 1.5. *Ἀμμώνιος Ἀμμωνίου*. Wooden label with its string intact (O.Claud. inv. 4271). Photo by Adam Bülow-Jacobsen.



Leaf-tablet: letter format.



Leaf-tablets, concertina format.

Figure 1.6a–b. A letter written on a folded leaf tablet and a concertina tablet. From *T.Vindol. I* 3839. Reproduced by permission of A. K. Bowman.

norm apparently being eight leaves from a block. The two outer leaves were sawn to a thickness of about 5 mm, while the inner leaves are 2–3 mm. The separated leaves were marked with notches by the carpenter, so that the original order could be maintained. Holes were drilled at the edge, and a string was passed through them. The boards are normally not whitened, but an inserted leaf in the Isocrates codex is. The text is written in ink in lines parallel to the short side of the tablets.

Wooden Leaf Tablets

This type of tablet is known from Vindolanda in northern England, where many have been preserved in anaerobic and humid conditions. Apart from ordinary wax tablets, the site also yielded these unique specimens. They are very thin slices (some as thin as 0.25 mm), but most are 1–2 mm thick and are of alder or birch. The surface, where it is preserved or can be reconstructed, is 16–20 cm by 6–9 cm. If such a slice were to be used for a letter, the lines of writing would normally be parallel to the longest side (thus parallel to the grain of the wood) and in two columns. The leaf was then scored lightly in the middle and folded, and it could be closed and sealed by a string drawn through holes near the left and right edges. The address could be written on the outside.³⁰ If the text was an account, the writing would often be parallel to the short side of the leaf (i.e., across the grain of the wood). The tablets were again scored and folded, but if the account was a long one, several such diptychs could be tied together to form a “concertina list” (figure 1.6).³¹

OSTRACA

Potsherds were everywhere in the ancient world, since pots, although they can be reused, cannot be recycled like glass or metal once they are broken.

We must distinguish several types of ostraca (in the modern usage of the term): (1) the Athenian type; mostly black glaze (i.e., red-figure) pottery on which ostracisms were written by scratching through the black glaze so that letters are shown by the pink pottery below; (2) the ancient Egyptian type of flat limestone with writing in ink; (3) sherds of broken pots written on with pen and ink (or brush and ink for the demotic ones); (4) whole pots inscribed with the contents, the origin, the name of the recipient, or similar information.

The regular Greek word for *ostrakon* is ὄστρακον, whereas Latin does not seem to have a word that covers all the meanings of the Greek term. *Testa* or *testula* are used to translate ὄστρακον in the Athenian sense (type 1 above) of a voting ballot. *Ostracum* is found very occasionally in texts from Egypt.



Figure 1.7. Athenian ostrakon (Kerameikos Museum). Photo by Adam Bülow-Jacobsen.

Ostraca of the Athenian type are of course preserved under most climatic conditions, while the other two types, even if the ostrakon itself is preserved, need a relatively dry climate if the ink is to remain legible (figure 1.7).

Ostraca of the Athenian type do not seem to have been used for purposes other than balloting. Type 3 ostraca, on the other hand, were used for most kinds of writing in Egypt, although they were considered a surrogate for papyrus.³² Obviously, ostraca were suited only for short texts and could not easily be archived, nor could they be bound together if more than one was needed for a longer text, and letters on ostraca could not be sealed to protect the text from prying eyes. In addition, they were much heavier than papyrus. Nevertheless, all these disadvantages were outweighed by one important advantage: Ostraca were completely free. In many places one only had to bend down and pick them up. However, in places like Mons Claudianus, where stonemasons were employed, we sometimes find ostraca that were prepared for writing with much more care. In a suitable sherd, holes were drilled to mark the circumference of the desired ostrakon, and the worker then carved out the writing ostrakon using these holes as a guide. In this way one could obtain a pleasant oval or a rounded square. Edges were then beveled, and the writing surface often smoothed, presumably by polishing it in sand. Such ostraca were sometimes washed and used again, but this shaping-procedure was exceptional and is not found in sites where military personnel were predominant (figures 1.8 and 1.9).

The best-known use of Greek and demotic ostraca was for tax receipts, especially in southern Egypt, but there is mounting evidence of their use for all kinds of writing in the desert. In particular, the many Roman sites in the Eastern Desert that have been excavated during the last twenty years continue to produce large amounts of ostraca and very few papyri. This is not difficult to explain: Provisions of wine, salt fish, olives, oil, and even pickled meat and fish for the people who lived and worked in the desert arrived in jars, mostly the standard Egyptian amphora of about 6½ liters with pitch on the inside, which may have been reused on site but were mostly broken (figure 1.10). So there was never any shortage of ostraca. On the other hand, papyrus had to be brought from the valley.



Figure 1.8. Ostrakon from Mons Claudianus in preparation. Here the craftsman has chosen a piece of an amphora that already has an inscription. The project appears to have been abandoned because the sherd broke. Photo by Adam Bülow-Jacobsen.

Letters on papyrus that had arrived from the valley must also have been a temptation when one was in need of kindling. In Coptic, ostraca were also used for tax receipts, but the great mass of surviving ostraca, which come from monasteries, contain letters. It is striking how few Arabic ostraca have been found so far.



Figure 1.9. A good example of a shaped ostrakon (*O.Claud.* III 522, natural size). Photo by Adam Bülow-Jacobsen.

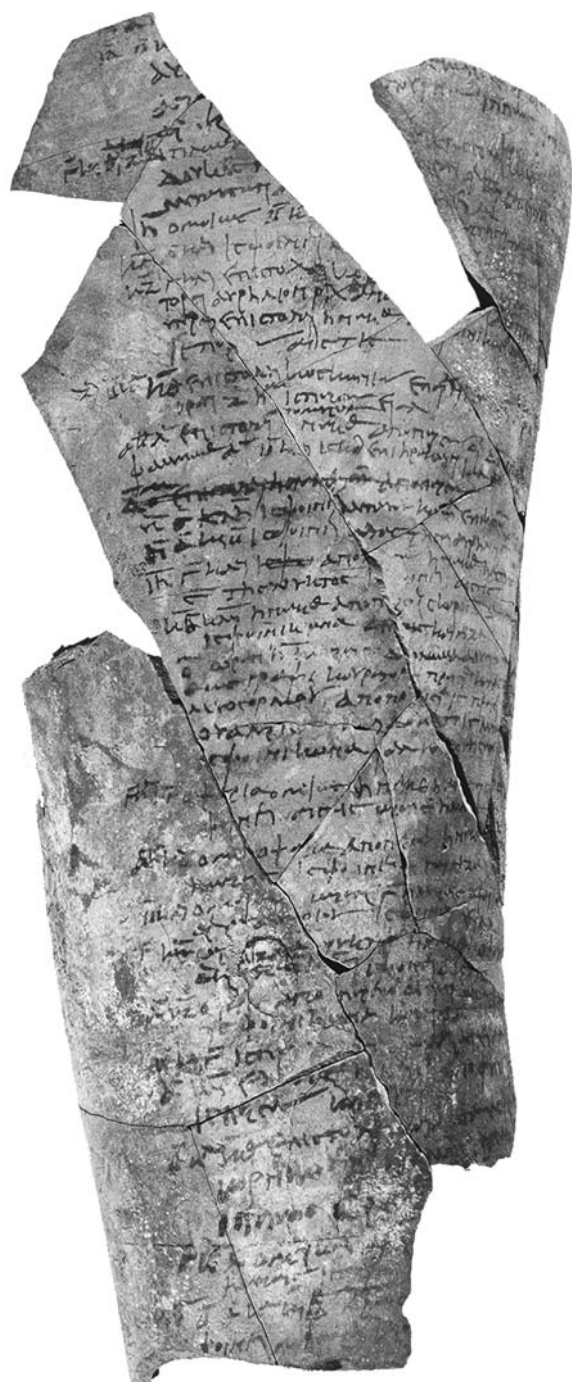


Figure 1.10. A giant ostracon (40.5 cm tall) using an almost complete amphora to write a register of post riders. (*O.Krok. I 1*). Photo by Adam Bülow-Jacobsen.

INK (μέλαν, ATRAMENTUM)

In antiquity, ink was what we now call India ink: soot with a little gum arabic suspended in water.³³ Both in China and in pharaonic Egypt ink was kept in blocks, and the writing brush could be inked directly on the block if a little water (spittle) was applied to its surface. Since Greek and Latin were written with a calamus (a reed pen), which had to be dipped into the ink, the scribe had to prepare a quantity of ink every day.³⁴ The earliest occurrence of metallic ink is from the third century BCE,³⁵ but from the second century CE and particularly from the third century onward, the mordant metallic inks make their appearance. These are made from powdered gallnuts, a metallic salt (iron or copper), gum arabic, and water. While the India inks do not fade, iron-gall inks turn from black to brown with time. They may fade to almost the same shade of brown as the papyrus and become very difficult to read. The mordant quality of iron-gall ink makes it more penetrating, but may also eventually damage the papyrus or parchment.

BOOKS IN ANTIQUITY: THE VOLUMEN AND THE CODEX

Book (*liber*, βιβλίον), as far as the ancients were concerned, meant a roll (Lat. *volumen*). Although the codex format was known at a fairly early time, it was not until the second century CE that it really appeared in Egypt, but already in the fourth century the majority of literary works were written on codices.

The situation is well illustrated by Ulpian (†228 CE) commenting on Sabinus (first half of the first century) and Gaius Cassius (mid-first century). The discussion is about what constitutes “a book” when donated in a will:

Under the term books (*librorum appellatione*) are included all rolls, whether of papyrus or parchment or any other material. And even if they are of rind of the lime or linden tree (as made by some) or of some other bark, the same must be said. But are they due if they are in codex-form, either of parchment or papyrus or ivory or some other material, or of waxed-tablets? Let us see. Gaius Cassius wrote that [loose] parchments are due also, when books have been bequeathed. Therefore, it follows that the others too will be due, unless this is contrary to the testator’s intentions.³⁶

So, in Rome, in the first century of our era, a jurist’s response was required to decide whether a codex was a book. Yet, when Ulpian wrote in the early third century, the codex was gaining steadily on the roll and in another century would



Figure 1.11. Bookroll with calamus and inkwell and polyptych with stylus. (From *Praedia di Iulia Felix*, Museo Nazionale, Napoli, inv. 8598). Photo by J.-P. Brun.

replace it almost completely. Why would that be ? Before trying to answer this question, we must look at the anatomy of the roll and the codex respectively.

The Bookroll

The roll was the normal unit in which papyrus was produced and sold.³⁷ As we have already seen from Pliny *HN* 13.77, the papyrus sheets were pasted together, twenty at a time, and sold as rolls. When a scribe wanted to write a document, he cut a sheet of an appropriate size from the roll, but when writing literature, the scribe presumably used the roll as it was. If the length of the work he was transcribing did not correspond to the length of the roll—and there was no reason it should—he would add on or cut off in order to obtain the right length.

As Pliny has told us, papyrus was commercialized as rolls made up of sheets pasted together. The reason for this was probably that the individual sheets would each present four edges, and the edges are the weakness of papyrus, always presenting a risk of fraying. Pasted together into a roll, the twenty sheets would present only four edges in all, and additional measures were taken to protect the ends. At the beginning of the roll was the *protokollon*, an unwritten sheet, while at the end there was probably the *ὀμφαλός* or *umbilicus*, the wooden stick around which the papyrus was rolled, but even if no *umbilicus* was present, the end was protected inside the roll. The sheets of the roll were pasted together in such a way that the left sheet was always over the right one in any given join. The joins are called *kollêseis* (singular *kollêsis*). If the roll was to be used for demotic writing (from right to left), it was turned 180 degrees. In this way the writer would always write “downward” over the join and feel a minimum of resistance when passing over a “step.” The face used first was always the inside of the roll, where the fibers



Figure 1.12. A muse reading from a bookroll (Attic red-figure lekythos from ca. 435–425. Louvre, Collection Pozzi, inv. CA 2220). Photo by RMN/H. Lewandowski, courtesy of the Musée du Louvre.

were parallel to the length of the roll and to the lines of writing. This is not because it is easier to write with the fibers rather than across them, nor is it normally because the surface on the “back” is less well suited for writing. Given a fragment of papyrus without original edges, writing, or *kollêseis*, papyrologists (even experienced ones) will have trouble telling which side is the front and which the back. When a *kollêsis* is present on a fragment, it is easy to see which side is the front and which side is the back since the *kollêsis* on the front makes a break in the fiber pattern. However, it is much more difficult to see the join from the back, where the edge of the sheet follows the same direction as the fibers (“vertical”). The reason for having the “horizontal” fibers on the inside and the “vertical” on the outside was probably that vertical fibers would be squeezed together and risk detachment if they were on the inside.

The writing would be on the inside, front, in columns (*σελίδες*, *paginae*) unless the document was written *transversa charta* (i.e., “having turned the papyrus”), in which case it would present one long column running down the roll with lines of writing across the fibers (figure 1.13).³⁸

For practical reasons, a bookroll could be written on one side only. When we find, as we often do, that there is writing on both sides of a papyrus, we are dealing with an example of reuse. Quite often a roll would be turned inside out when the primary writing was no longer of interest, and the back could be used for further writing. Of 3,365 literary rolls listed in the *LDAB*, more than 400 are examples of literature written on the back of documentary rolls that have been turned over. There are also several examples of demotic literature that was written on the back of Greek rolls, although demotists have a tendency to consider the demotic text as the “recto” or the front, regardless of the fiber direction and other evidence.

The height of the roll depended on the constituent sheets, not, as we have seen, on the quality of the papyrus, and ranges from 15 cm to more than 40 cm (a height of 20–30 cm is normal). The length of the bookroll was theoretically unlimited, and Ulpian mentions, for the sake of the argument, the possibility of getting all forty-eight books of Homer onto one roll.³⁹ Ancient Egyptian rolls could be very long (the longest known exceeds 40 meters), but most of these very long rolls are ornamental copies of the Book of the Dead, meant to be buried with the deceased, not to be read in this world. Greek rolls were no longer than 10–11 meters and generally much shorter, but few complete Greek rolls exist, and the original length of a fragmentary roll is mostly a theoretical projection on the basis of letters per line and lines per column calculated against a known text.

To modern people who are used to the codex format, the disadvantages of the roll seem many: It does not readily contain more than part of a prose work, like, for example, a book of an historian; it has to be rolled back when read; and it is difficult to refer to a passage. Besides, the roll is fragile. The edges fray, especially the lower edge, which may rub against the reader’s clothing, and the roll is easily torn.

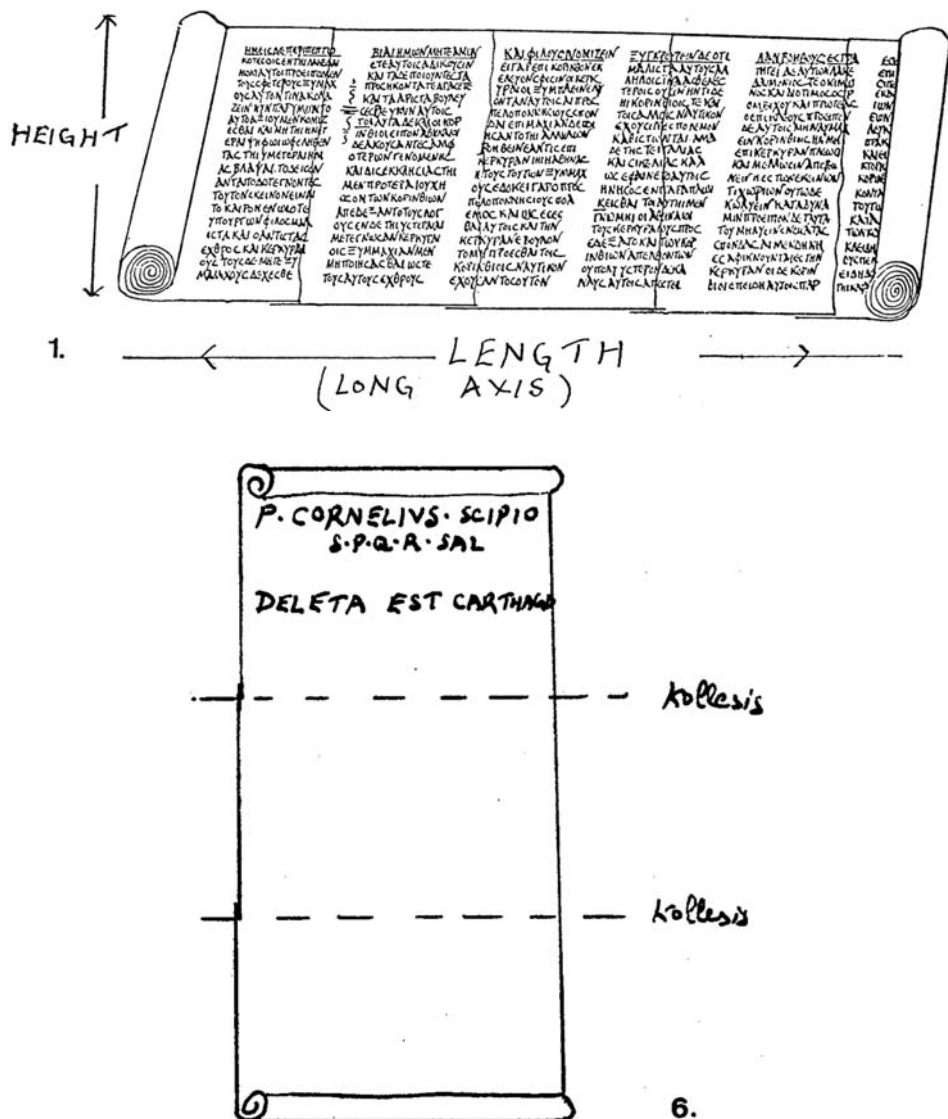


Figure 1.13a–b. Drawings of, respectively, a bookroll and a “rotulus” written “transversa charta” (W. E. H. Cockle and E. G. Turner in Turner 1978, 14, 33).

Parchment sheets can be made into rolls, the best-known examples being the Hebrew Torah rolls. However, the one example of a parchment roll that I know and which must originate from Egypt is clearly an amateurish creation.⁴⁰ Altogether I know of eighteen parchment rolls in Greek or Latin, of which seven are Old Testament texts that were clearly influenced by the Torah format; two are New Testament; and the remainder are a few fragments of classical authors. However, none of these were unquestionably written in Egypt, and most of them were

probably not. I believe that these texts may give us a glimpse of what books in the Pergamon library looked like.

The Codex

To understand the development of the codex,⁴¹ consider that, if the material is not papyrus but rather tablets or parchment, the bookroll is not a natural result. Neither tablets nor parchment have frail edges that need protection, and they are more difficult to concatenate. Parchment rolls are sewn together, not glued. The “concertina” tablets from Vindolanda (mentioned earlier) have been regarded as precursors of the codex but could also have been an attempt to make a roll. Wooden or waxed tablets might also have been concatenated like sheets in a roll.⁴²

The format adopted when a longer text was to be written on tablets or parchment was the codex (*caudex*, *pugillares*, *membranae*), which began its career far from the bookroll’s world of classical literature. Letters, drafts, and accounts were routinely written in this form, not least, of course, outside Egypt, where papyrus was less easily obtained.

A natural way to link tablets together is to bore holes in one edge and bind them with a piece of string or a leather thong. This way, both sides of the tablet are useable, the inner surfaces are protected, the “book” can be sealed if it contains a letter, and it is easily transportable. Such books, with as many as fifteen leaves (thirty pages), are well known from a number of places in the Roman Empire. The special case of the Dakhla tablet books has already been described, but waxed tablets were undoubtedly more common.

Latin authors also mention notebooks made of parchment, called *membranae*.⁴³ The point of departure here would be a large sheet of parchment that was folded and cut at the edges, precisely like modern printed books before the

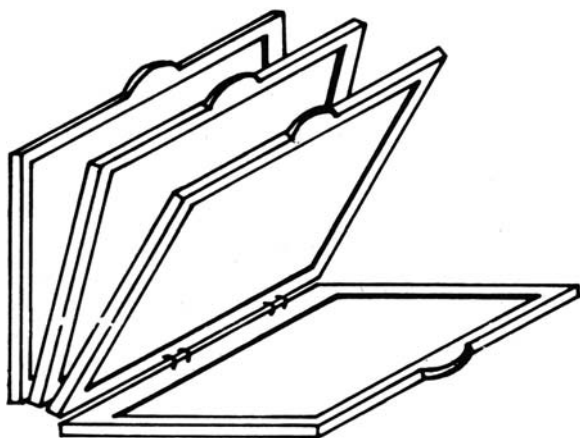


Figure 1.14. Reconstruction of a polyptych from “Villa dei papiri” in Herculaneum. From Capasso, “Le tavolette della Villa dei papiri ad Ercolano” in Lalou, ed. (1992). Reproduced courtesy of M. Capasso.

bookbinders began to do it for us. A sheet folded once in each direction will produce four leaves or eight pages, a “quarto” format. Folding once more makes an “octavo” format of eight leaves, and so on. These folded sheets, called “quires” in English (derived from Latin *quaternio* [a set of four]), are then sewn together with other quires to form a codex. By following this procedure one automatically obtains the aesthetically pleasant effect that any opening of the finished, cut book presents two pages of “flesh side” or two pages of “hair side.”

All this is quite different, however, if you want to make your codex of papyrus, as would be natural in Egypt.⁴⁴ Here the starting point is the roll made of sheets pasted together. This roll must be cut into sheets twice the width of the desired page and folded once in the middle. The early papyrus codices were often made as “single quire” codices, in which the cut sheets were placed in a pile (normally all with the front up), which was folded in the middle. This method put great stress on the outer leaves and produced an irregular and fragile front edge. Every possible method seems to have been tried, and, besides the single-quire codices, there are papyrus codices that range from one to at least five sheets per quire. Eventually, however, a preference for the *quaternio* (four sheets per quire) was established.⁴⁵ The principle of facing pages having the same surface was, as we saw, automatic with parchment, but with papyrus it was not. Apart from the single-quire codices, a practice seems to have developed in which the outside leaf in a quire normally had horizontal fibers and the following ones alternated, so that an opening always showed two facing pages with the same fiber direction. Sometimes the codex is well enough preserved to permit reconstruction of the roll from which the leaves were cut (figure 1.15).

The competition between the roll and the codex lasted a couple of centuries but was eventually completely won by the codex. It seems that the Christians took to the codex with alacrity, perhaps because the roll was associated with classical elite, literary culture, while the first Christians were mostly humble people who were more used to accounts and business letters than to Homer and Aeschylus. Presumably they also wanted their books to be different from the Jewish Torah rolls. The codex was also easier to refer to, simpler to transport, and more economical since the back of the sheet could also be used. As early as the second century, when the struggle had just begun, only about 4 percent of 1,772 papyri of classical literature were codices, whereas 75 percent of 37 Christian works were codices. In the third century, 13 percent of classical texts were written in codex form, while 75 percent of the Christian works were codices. In the fourth century the codex had already claimed 64 percent of classical literature and 81 percent of Christian. By the fifth century 90 percent of classical and 95 percent of Christian literature was in codex form (table 1.2). The era of the literary bookroll had definitely ended.⁴⁶

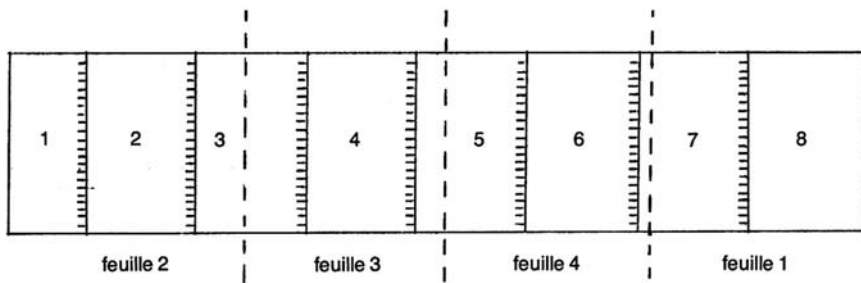
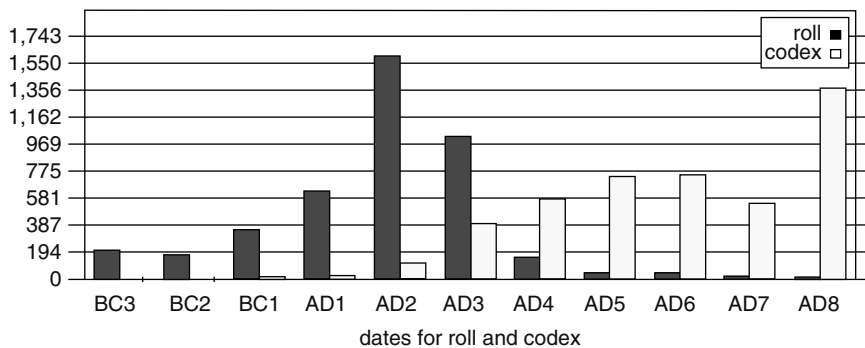


Figure 1.15. A reconstruction of the roll from which the first four sheets for a codex were cut. As is evident, no account is taken of the original *kollêseis*. From J. Scherer, *Extraits des livres I et II du Contre Celse d’Origène d’après le Papyrus no. 88747 du Musée du Caire*, Cairo (1956).

Table 1.2. The replacement of the volumen by the codex



Source: *Leuven Database of Ancient Books*, <http://www.trismegistos.org/ldab/>.

NOTES

- 1. Brashear (1997).
- 2. See, for example, Pliny *HN* 13, 69.
- 3. <http://www.rzuser.uni-heidelberg.de/~gv0/gvz.html>.
- 4. <http://www.trismegistos.org/ldab/>.
- 5. Alain Delattre, *Banque de données des textes coptes documentaires*, <http://dev.ulb.ac.be/philobad/copte/base.php?page=rechercher.php>.
- 6. Theophr. *HP* 4, 8, 3; Pliny *HN* 13, 70.
- 7. Täckholm (1974, 790).
- 8. Ragab (1980, 52–53). Contrast, however, Ragab (1988, 514–515), who states that the plants in his plantation came from the Sudan. Moreover, Basile (1998, 29) claims that, around 250 BCE, Hieron II had transported the plant from Egypt to Sicily, where it was used only for cordage since the Sicilians did not know the secret of paper making.

9. Thompson (1965, 23): “His description applies specially to the system of his own day; but no doubt it was essentially the same as had been followed for centuries.”

10. This translation is based on a correction of the text, which I propose with some hesitation. The manuscripts have *diviso acu* (divided by a needle). Attempts to make sense of this has led to various interpretations, such as Hendriks (1980) (discussed later) or Łukaszewicz (1997), but all difficulties would disappear if we were to accept *diviso ac<c>u<rate>* and assume a lacuna in the archetype.

11. Bülow-Jacobsen (1976).

12. Tait (1988). See also Clarysse (1993). Delange (1990) gives examples of demotic papyri written with carbon ink and a reed brush, while, in the same document, the Greek subscription is written in metallic ink with a calamus.

13. Johnson (1993).

14. Cf. Lewis (1974, 53n27).

15. Lewis (1989, 21–22).

16. Lewis (1974, 45n13).

17. Lewis (1989, 22): “How did the ‘clever workshop’ make the papyrus thinner? By malleting?”

18. Hendriks (1980).

19. See, for example, Turner (1980) but also Lewis (1981).

20. In the sense of “parchment book,” *δέρμα* appears in P.Ashm. inv. 3 (fourth century), republished by Otranto (1997). I thank Simona Russo for this reference.

21. Pliny *NH* 13, 70.

22. Roberts and Skeat (1983, 5–7) do not believe that the story can be true; they cite arguments from a thesis by Richard R. Johnson, “The Role of Parchment in Greco-Roman Antiquity” (PhD. diss., University of California, Los Angeles, 1968), which I have not seen.

23. For references to more detailed descriptions, see Turner (1968, 9 and 9n41).

24. Lalou (1992) contains articles by experts on most kinds of tablets.

25. Quintilian (*Inst. Or.* X 4, 1) even claims that the erasing capacity of the stylus is at least as important as its capacity to write.

26. Quintilian, *Inst. Or.*, X, 3, 31.27. See, for example, *T.Vindol.* = Speidel (1996).

28. See, for example, Andokides, *περὶ τῶν μυστηρίων* 83; Lysias XXVI 10.

29. See J. L. Sharp, “The Dakhleh Tablets,” in Lalou, ed. (1992, 127–148), and Sharp’s very full codicological descriptions in *P.Kellis* IV pp.17–20, and *P.Kellis* III pp.9–21.

30. A perfect example is *T.Vindol.* II 310 (figure 1.6a). A similar type of folded leaf tablet is *P.Yadin* 54.

31. See *T.Vindol.* I 4. (figure 1.6b).

32. Cuvigny et al. (2003 II 470–473) present a more thorough analysis of the use of ostraca than the space here permits. There are also quotations from unpublished ostraca that present excuses for not writing on papyrus.

33. See also Cockle (1983, 150).

34. *τὸ μέλαν τρίβειν* (“to grind the ink”); see, for example, Demosthenes, *De Corona* 258.

35. See Delange (1990).

36. Justinian, *Digesta* 32.1.52, trans. A. Watson.

37. The most recent and comprehensive description of the bookroll is Turner (1978).

38. This was apparently customary when writing to the senate in Rome; cf. Suetonius, *Div. Iul.* 52.6.

39. Justinian, *Digesta*. 32.1.52.1.1. On a conservative estimate such a roll would have been a monster of about 140 meters.
40. Chester Beatty Library, inv. W 145. See the description in Quecke (1975). See also *P.Köln* IV 174, which is part of the same roll and where the full bibliography may be found.
41. Greek $\kappa\omega\delta\iota\xi$, but no proper Greek word seems to have existed.
42. This format is in fact found in Nimrud, where waxed ivory tablets of the late eighth century BCE were hinged together to make a concertina (Wiseman 1955; Howard 1955). These waxed tablets were made of wood and ivory and contain writing on both sides. Wiseman (1955, 6–8) appears to assume that both the front and the back were used for the same text.
43. Passages illustrating books and reading are conveniently collected in Kenyon (1951: 121–134).
44. To me, there is little doubt that the papyrus codex is derived from the parchment codex, but the great specialists on the matter, Roberts and Skeat (1983), see it differently. Two chapters of their book are devoted to various theories about both this and the Christian preference for the codex.
45. For makeup and statistics on the early codex see Turner (1977).
46. *LDAB*.

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CHAPTER 2

THE FINDS OF PAPYRI: THE ARCHAEOLOGY OF PAPYROLOGY

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FROM “SMASH-AND-GRAB” JOBS TO SUBTLE STRATIGRAPHY

The Time of the Consuls

Until Napoleon Bonaparte’s expedition to Egypt (1798–1801), the papyri had slumbered undisturbed in their tombs and the ruins of ancient settlements. There were only rare exceptions, like the roll that came to be known as Charta Borgiana (reputedly found with fifty others), which was bought by an anonymous Italian merchant at Giza in 1777.

Greek papyri completely escaped the attention of the scholars of the French expedition, who brought back only papyri written in Egyptian. This

military campaign, however, precipitated Egypt's entry into the modern world. The expedition left behind political chaos, out of which emerged Mohamad Ali, who reigned from 1805 to 1848 and opened the country to Western influence. France and England then entered into a devious power struggle. Merchants, diplomats, spies, adventurers, tourists, engineers, and technical counselors were everywhere in Egypt. They discovered an archaeological El Dorado and became antiquities hunters and dealers. Some of them (not least the consuls) financed excavations, whether from passion or greed, and assembled fabulous collections, which they sold in Europe, especially to museums.¹

Frédéric Cailliaud, a French mineralogist who had been sent by Mohamad Ali to find the ancient emerald mines in the Eastern Desert, describes the feverish atmosphere in Thebes in 1818: "The whole area of the ruins of Karnak was covered with demarcation-lines that separated French, English, Irish, Italian, &c. excavations from each other. European ladies and other travelers ran around in the ruins and in the catacombs. All were trying to find or buy antiquities, and nobody thought of the heat and the fatigue" (Cailliaud 1821, 82). The Greek papyri found during this period are collection pieces and generally Ptolemaic.

This archaeological fervor did not prevent the destruction of other antiquities. At Antinoopolis and Hermopolis, the limestone and marble monuments, known today only from engravings in the *Description de l'Égypte*,² became quarries: Blocks were reused in modern buildings or disappeared into the lime kilns. During his journey in Egypt in 1828–1829, Champollion was horrified to see that the monuments no longer existed.

In 1835, under the influence of Egyptian thinker Rifa'a Al-Tahtawi,³ Mohamad Ali ordered the suspension of all excavations in Egypt and forbade the exportation of antiquities. This order was ineffectual, however, because the demand was too great and the authorities were indifferent to the plundering.

In 1858 the French obtained from Viceroy Saïd Pasha permission to create a *Service de conservation des antiquités de l'Égypte*, or Conservation Service. The idea came from Auguste Mariette, who had become famous in 1851 by finding the Serapeum of Memphis. Mariette was sincerely concerned about the pillaging of antiquities, but for him the Conservation Service was also a means of staying in Egypt. Although he was assistant conservator at the Louvre, he did not see himself as an armchair scholar. For France, this "archaeological protectorate," which the French managed to maintain until 1952, was a low-cost way of acquiring more influence in Egypt.⁴ As founder and first director of this agency, Mariette put an end to the unbridled pillaging and to a large extent managed to acquire for the Service the sole right to excavate. This practice enriched the holdings of the Egyptian Museum, which he founded.

***Sebâkh* and Cartonnage: The Papyrological Excavations**

The First Fayyum Find

Mohamad Ali had begun an ambitious program of modernization in Egypt, which was carried on by his successors and much encouraged by the English, who took over administration of the country in 1882. Mohamad Ali's program had important consequences for the history of papyrology. First of all, Egypt's irrigation system was completely restructured. The traditional basins, in which water from the floods was retained in order to soak the soil, were partly replaced by canals that made perennial irrigation possible. This brought about a significant extension of the cultivable land and resulted in double or even triple harvests. Cash crops were introduced, the most important of which were sugarcane and cotton. Already at the end of the nineteenth century, archaeologists began worrying about the deterioration of archaeological sites that came to be surrounded by cultivated land. In addition, archaeologists and scholars are now concerned about an unforeseen consequence of the building of the Aswan high dam (inaugurated in 1969): the rising water table. But the archaeologists of the late nineteenth century also had to contend with the much more pressing competition from the *sebbâkhîn* (*sebâkh* diggers) and the powerful economic interests that made the peasants excavate for *sebâkh*.

In Egyptian Arabic, *sebâkh* is the powdery, saltpeter-rich earth that is characteristic of Egyptian ruins and is used for manure. *Sebâkh* consists of decomposed organic matter mixed with the fine clay that results from the destruction of mud-brick architecture. In addition, the mud bricks were also salvaged in order to fire them (Bailey 1999, 211). From the 1830s on, the peasants (*fallâhîn*) were also put to work digging for *sebâkh* in the mounds (*kimân*, singular *kôm*) of archaeological sediment into which the Egyptian climate had transformed ancient settlements. These were sometimes as much as twenty meters high. In 1910 an official inventory of the *kimân* from which *sebâkh* could be extracted numbered 545; most of these were located in the delta, many in Middle Egypt, and a few in Upper Egypt, which was less populated (Bailey 1999, 213). The industrial crops were not the only "consumers" of *sebâkh*, which was also collected in order to extract the saltpeter and produce gunpowder. In the second half of the nineteenth century, large gunpowder factories were constructed next to Antinoopolis and Hermopolis, and the mud-brick city walls of Antinoopolis were swallowed up.

Whole buildings and everything in them were carried off by the camels and donkeys of the *sebbâkhîn*, who inevitably also found marketable antiquities. During the winter of 1877–1878 they attacked the *kimân* *Faris*, the ruins of the ancient metropolis of the Arsinoite nome. Papyri were found by the thousands, constituting the "first Fayyum find," most of which was bought by the Austrian dealer and collector Theodor Graf, who sold them in 1884 to Archduke Rainer. The first

Fayyum find marked the beginning of illicit excavations in the whole province, and the antiquities market in Cairo was swamped by enormous quantities of Fayyum papyri. In the last decade of the nineteenth century the site of Soknopaiou Nesos was plundered by both the *fallâhîn* and two local antiquarians, who for some time had been granted exclusive “rights” to these excavations. No papyri from the Fayyum or the neighboring Herakleopolis and Hermopolis found in the urban ruins during this period are older than the Roman principate. The earlier levels of occupation had been covered by the Roman and Byzantine levels, and the rising humidity had destroyed the earlier, lower levels, which were thus less likely to yield papyri.

The Excavations for Papyri

In 1882 nationalist troubles led to a British military occupation of Egypt. England took charge of the country’s administration, with the result that every Egyptian minister was under the control of a British counselor. The Egypt Exploration Fund (EEF), a private, learned society whose purpose was to finance excavations in Egypt, had just been created.⁵ Unlike Mariette, his successor, the French Egyptologist Gaston Maspero happily granted authorizations for excavations, and he quickly persuaded the Egyptian government to divide the antiquities that excavators brought to light between the excavators and the Egyptian Museum, of which he was also the director. The EEF’s first project, directed by Swiss Egyptologist Edouard Naville, was initiated in 1883 at Tell el-Masquta, ancient Pithom. The choice of a place mentioned in the Scriptures, in order to prove the historical validity of the Bible, was meant to attract donors. When Naville was temporarily unavailable the following year, the EEF sent W. M. Flinders Petrie, who was to excavate in Egypt until 1926.

A bitter rivalry grew up between the EEF’s two prime excavators. Petrie had received an unconventional education and had developed a passion for measuring and surveying; his archaeological recordings and attention to the humblest objects were indications of the coming of modern archaeology. On the other hand, Professor Naville, a distinguished academic, was interested only in inscribed blocks and, when on site, spent part of every day in his tent. When Petrie accused him of not marking the findspot of every object, he defended himself by saying, “You might as well make a plan of the position of raisins in a plum-pudding” (Drower 1985, 283).

In 1889, in the Ptolemaic cemetery of Gurob, Petrie found mummies covered in cartonnage of demotic and Greek papyri.⁶ From then on, Ptolemaic cemeteries were systematically plundered, but the raiders were frequently disappointed because humidity had often affected the cartonnage in such a way that it turned to dust at the slightest touch. In 1902–1905 the tombs excavated by O. Rubensohn at Abusir al-Malaq produced cartonnage from both the first century BCE and the reign of

Augustus. It contained papyri from the Herakleopolite nome, as well as Alexandria, a great rarity. Among the latter is a royal ordinance that perhaps carries Cleopatra's signature, which made headlines in 2000 (van Minnen 2000).

In 1893 a young Oxford classicist, Bernard P. Grenfell, came to Egypt for the first time. He worked with Petrie in Koptos, bought some papyri (the future *P. Grenfell*), and understood the importance of excavating postpharaonic sites in order to save as much as possible from the *sebbâkhîn*. With support from Petrie he obtained financing for excavations in the Fayyum. The excavations of 1895–1896, which he undertook with D. G. Hogarth and A. S. Hunt, were the first papyrological excavations made by Western scholars. The EEF also financed Grenfell and Hunt's first campaign at Oxyrhynchus (1897). After three weeks of work in the Roman necropolis and the much-destroyed ancient town, they decided to concentrate on the enormous, ancient rubbish mounds. During their four months of excavation there, Grenfell and Hunt found two thousand documentary and three hundred literary texts. This first season (see chapter 3) was such a success that the EEF immediately created the Graeco-Roman branch, which was intended to finance the papyrological excavations and the publication of the texts they brought to light.

The so-called Oxford Dioscuri immediately acquired a following. In 1899 the great Ulrich Wilcken excavated at Herakleopolis. Unfortunately, the papyri he found there went up in smoke when the ship on which they had been sent to Europe burned in the harbor of Hamburg. From 1902 to 1906 Otto Rubensohn excavated on behalf of the Berlin museums at Hermopolis (al-Ashmunayn), where he had to contend with competition from the Italians, who excavated there until 1909. However, their harvests were modest compared to that of Grenfell and Hunt at Oxyrhynchus. The *sebbâkhîn* had already made great finds at Hermopolis before organized excavations began.

Sebbâkhîn vs. Archaeologists

The competing economic interests were too important to allow the Antiquities Service to curb the relentless destruction of the *kimân*. At the end of his campaign at Antinoopolis in 1913, J. de M. Johnson noted that all attempts to protect the *kimân* would meet with opposition from the ministries of the interior, finances, agriculture, and public works (the Antiquities Service had been part of public works since 1883) (Johnson 1914, 173*m*). Against such powers, the resources of the Antiquities Service counted for nothing, but at least it tried to limit the extraction of *sebâkh*. The first decree, inspired by Maspero, was issued in 1901, and the following ones were in the same spirit: *Sebâkh* digging was subject to authorization and must be carried out under surveillance, and the antiquities found must be handed over to the service.

But worse was in store: the great landowners began to use railways to transport the *sebâkh*. In 1910 Maspero complained, "Until today, the method of transporting the



Figure 2.1. Karanis. The northwestern corner of the area excavated by the *sebbâkhîn*. Photo by G. R. Swain. Kelsey Museum Archives, 5.1707. Courtesy of The Kelsey Museum, University of Michigan.

sebâkh on camels and donkeys allowed the farmers the time to sift the manure and consequently to collect what they found in it, so that we received our part. With the present procedure the manure is loaded directly into the dumping wagons. Precious objects are crushed or broken, papyri are reduced to smithereens and only large pieces resist destruction” (Maspero 1910, 321). In fact, as early as 1884 a dump wagon track laid by a sugar company led right into the heart of the ruins of Hermopolis. In 1925 at Karanis, the American excavators from the University of Michigan had to come to an agreement with the *daira* Agnelli, an Italian company that was authorized to extract two hundred cubic meters of *sebâkh* per day (figure 2.1). Going into what used to be the center of the village, A. E. R. Boak had the impression of being in “the crater of some extinct volcano.” After negotiations, the Italians agreed to take only the dirt from the excavations, while the Americans grudgingly consented to choose their excavation sites with regard to their richness in *sebâkh* and proximity to the tracks (Boak and Peterson 1931, 3). However, they soon came to appreciate the fact that their dirt was removed for free; after the second season, when *sebâkh* output had been unacceptably low and the Italians had threatened to switch to chemical manure, the Americans promptly concentrated again on more productive locations (*Kelsey Museum Newsletter* [Fall 2005]: 5). It was not until the 1930s that *sebâkh* digging became illegal.

Saving Papyri

The excavations conducted before the First World War with the sole purpose of finding papyri and ostraca had common traits. The concession areas allotted to the excavators were very large, which permitted them to leave disappointing sites after only a few days in search of more promising ones. They were poorly financed by public or, in the case of the Graeco-Roman branch of the EEF, private funds exclusively to find papyri; thus, the excavators could never be sure they would be able to return the following year. They were therefore always under pressure to produce immediate results and did not waste time making plans before beginning to dig. They observed the color of the earth or the feel of it under the boots, which can indicate the presence of a good layer of *afsh*, a mixture of earth with straw and other dry, vegetable matter, which experience had taught them often contained papyri (Grenfell and Hunt somewhat pompously called these indicators “the principles of *afsh*”). Their global view of the site was vague, and they had no precise idea of the position of their ditches. In a description to Wilcken of the findspot of an important cluster of fiscal ostraca, Maspero told him to draw two lines on Mariette’s plan. The house of the ostraca “was roughly at the intersection of the two lines. . . . Of course, this is only an approximation, and I could be wrong even by a hundred metres.”⁷ Plans of buildings are rare and are not indicated in a general plan because those were never made. Moreover, uninscribed objects were not placed in a context, and the concept of stratigraphy was absent.

Today archaeologists shudder at the thought of Grenfell and Hunt’s “methods,” but we must take into account the conditions at the time. First, there was no clear distinction between archaeologists and philologists, and scientific archaeology⁸ was typically directed by philologists, who were more interested in written documents than objects. Petrie, who demonstrated the scientific importance of even the humblest objects, looks like a visionary in this connection. Further, Grenfell, Hunt, and their followers felt the pressure of competition with the *sebbâkhîn*, the illicit diggers, and the steadily growing areas of cultivation. These were rescue excavations, a concept that is still with us. The papyrus excavation was not unlike a race in which the “teams” tried to overtake each other: The papyrologists constantly frequented the dealers to obtain new leads to where papyri might be found. As soon as the papyrologists had left, the illicit diggers inevitably took over.

In addition to having to work faster than the local population, the papyrologists of the EEF also had to satisfy their donors. Several excavation reports from Grenfell and Hunt end with an expression of their hope of having enough money to return to Egypt the following year. This is why they unashamedly preferred the papyri that most interested the donors to the EEF Graeco-Roman branch (among whom there were seven bishops), namely, the literary and the theological texts. This consideration of their donors’ preferences, which apparently coincided with their personal inclinations, entered into their archaeological choices. Grenfell and Hunt even



Figure 2.2. Papyrus fragments found at Oxyrhynchus. Courtesy of the Egypt Exploration Society.

gave up excavating potentially rich (but Byzantine) zones, as they explain in their report of the fourth season in Oxyrhynchus: “The mounds which accumulated in the sixth or seventh century or later have been merely scratched, and to any one who cares for early and medieval Arabic documents there is plenty of virgin ground to be explored. But the interest and importance of Greek papyri after the fourth century wanes rapidly” (*EEF Archaeological Report* 14 [1904–1905]: 14).

The archaeological methods of Grenfell and Hunt may seem crude, but, thanks to the papyri, they were nevertheless able to date the layers they were excavating. They also scrupulously collected the unscribed material (Grenfell had been trained by Petrie), and the large number of coins found—even if coins would not normally be thrown away—shows that their workers were careful. Where papyri were concerned, they were aware of the archaeological context and made an effort to keep together those that had been found together (figure 2.2):

Since this rubbish mound had proved so fruitful I proceeded to increase the number of workmen gradually up to 110, and, as we moved northwards over other parts of the site, the flow of papyri soon became a torrent which it was difficult to cope with. Each lot found by a pair, man and boy, had to be kept separate; for the knowledge that papyri are found together is frequently of the greatest importance

for determining their date, and since it is inevitable that so fragile a material should sometimes be broken in the process of extricating it from the closely-packed soil, it is imperative to keep together, as far as possible, fragments of the same document. We engaged two men to make tin boxes for storing the papyri, but for the next ten weeks they could hardly keep pace with us. (*EEF Archaeological Report* 6 [1896–1897]: 6 f)

The existence of a legal antiquities trade with the possibility of exporting⁹ must have made the excavators' life even more difficult since the Egyptian workers were seriously tempted to hide the best finds and sell them to the dealers, who often came right up to the edge of the excavation. For this reason the *bakshish* principle, invented by Petrie, was practiced, through which each worker was paid extra for his finds. One can imagine that the poor scholars must have spent more time keeping track of the finds of their numerous workers than following the excavation step by step. Friday payment was a nightmare for Hogarth when he was with Grenfell and Hunt in the Fayyum (Montserrat 1996, 142). Moreover, J. de M. Johnson reports that there was a constant need of arbitration between the teams of diggers, since the practice was to give each one a strip several meters wide to excavate (Johnson 1914, 175).

Egypt has fallen victim to its extraordinary archaeological riches and is undoubtedly the least well excavated of the ancient Mediterranean cultures. But let us not forget that papyrology as a discipline would not exist without the massive finds made by the *fellahîn* and the somewhat uninhibited excavations carried out by a number of lucid and pragmatic scholars of the late nineteenth and early twentieth centuries.

The Scientific Excavations

The Coming of the Archaeologists

Was it the diminishing abundance of papyri that made salvage excavations less urgent and led to making a virtue of necessity? Or was it the progress in archaeological technique and in social and economic history, which made for an understanding that precious archaeological contexts had been destroyed in the unbridled race for *sebâkh* and papyri? No doubt both reasons were pertinent.

From the 1920s on, the excavations of Graeco-Roman sites no longer had the finding of papyri as their sole objective. This new trend was initiated in the United States by the philologist Francis W. Kelsey, who was professor of Latin at the University of Michigan. Kelsey saw the faults of Graeco-Roman archaeology in Egypt and decided that the United States had a duty to do something about it. The Americans' choice fell on Karanis, which, thanks to Egypt's unique climatic conditions, turned out to be an ideal site for the study of people in antiquity not only through the writings they had left but also by the analysis of the material world in which they had lived.



Figure 2.3. Rolls of papyrus found in the threshold between rooms D and E of 5026 at Karanis: a documentary cache? Worms feasted on them before papyrologists could do so, and they are all still unpublished (unless *P.Mich.* IX 551, a donkey sale, is one of them, but layer indications are contradictory). Photo by G. R. Swain. Kelsey Museum Archives, 5.1801. Courtesy of the Kelsey Museum, University of Michigan.

The excavation of Karanis, carried out by the University of Michigan from 1924 to 1935, was exemplary for its time.¹⁰ While we wait for the recent excavations of Tebtynis and Bacchias to progress, Karanis is still the best-known urban conglomerate in the Fayyum. For the first time, the excavators worked to distinguish different levels of occupation, carefully mapped the excavated zones, made plans and cross-sections of houses, and scrupulously recorded the location and level of each object or papyrus (figure 2.3). This was a vast improvement over previous excavations and one that would remain unparalleled for a long time.

Now that modern archaeology demands a very high degree of technical skills, it is no longer possible to become an excavator just by excavating. And yet, although the papyrologists hardly dare touch a trowel nowadays, many Graeco-Roman sites are still opened on their initiative. In fact, Graeco-Roman sites in Egypt have not been very attractive to archaeologists unless they have a bearing on a larger historical problem like central power, commerce,¹¹ or the environment.¹² In other cases, Graeco-Roman layers have to be removed in order to gain access to pharaonic sites, as is the case with D. Bailey's excavation at Hermopolis, which is essentially a by-product of an Egyptological excavation. The exploration of villages

or middle-sized towns that the *metropoleis* were (which were allowed to call themselves cities only at a late date and even then relatively briefly) does not lead directly into the mainstream of historical research. There is no prestige attached to these sites. Their monuments have been dismantled, Egypt is notoriously poor in Greek or Latin inscriptions, and what is left for the archaeologist are modest mud-brick structures, rubbish dumps with difficult and unrewarding stratigraphies, and overwhelming quantities of commonplace material, not the least of which is pottery.

The excavations of Tebtynis (begun in 1988 in collaboration with the Institut français d'archéologie orientale and under the direction of Claudio Gallazzi, professor of papyrology at the Università Statale of Milan) have shown that papyrology has nothing to lose by a methodical excavation, provided that adequate financing is available; thus, several large-scale seasons can be conducted without fear of disruption. There are no more large concentrations of papyri, and excavations must be conducted over a large area in order to gather a good crop. Although Tebtynis has been excavated since the end of the nineteenth century by a succession of official and illicit diggers (not to mention the *sebbâkhîn*), the site is rich in ostraca, a commonplace writing material in Upper Egypt but which was thought to be rare in the Fayyum. This discovery is the result of a more careful and methodical excavation. The earlier papyrus hunters made soundings in order to find a layer of *afsh*, which they then followed as one would a vein of ore. Since they were primarily interested in papyri, they paid no attention to the potsherds, which are always abundant in Egyptian excavations (Gallazzi 2000, 31). Incidentally, it is interesting that, in the deontologically correct excavations of Bacchias, ostraca are handled more casually than papyri. Papyri are individually located in three dimensions, while ostraca are treated as potsherds and recognized as written sources only when the potsherds are washed and sorted. Ostraca are thus identified with only a layer number (Davoli 2000, 17–18). A final difference between today's excavations and those of the early papyrus hunters is that the latter were not interested in the lower layers, where the pressure and the mounting humidity made the presence of good papyri less likely. In this way they cut themselves off from earlier material and depended, at least in the Fayyum, only on mummy cartonnage for Ptolemaic papyri.

The exploration of Mons Claudianus, begun a year before that of Tebtynis, on the initiative of a group of papyrologists, of whom I was one, is a special case.¹³ There the papyrologists found themselves in a situation similar to that of the papyrus hunters before World War I. In a remote location between the Nile and the Red Sea, Mons Claudianus had remained almost undamaged for nearly two thousand years, but with the tourism boom on the Red Sea coast beginning in the 1980s, it was exposed to illicit digging, which in turn gave the Bedouin ideas. Moreover, because of its isolation, the site was impossible to guard.¹⁴ Mons Claudianus was very rich in texts (not papyri but mostly ostraca), which were

concentrated in the rubbish mounds and easy to find, so there was a great temptation to dig just to find the ostraca. However, the team was strengthened by the participation of several archaeologists, who added some archaeological respectability.

From the point of view of human experience and method, the seven years of excavation at Mons Claudianus were not free from friction, but they were all the more interesting in that the archaeologists had high principles, while we, the papyrologists, were simply excited by all these ostraca that were there for the taking. Our colleagues could but regard us as looters, while we tended to see them as killjoys. We undoubtedly learned a lot from each other. In any case, the experience of Mons Claudianus has shown that the interests of papyrology and modern archaeology are not necessarily easy to reconcile. Understandably, the archaeologists are loath to dig in places that suggest no other prospect than the presence of texts. Modern archaeologists are very conscious of the destruction caused by excavation. Like surgeons, the archaeologists endeavor to use noninvasive methods in order to leave unspoiled samples for exploration by future generations of archaeologists with newer and even better techniques. Their efforts are concentrated on mapping, planning, and measuring. Now magnetometry permits analysis of remains under the soil before (or without) digging. Trial trenches are reduced to a minimum, and soil samples are taken for analysis and study. It is thus possible to obtain a comprehensive visualization of a site without destroying it. In Egypt, however, the problem is that the "future generations" are already at work.

Archaeological Multidisciplinarity as Seen by a Papyrologist

No archaeological course of study fails to point out that it involves multiple disciplines. However, the joint study of anepigraphic artifacts, soil samples, and texts that have been collected with the strictest observance of archaeological stratigraphy does not automatically lead to fruitful conclusions. Texts and objects do not always illuminate each other. Often there is little common ground, and various types of material present different problems. Often one gets the impression of parallel, unconnected worlds. Sometimes the data are redundant; sometimes they are supplementary. The collaboration between specialists is necessary but can be disappointing.

The specialists in uninscribed material who work in the Eastern Desert never fail to ask us how their type of material is reflected in the ostraca. The confrontation of the data gives varying results depending on the types of material. It is without a doubt the archaeobotanists who profit most from the texts.¹⁵ Food and provisions are among the most common subjects in the ostraca, whether they are private letters or administrative. Most of the cultivated species that the archaeobotanists have identified are also mentioned in the ostraca, which, on the other hand, give details about the organization of the provisioning. For instance, we learn

that certain herbs and vegetables were cultivated in desert gardens. At Mons Claudianus a number of quarriers' and blacksmiths' pay chits provide much detail on the workers' diet.

Meat and butchering are also mentioned in the ostraca, although to a lesser degree, but as meat was rare, the information is more anecdotal (e.g., "buy three suckling pigs," "I send you a donkey leg"). The study of the faunal remains gives precious quantitative information: We learn that donkey was the meat most commonly eaten at Mons Claudianus, while pork was more common in the forts along the roads to Myos Hormos and Berenike. This difference is explained by the many work donkeys in the quarries. Archaeozoologists have also been able to state that significant quantities of fish were eaten at Mons Claudianus and that they came almost exclusively from the Red Sea, not from the Nile. The only Nile fish that has been identified is the catfish, whose presence is certainly not explained by their fine taste but rather by the fact that these amphibious creatures could arrive alive at Mons Claudianus. The ostraca give the impression that fresh fish were a rare delicacy and do not inform us of the quantities involved. On the other hand, they put a perspective on the means of obtaining fish: At Mons Claudianus, according to one ostrakon, fish from the sea were brought by Bedouin, who are probably to be identified with the coastal dwellers called "Arab-Egyptian fish eaters" by the geographer Ptolemy. On the Myos Hormos road the relay post riders of the military stations helped to provide fine fish for the table of the prefect of Egypt when he was in Koptos.

With regard to leather and textiles, a comparison between the data of the texts and archaeology is of no particular interest. The leather specialists have been able to identify a variety of types of shoes, but these are described in the texts by only two words: *sandalion* and the generic *hypodêma*. The variety in the leather objects is nothing compared to that of the textiles, where the richness of color and the complexity of weaving dazzle the experts. Analysis of colors is beginning to show just how advanced dyes from Roman Egypt were, especially in imitating real purple with vegetable dyes. But, of course, there is nothing on the subject in the texts written by those who wore these clothes.

By contrast, it is not useless to search the ostraca for names of the ceramic containers that the ceramologists classify and draw. At Mons Claudianus it goes without saying that the ubiquitous *keramion* of the texts is the common Nile silt amphora, which constitutes 90 percent of the pottery found (the so-called AE3 bitronconique). Since complete specimens have been found, it has been possible to measure the contents at 6.5 liters, which is extremely important for a calculation of wine consumption because the *keramion* is used to measure rations. From the middle of the second century, the ostraca from the sites in the Eastern Desert—at least those that continued to function after about 150 CE—mention a new kind of ordinary container, the *kolophônion*. It so happens that, at the same time and from the same sites, large quantities of costrels appear. It is almost inevitable that ceramologists identify these costrels with the *kolophônia*.

Since the ostraca are often precisely dated, they also permit dating of certain contemporary artifacts. The ostraca from Mons Claudianus have, for instance, allowed D. Bailey to date the so-called frog lamps to the second century, when they had hitherto been thought to be from a later period. On the other hand, at the site of Maximianon, where, as luck would have it, none of the fifteen hundred ostraca found could be dated, it was the typology of the glass that allowed a dating of the layers and hence the ostraca.

It is the collaboration with the actual excavator that is most productive for the papyrologist. In spite of the significant information derived from the written documents, we must not ignore the results of the excavator's austere examination of structures and layers. Certainly the texts normally tell us the ancient name of the site—except in cases where the papyri were recycled as mummy cartonnage and found in graveyards (the embalmers reused old papyri that could have come from anywhere). On the other hand, the texts can be deceptive with regard to the periods of occupation either because whole layers have disappeared or because the site has not yet been fully explored. This is the case in Tebtynis, where the latest papyri date from the third century CE but where the Byzantine part of the town has not yet been excavated (Bagnall 2001, 234).

In certain cases, the archaeological context in which a document was found can prove essential for its understanding. This is the case with an important group of ostraca found at Tebtynis in 2003. Their texts are short: a date, a name, and a quantity of beer measured in *dichôra*. A few similar texts were already known from stray finds or older excavations, and the editors had interpreted them either as receipts given to a brewery by those who had received beer or as delivery notes issued by the brewery. Now, the new texts from Tebtynis in some cases carry the additional mention of *posis zytou* (consumption of beer), which places them in the context of the ritual consumption of an association. In addition, the ostraca have been found in a banquet hall, which suggests that the names are those of association members who have presented the beer (Reiter 2005, 133–136). In isolation (i.e., in a museum or a collection), these documents made no sense and, given their brevity, would be of little interest except perhaps for some new proper names.

To give another example, let us go back to the letter by Maspero, in which he tries to explain to Wilcken, using a plan of Karnak, where he had found a group of tax receipts that had accumulated against the wall of a house. At the time of the discovery, Maspero did not know that these texts could have clarified the important problem of where tax receipts were kept. Often these are found, as we should expect, in the house of the taxpayer who received them when the taxes were paid. However, these receipts from the Theban region (most of them bought in the 1880s and 1890s) can often be organized into archives not of the taxpayer but of the tax collector as if they had been kept by the latter. To explain this apparent paradox, Wilcken suggests that the receipts were issued by the bank to the tax collectors. In fact, the taxpayer often did not pay the taxes directly to the public bank but instead to collectors, who

then deposited the money. Unfortunately, these ostraca were not read on the spot and now appear to have disappeared without a trace in the stores of the Egyptian Museum, where Maspero had duly deposited them, so we do not know which formula they followed, and Wilcken's theory cannot be verified.

IN WHAT ARCHAEOLOGICAL CONTEXTS ARE PAPYRI FOUND?

The types of papyri that would most interest the historians, those of the offices of the central administration at Alexandria, or the classical philologist, the contents of the library of Alexandria, have disappeared. This is why papyrology still suffers from a comparative lack of recognition as an important discipline. The historian will have to make do with papyri found in the nome capitals and the villages south of the delta. As it happens, the delta, which was the richest and most populous region, has a geography and a climate that have not allowed papyri to survive as they have elsewhere in the country. There are only two exceptions to this, namely the carbonized papyri of Thmouis and Boubastos (see chapter 16). Moreover, archaeological contexts are neither all equally interesting nor equally favorable to the preservation of papyri.

Books in Tombs

Some beautiful literary rolls have been found in tombs. The oldest is the Timotheos papyrus (fourth century BCE), which was discovered by L. Borchardt in 1902 in a wooden sarcophagus in Abusir. A roll containing *Iliad* II (second century CE) was found by Petrie at Hawara under the head of the mummy of a young woman. The first editor of the papyrus, A. H. Sayce, credits her with an agreeable, intellectual physiognomy, undoubtedly Greek. Earlier, in 1858, Mariette had given to the Louvre a papyrus of Alcman found by the natives at Saqqara, rolled up in linen and placed between the legs of a mummy.¹⁶ The manuscript of Herodas's *Mimes* (first–second century CE) appears to have been found north of Assiut (at Meir?), perhaps along with the *Constitution of Athens*, in the tomb of a couple. The wife, Sarapous (daughter of Sarapion), had died at the age of fourteen (Martin 2002, 23–26). This practice was not widespread; in February 1912 J. de M. Johnson, working for the EEF, spent several days opening approximately a hundred tombs at Qamadir, near Oxyrhynchus, “in the vain hope of a papyrus roll.” The people who were sufficiently smitten with literature to be buried with an expensive book must have been statistically rare, for it seems necessary to interpret these pious gifts as a reflection of the deceased's personality rather than as an imitation of the



Figure 2.4. Cartonnage elements at Tebtynis (1899–1900). Courtesy of the Egypt Exploration Society.

Egyptian habit of giving the dead a book of religious-magical formulas as a passport to the hereafter. The Derveni papyrus (fourth–third century BCE), incidentally, attests to a similar concern in the Greek world. This papyrus, the only one to have been found in Greece, contains a philosophical-eschatological text and was found in 1962, carbonized among the remains of a funeral pyre (Betegh 2002).

Cartonnage and Crocodiles

During the whole of the Ptolemaic period and up to the end of the reign of Augustus, human mummies were wrapped in linen bands and often given a mask, sometimes also other separate elements such as a foot case, a pectoral, an apron, and leg guards (figure 2.4). These elements were made of a core of papyrus, linen, or palm fiber, which was covered with stucco and painted with standardized, protective images. The use of scrap paper for cartonnage does not seem to have been common before the reign of Ptolemy II Philadelphos (283–246). Most of the papyri of the third century BCE come from such cartonnage, with the notable exception of the Zenon archive. Most papyri from cartonnage are administrative documents, but literary

texts are sometimes found as well. These papyri have the disadvantage of having been cut to fit the part of the body that they were intended to cover. Moreover, the writing is often weakened, first by the application of the stucco and then by its removal.

At Tebtynis, Grenfell and Hunt accidentally discovered that a number of crocodile mummies had been prepared with recycled administrative papers, either as wrapping or as filling but not as cartonnage proper (figure 2.5):

On Jan. 16, 1900—a day which was otherwise memorable for producing twenty-three early Ptolemaic mummies with papyrus cartonnage—one of our workmen, disgusted at finding a row of crocodiles where he expected sarcophagi, broke one of them in pieces and disclosed the surprising fact that the creature was wrapped in sheets of papyrus. As may be imagined, after this find we dug out all the crocodile-tombs in the cemetery; and in the next few weeks several thousands of these animals were unearthed, of which a small proportion (about 2 per cent.) contained papyri. (Grenfell, Hunt, and Smyly 1902, vi)

These papyri were of the second century BCE and came from the office of the village scribe at Kerkeosiris. One might have thought that this was an isolated case, but in 1901 at Talit, a village neighboring Tebtynis, Grenfell and Hunt found

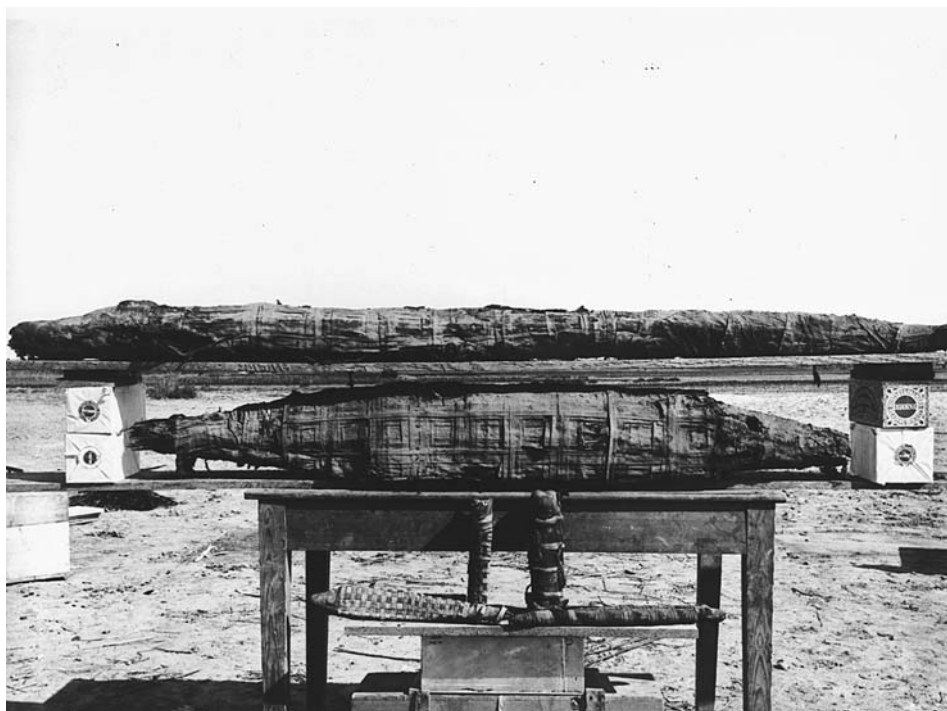


Figure 2.5. Crocodile mummies at Tebtynis (1899–1900). Courtesy of the Egypt Exploration Society.

other crocodiles wrapped in Greek and demotic documents of the first century BCE, just slightly later.¹⁷ This practice has been related to the subventions from the Ptolemies toward the burial of sacred animals,¹⁸ even though scrap paper from the administration is perhaps not what one imagines when reading about the “magnificent and famous gifts” that the Rosetta Stone mentions in this respect.

Buildings

Obviously, the dream of every papyrus hunter was to find the public archive still in place in the *bibliothèque*. This miracle almost happened in 1892, when Naville came upon what must have been the archives of the Mendesian nome in the delta. The rooms of the building were filled with papyri burned in a fire in the late second century CE. Naville’s description is depressing, although he may purposely have made it even more so:

They are now quite carbonized, like those of Herculaneum, but even in a worse state. They are most difficult to take out, they crumble to pieces when they are loosened from the earth which covers them, but, by looking sideways the characters are still discernible; they generally are Greek, in good handwriting. As for those which have escaped the fire, they are quite hopeless. The moisture and the salt in the soil have reduced them to a kind of brownish paste, which seems to be very fertile, for roots of plants grow in it in abundance. (*EEF Archaeological Report* [1892–1893: 4])

Naville filled five boxes, which arrived at the British Museum with their contents reduced to crumbs. Since Petrie suspected that Naville, heavy handed as he was, had not done everything possible to save what could be saved, the EEF at once undertook a rescue operation directed by Howard Carter. Carter spent two months looking in vain among the ruins without finding the *bibliothèque*. Naville’s indications were not precise enough to find it (Drower 1985, 284). A number of rolls from illicit digging came into the hands of the Egyptologist Albert Daninos, who conceived the brilliant idea of softening them in rectified alcohol. He then cut the rolls open lengthwise and detached the sheets, which he glued onto cardboard. This is all that is left of the archive of the Mendesian nome.

The papyri from Dura-Europos in Syria are the only other example of an archive uncovered by an official excavation. And yet, even they do not represent the whole of the archive of the *Cohors XX Palmyrenorum*, whose camp had been installed in part of the town. The room in which the texts were found is just a place where one stored documents that were no longer of interest. It opened onto another room where the walls were covered with dipinti, graffiti, and “a great many smudges of ink as if one had used the plaster for wiping pens and fingers” (Rostovtzeff 1934, 152), probably the *officium* of the scribes of the general staff.

Grenfell and Hunt established a hierarchy of archaeological contexts in which one might find papyri. The best are abandoned houses that have collapsed, thus sealing both papyri and objects of daily use where the inhabitants had left them.¹⁹ But the interest, according to them, was that the papyri were better preserved than in the rubbish dumps, not, as we would now think, that they were part of a coherent archaeological context in which the various elements could elucidate each other. Strangely, the first editors of the papyri from Karanis, which had been found in advanced excavations with multidisciplinary aspirations, showed the same inhibition and did not take the archaeological context into consideration in order to explain their texts. As an example, the ostraca found in the same house were published separately, while the editor did not realize that they could establish the genealogy of the family that had lived there (van Minnen 1992). The archaeologists in turn let precious stratigraphic information slip away because they did not know that a group of papyri found in a trench were homogeneous and consequently belonged to the same stratigraphic unit (van Minnen 1994). At least the registration of the finds was so well conceived (even if somewhat rough according to today's standards) that it is still operational, and now, sixty years later, allows one to make use of the data and show what can be deduced from what Peter van Minnen has called "a house-to-house approach," a method that he has applied to house 17 in state B. Taking into account all the papyri, published or unpublished, and all the objects from this house, he has demonstrated that house B17 was inhabited by a tax collector (*praktôr argyrikôn*) by the name of Socrates, who not only lived but also worked there. Thanks to a draft of a petition in Socrates' handwriting, van Minnen has been able to identify him as the writer of a Karanis tax roll in which he leaves a personal mark by amusing himself by inventing Greek equivalents of the taxpayers' Egyptian names. Some of these names testify to a high degree of erudition (e.g., ἀνδίκτης, which is otherwise attested only in Callimachus, where it means "mousetrap"). Socrates uses this name here instead of the Egyptian name, Panpin, which means "he of the mice." Callimachus was not among the books found in Socrates' library in house B17, but a fragment with text by this author has in fact been found in the house opposite it. Van Minnen further remarks that Socrates did not live with the woman who was probably the mother of his twin sons, a Roman citizen who lived several blocks away and who had declared her sons as of an unknown father in order for them to inherit her juridical status.

The texts found in Socrates' house were only what was left by chance after abandonment. Earlier I discussed public archives; on their own level, private archives, which people guarded carefully in jars or boxes, also have a much greater importance than documents found in isolation (see chapter 10). Unfortunately, these nests of papyri, the private archives, are rarely found by archaeologists. We may think of the archives of Zenon, which were found in Philadelphia under unknown circumstances somewhat before World War I, or the archive of

Heroninos, which was reportedly found at Theadelphia by *fellahîn* in a wooden box a short time after Grenfell and Hunt's excavations. One of the curses of papyrology is, in fact, that so many of the important discoveries have been clandestine; thus, the archaeological context is unknown. Predictably, the natives were often luckier than the professionals. Numbers were in their favor, and they were impeded neither by time and financing nor by methodological scruples. Of course, scholars have also made some discoveries of archives, but these were in older excavations of a period when the excavators were often philologists who saw no farther than the contents of their texts and did not think of looking for help in the material context.

At Kôm Ishqaw in 1905, the classicist Gustave Lefebvre, who was also inspector of antiquities, found the archive of Dioskoros of Aphrodite. His report gives a good impression of a less pedantic way of doing archaeology: "For a few pounds the owner sold us the right to turn his plot of land inside out. We excavated right into the road, on the other side of the wall. Everything was done in three days." One meter below the surface they came upon a house with three rooms, in one of which "there stood a jar with the neck broken off, 0,90 m high, full of papyri. . . . The inventory was quickly made: at the top of the jar there came to light, all crumpled up, a codex of eleven leaves: it was the Menander manuscript. . . . In the jar there were also some hundred and fifty rolls, mostly Greek, business papers, wills, contracts, letters &c." (Lefebvre 1907, x). Unfortunately, there is not even a photograph of the discovery.²⁰ The excavation reports from the heroic age of papyrus hunting make much more agreeable reading than today's terse archaeological reports, but they leave us unsatisfied if we are looking for useful information to elucidate our texts. When one considers all this wasted archaeological potential, one may perceive some irony in the technical refinement that is deployed today on the tatters that remain after the two hundred years of devastation to which Egyptian antiquities have been subjected.

The Document Caches

The documents found in 1960 and 1961 by Yigael Yadin in the Judean desert are to this day the only archive found by someone worthy of being called an archaeologist and in the condition in which the owners left them. This brings us to the concept of "document cache," which Alain Martin has proposed adding to the roster of archaeological contexts that produce papyri (Martin 1994). The most famous examples of these treasure troves not of gold but of documents are undoubtedly the two archives found in the "cave of letters," one of the inaccessible strongholds in which survivors of the Bar Kochba revolt took refuge in 132 CE or shortly thereafter.²¹ The first cache found was a bundle of fourteen letters on papyrus and one on a folded, wooden leaf tablet (see chapter 1), all of which was tied up with string and sealed with a clay seal. The documents are written in Greek,