



UNIVERSITY  
OF WARSAW | Polish Centre of  
Mediterranean Archaeology



---

**Title: Monetization of Roman Egypt during the Flavian Dynasty (AD 69–96): The case of Alexandria and Berenike.**

Author(s) : ***Katarzyna Lach***

Journal: *Polish Archaeology in the Mediterranean* 24/1 (*Research*)

Year: 2015

Pages: 727 - 734

ISSN 1234–5415 (Print), ISSN 2083–537X (Online)

Publisher: Polish Centre of Mediterranean Archaeology, University of Warsaw (PCMA UW),  
Wydawnictwa Uniwersytetu Warszawskiego (WUW)

[www.pcma.uw.edu.pl](http://www.pcma.uw.edu.pl) [www.wuw.edu.pl](http://www.wuw.edu.pl)

---

**Abstract:** A study of coin output in Egypt during the Flavian dynasty (AD 69–96) brings to light a dichotomy in circulation between billon tetradrachms and low denomination bronze coins. The composition of hoards with Flavian silver issues suggests minimal coin production due to a sufficient quantity of Nero's tertadrachms on the market. However, stray finds of coins from the Flavian dynasty consist mainly of bronze issues, apparently outnumbering Nero's low-denomination coin output. A tempting idea to consider is that the low number of Flavian silver coins in circulation resulted in an extended production of bronze issues.

**Keywords:** Alexandria, medieval cemetery, Islamic necropolis, funerary stelae

سكّ العملات الرومانية المصرية خلال فترة حكم أسرة فلافيان (96-69 م) . حالة من الإسكندرية وبرنيكا  
Katarzyna Lach

**الملخص :** دراسة لإنتاج العملة المعدنية في مصر خلال فترة حكم أسرة فلافيان (96-69 م) يسلط الضوء على الانقسام في تداول بلون دراخما ( عملة رومانية معدنية ) وإنخفاض العملات البرونزية. و تسوية المدخرات مع إصدار عملة فلافيان الفضية تشير إلى إنتاج أقل للعملات بسبب وجود كمية كافية من دراهم نيرون ( Nero's tetradrachms) في السوق . ومع ذلك، يرى الضالة من القطع النقدية من فترة حكم أسرة فلافيان تتكون أساسا من الإصدارات البرونزية، على ما يبدو تفوق نسبة إنتاج عملة نيرون المنخفضة. وهناك فكرة مغرية هي الأخذ بعين الاعتبار أن إنخفاض تداول قطع فلافيان الفضية قد أدت إلى إصدار موسع من العملة البرونزية.

*POLISH ARCHAEOLOGY IN THE MEDITERRANEAN (PAM)*  
*Annual of the Polish Centre of Mediterranean Archaeology, University of Warsaw*

*Editorial Board*

Piotr Bieliński  
Krzysztof M. Ciałowicz  
Wiktor Andrzej Daszewski  
Michał Gawlikowski  
Włodzimierz Godlewski  
Karol Myśliwiec  
Tomasz Waliszewski

*International Advisory Board*

Jean Charles Balty  
Charles Bonnet  
Giorgio Buccellati  
Stan Hendrickx  
Johanna Hlaubek

Peer-reviewed by members of the *PAM* committee of independent reviewers.  
<http://www.pcma.uw.edu.pl/en/pam-journal/pam-independent-reviewers/>

POLISH CENTRE OF MEDITERRANEAN ARCHAEOLOGY  
UNIVERSITY OF WARSAW

# POLISH ARCHAEOLOGY IN THE MEDITERRANEAN

XXIV/1

---

RESEARCH



## ABBREVIATIONS

<i>AA</i>	<i>Archäologischer Anzeiger; Jahrbuch des Deutschen Archäologischen Instituts</i> (Berlin)
<i>ANM</i>	<i>Archéologie du Nil Moyen</i> (Lille)
<i>ASAE</i>	<i>Annales du Service des Antiquités de l'Égypte</i> (Cairo)
<i>AV</i>	<i>Archäologische Veröffentlichungen, Deutsches Archäologisches Institut, Abteilung Kairo</i> (Berlin–Mainz am Rhein)
<i>BAAL</i>	<i>Bulletin d'archéologie et d'architecture libanaises</i> (Beirut)
<i>BAH</i>	<i>Bibliothèque archéologique et historique</i> (Paris)
<i>BAR IS</i>	<i>British Archaeology Reports International Series</i> (Oxford)
<i>BASOR</i>	<i>Bulletin of the American Schools of Oriental Research</i> (Ann Arbor, MI)
<i>BCH</i>	<i>Bulletin de correspondance hellénique</i> (Paris)
<i>BdE</i>	<i>Bibliothèque d'étude</i> (Cairo)
<i>BIFAO</i>	<i>Bulletin de l'Institut français d'archéologie orientale</i> (Cairo)
<i>BSAA</i>	<i>Bulletin de la Société d'archéologie d'Alexandrie</i> (Cairo)
<i>BSFE</i>	<i>Bulletin de la Société française d'égyptologie</i> (Paris)
<i>CCE</i>	<i>Cahiers de la céramique égyptienne</i> (Cairo)
<i>EtTrav</i>	<i>Études et travaux. Travaux du Centre d'archéologie méditerranéenne de l'Académie des sciences polonaise</i> (Warsaw)
<i>FIFAO</i>	<i>Fouilles de l'Institut français d'archéologie orientale</i> (Cairo)
<i>GAMAR</i>	<i>Gdańsk Archaeological Museum African Reports</i> (Gdańsk)
<i>GM</i>	<i>Göttinger Miszellen</i> (Göttingen)
<i>IAMS</i>	<i>Institute of Archaeo-Metallurgical Studies</i> (London)
<i>JARCE</i>	<i>Journal of the American Research Center in Egypt</i> (Boston–Princeton–New York–Cairo)
<i>JEA</i>	<i>Journal of Egyptian Archaeology</i> (London)
<i>JGS</i>	<i>Journal of Glass Studies</i> (Corning, NY)
<i>JJP</i>	<i>Journal of Juristic Papyrology</i> (Warsaw)
<i>JRS</i>	<i>Journal of Roman Studies</i> (London)
<i>MDAIK</i>	<i>Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo</i> (Wiesbaden)
<i>OIP</i>	<i>Oriental Institute Publications</i> (Chicago)
<i>OLA</i>	<i>Orientalia lovaniensia analecta</i> (Louvain)
<i>PAM</i>	<i>Polish Archaeology in the Mediterranean</i> (Warsaw)
<i>PSAS</i>	<i>Proceedings of the Seminar for Arabian Studies</i> (London)
<i>SAAC</i>	<i>Studies in Ancient Art and Civilisation</i> (Kraków)
<i>SAK</i>	<i>Studien zur altägyptischen Kultur</i> (Hamburg)
<i>SAOC</i>	<i>Studies in Ancient Oriental Civilization</i> (Chicago)
<i>WVDOG</i>	<i>Wissenschaftliche Veröffentlichungen der deutschen Orient-Gesellschaft</i> (Berlin–Leipzig)

# MONETIZATION OF ROMAN EGYPT DURING THE FLAVIAN DYNASTY (AD 69–96): THE CASE OF ALEXANDRIA AND BERENIKE

Katarzyna Lach

Polish Centre of Mediterranean Archaeology, University of Warsaw

**Abstract:** A study of coin output in Egypt during the Flavian dynasty (AD 69–96) brings to light a dichotomy in circulation between billon tetradrachms and low denomination bronze coins. The composition of hoards with Flavian silver issues suggests minimal coin production due to a sufficient quantity of Nero's tetradrachms on the market. However, stray finds of coins from the Flavian dynasty consist mainly of bronze issues, apparently outnumbering Nero's low-denomination coin output. A tempting idea to consider is that the low number of Flavian silver coins in circulation resulted in an extended production of bronze issues.

**Keywords:** Roman provincial Egypt, Alexandrian coinage, Flavian dynasty

For almost three centuries the economy of Roman Egypt was based on a relatively stable currency administered by the government. The boost in the provincial economy came with the widespread use of coins in commercial transactions (Harl 1996: 117). Nonetheless, it is essential to distinguish the concept of economic prosperity of the province from the assets of local inhabitants, half of whose income was collected in the form of taxes.

Yet the process of monetization of Egypt did not proceed evenly. In Ptolemaic times some taxes were paid in coins, while the rest in grain. These proportions

were reversed during the age of Roman supremacy over the province of Egypt (Harl 1996: 254), and this is likewise observed in increased coin production. The greater numbers of coins in everyday life were the result of Roman policy toward the provinces.

There were several reasons behind the demand for struck coins in Egypt. On the one hand, a closed currency system prevented a relocating of coins to other provinces, but it also precluded the use in Egypt of currency struck outside the province. The monitoring of the quantity of coins issued aimed to reduce the risk of

inflation and of decreasing real currency value. Papyri found in Egypt are, in most cases, records of accounts, which confirm the stable value of the currency during the 1st century AD. The average value of grain between AD 45/46 and AD 78/79 increased by two drachms per artaba, but these prices had almost doubled by the end of the 2nd century AD (Duncan-Jones 1990: 146–147).

Papyri also provide information regarding the amount and form of payments. Taxes were paid in struck money and in kind depending on the product (Duncan-Jones 2002: 189). Currency was also used in the widespread rent of private land for tenancy farming (van Minnen 2008: 230–231). Since most of the land was in the hands of the Roman emperor from Nero's time, it should be emphasized that profit was made concurrently on land rental and land tax (Sartre 1997: 471). Another important fact highlighted by Peter van Minnen is that the income from Egyptian taxes was not intended to be invested back in the province (van Minnen 2008: 238). Grain was transported to warehouses in Rome, while the currency struck in Egypt was exchanged in Alexandria. Merchants leaving the province would exchange Alexandrian tetradrachms for Roman denarii to use in other parts of the Empire. Apart from commercial transactions and tax payments, the local currency was also used to raise loans (e.g., van Minnen 2008: 230).

In Egypt, as in Greece, monetization of the country should be distinguished from the spread of coins (von Reden 2010: 25–26). Barter, particularly widespread in the rural parts of the province isolated from trade routes, enjoyed a centuries-old tradition in Egypt. Trade of this kind often

operated simultaneously with monetary exchange, being thus visible evidence of prosperity (Rathbone 2002: 162)

Stray finds are of greater importance than hoards for specifying the extent of Egyptian monetization. This coin category consists mainly of lower denomination fractions struck in bronze and more seldom of billon tetradrachms. Stray finds reflect the extent of coin use in everyday life more precisely than hoards (Crawford 1970: 40), which were collected for longer periods and consisted of coins that were not necessarily in circulation at the time of deposition (Katsari 2011: 10–19). Finds of single coins lost by owners come from every place of human activity, not only urban and rural areas, but also military camps and burial places. The percentage of coins found during excavations varies depending on fieldwork methods and the size of the excavated area, sometimes restricted by modern housing development, as in Alexandria for example. Moreover, the degree of wear of single bronze coins found in the excavations may contribute data on the intensity of their circulation.

Another issue to be considered is the length of time that passed before a coin went out of circulation. The picture presented by stray finds from the late Roman North necropolis in Antinoupolis (Castrizio 2010: 7) illustrates how problematic this matter can be. The site, which is dated between the 4th and 9th century AD, yielded two Ptolemaic coins, a denarius of Marcus Antonius and Cleopatra and a few other coins from the 1st–2nd century AD (Castrizio 2010: 271–272). The presence of these specimens at the site, which is otherwise clearly late Roman in date, is probably accidental.

A study of stray coin finds from excavations indicates that most of the billion tetradrachms dated between the reign of Tiberius and that of Marcus Aurelius, when a devaluation of money took place, were found in the Delta, Fayum Oasis and modern Ismailia (Christiansen 2006: 19). This demonstrates a larger share of coins in wealthy rural areas and in the vicinity of border crossings. The 1st century bronze coins from Egypt and the tetradrachms share a similar percentage distribution (Christiansen

2006: 19). The most common fractions are drachms and diobols (Christiansen 2005: 280); however, these coins are bigger and, therefore, easier to find.

The following case study encompasses two very different harbor cities: Alexandria and Berenike. Alexandria used to be a metropolitan city, whereas Berenike served as a trading port on the peripheries of the province. It is interesting nonetheless to seek out similarities in the monetization of these two localities.

## ALEXANDRIA

Excavations by the Polish Archaeological Mission at the Kom el-Dikka site in Alexandria unearthed private buildings from the 1st through 3rd century AD. House H1 in the eastern part of the site was built on top of the remains of a late Hellenistic domicile (Majcherek 1990: 77–78). Pottery finds have dated the structure to the 1st and beginning of the 2nd century, and its destruction and abandonment to the 3rd century AD (Majcherek 1991: 23). All of the coins found within the house were struck during the 1st century AD, which was the most intense period of its exploitation. The biggest share in this set is that of coins of emperors of the Julio-Claudian Dynasty: Augustus, Tiberius and Claudius (11), this compared to just three specimens representing the reigns of Nero and Domitian (Lichocka 1995: 112–113). This cluster includes obviously only a fraction of the coins that are to be found in early Roman contexts in this area.

Roman coins are usually found in layers of accumulated fill, precluding systematic analysis of coinage use. In the words of Michael Crawford, “groups of coins from well-excavated and well-recorded strata are sadly infrequent” (1970: 40). House H is a commendable exception in view of its well documented strata, making the struck coins from its contexts excellent evidence for everyday coin use in early Roman Alexandria. Based on this set one is secure to say that issues struck during the reign of Nero, otherwise common in hoards, constituted only a small fraction of the coins found in the house.

Other evidence of coin use in Alexandria comes from excavations conducted by the Centre d’études alexandrines in different parts of the city. These have yielded 264 coins from the reign of Augustus to the time of Diocletian’s reform in AD 296 (Picard et al. 2012: 125).<sup>1</sup> Investigations in the area of the Alexandrian Library (Bruccheion

<sup>1</sup> The reform should be regarded as a long time process: the *folles* was introduced in Egypt probably around AD 294 and was circulated together with coins minted in the province until AD 295/296 (Sutherland 1955: 117–118).



quarter) and the Gabbari necropolis have documented a percentage distribution of coins similar to that observed in House H on Kom el-Dikka. Most of the coins were struck in the reigns of Augustus (76), Tiberius (34) and Claudius (18). Moreover, coins struck during the Flavian period (nine coins each of Vespasian and

Domitian) prevailed over Nero's issues (seven coins). Again, estimates regarding the share of Nero's coinage in 1st and 2nd century coin use in Egypt seem exaggerated. Erik Christiansen has proven that Nero's issues dominated in hoards for almost a century (2004: 91), but the stray finds give a slightly different picture.

## BERENIKE

Stray coin finds from excavations in the coastal area of the Berenike harbor on the Red Sea constitute additional evidence of monetization in this region and reflect on periods of intensive trading. The harbor was founded by Ptolemy II about 275 BC, while its depopulation and abandonment was dated to sometime before the mid-6th century AD (Sidebotham, Hense, and Nouwens 2008: 159, 174). Excavations have been conducted in the harbor bay, the residential, religious and industrial districts as well as a harbor rubbish dump. Three phases of intensive trade and production activity have been identified (Wendrich et al. 2003: 49). The first stage was when Berenike was a handling point for African elephants used in the Ptolemaic army, from the time of founding through the mid-2nd century BC. The next phase of economic growth was dated to about the 1st century AD, when trade contacts with India and the Arabian peninsula intensified. The last phase of the city's prosperity began about the middle of the 4th century and lasted through the beginning of the 5th, even though Berenike has lost its superior function of a handling harbor by the end of this era.

The local economy of the city can be investigated through a study of a large collection of ostraka coming from the early Roman rubbish dump investigated extensively at the site. Most of these documents date to AD 40–70 and were permits issued for goods at the custom station of Berenike for export to Africa, Arabia or India (Bagnall, Helms, and Verhoogt 2005: 64; Nappo and Zerbini 2011: 63).<sup>2</sup> It is consistent with the archaeological evidence showing a peak in commercial activities in Berenike in the 1st century AD. Coin finds provide additional evidence for a local trade. About 40% of the identifiable/attributable coins from Berenike date to the 1st century AD (Sidebotham 2011: 79). The most common issues of the 1st century are those of Claudius (11 coins), Augustus (six coins), Tiberius, Nero and Vespasian (five coins per emperor). The Berenikan evidence seems to corroborate Christiansen's (2006: 14) assumption that stray finds reflect actual coin circulation. Coins dated to the 2nd and 3rd century AD comprise only 6% of all the finds, corresponding to a recession that touched the city during

<sup>2</sup> Nappo suggests that Roman denarii and aurei were part of the cargos shipped through Berenike to be used by merchants in India (Nappo and Zerbini 2011: 67–68), but there is no archaeological evidence from the site for this. Hélène Cuvigny does not support this hypothesis (2013: 69).

these centuries due to the economic downturn and political unrest, which led to a drop in the size of the population (Sidebotham 2011: 63). Coins of the 4th century in Berenike make up 33%

of all stray finds from the site, indicating a slight renewal of trade and commerce in this period, prior to the ultimate stagnation and abandonment of the city (Sidebotham 2011: 261).

## CONCLUSIONS

The evidence from both Alexandria and Berenike shows that low-denomination coins from the Flavian dynasty are far more frequent among stray finds than the tetradrachms of these emperors found in hoards. Alexandrian hoards found in Egypt consist mostly of billon tetradrachms. Hoards with Flavian coins are dated up to the early 3rd century AD. Billon tetradrachms of Vespasian, Titus and Domitian are much rarer than issues of Nero [Fig. 1], as demonstrated already by Erik Christiansen (1985: 95, 105, 109).

Rulers of the Flavian dynasty did not need to issue huge amounts of tetradrachms, because the market had been sufficiently supplied by previous rulers. Quantitative studies of coin output during the early years of Vespasian's rule have also confirmed observations regarding the hoard deposits. Furthermore, it is tempting to see in the tetradrachms struck by the Flavian rulers (especially by Vespasian and Titus) a means for the introduction of the image of the new emperor. Christiansen also assumes that

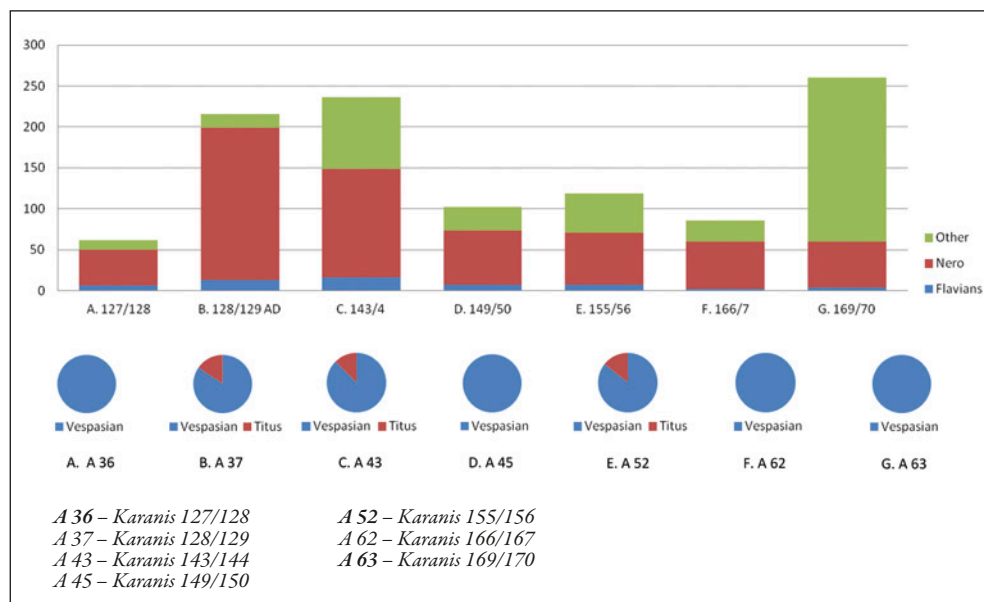


Fig. 1. Structure of Nero's and Flavian's issues in hoards  
(Based on Christiansen 2004: 169–197)

the new issues of Vespasian paid for war expenditures, whereas issues of Nero were spent on taxes or used in trade (Chritiansen 2004: 98).

However, the quantities of low-denomination coins of the Flavians in circulation seem to have matched those of Nero. Of course, this applies mainly to the bronze issues, as they are found far more frequently during excavations than silver. Bronze coins deteriorate relatively quickly and they tended to be lost more often, therefore the market was in need of a continuous re-supply with new issues.

Alexandria and Berenike, linked by routes that served the merchants who imported goods from Arabia and India via the Eastern Desert, however different in their importance and meaning, were trade points of great value to their surroundings. Alexandria was Egypt's main port and there is no need to demonstrate its significance. As for Berenike,<sup>3</sup> it was an important trade stop in the area. The troops stationed in the forts along the desert roads must have played a stimulating role in the monetization of the region. It has already been observed (von Reden 2010: 268) that the Roman army encouraged the practice of monetary exchange. Berenike's local market served both regional consumers and soldiers, who would use newly minted coins received as

pay, thus allowing a remote countryside to benefit from contemporary coin issues.

If the assumption that the evidence of stray finds reflects actual coin circulation is correct, it can be said that the Flavians issued only a limited number of tetradrachms, but they supplemented the market with low-value coins used for common transactions. Tetradrachms vanished from circulation mainly because of hoarding and it is probable that bronze coins were struck instead to meet the market demand. In this case, there may be an inverse relation of the ratio between bronze and silver coins, meaning that the dropping quantity of silver coins would compel the authorities to increase the output of bronze coins. Producing more tetradrachms was out of the question as it would have lowered the value of the already debased Egyptian silver coins. The only way to complement the demand for struck coin seems to have been the decision to issue bronze coins.

#### ACKNOWLEDGMENTS

The author would like to thank Michael R. Ide for important suggestions and comments to this paper. The research was funded from a PhD internship program grant DEC-2014/12/S/HS3/00088 of the National Science Center of the Republic of Poland.

Dr. Katarzyna Lach  
Polish Centre of Mediterranean Archaeology, University of Warsaw  
00-497 Warsaw, Poland, ul. Nowy Świat 4  
lach.k2@gmail.com

<sup>3</sup> The division of trade between Berenike and Myos Hormos during the 1st century AD is much disputed (see Bagnall 1976: 34–35).

## REFERENCES

- Bagnall, R. S. (1976). *The Florida Ostraka (O. Florida): Documents from the Roman army in Upper Egypt* [=Greek, Roman, and Byzantine Monographs 7]. Durham, NC: Duke University.
- Bagnall, R. S., Helms, C., and Verhoogt, A. M. F.W. (2005). *Documents from Berenike II. Texts from the 1999–2001 seasons* [=Papyrologica Bruxellensia 33]. Brussels: Fondation égyptologique Reine Elisabeth
- Bowman, A. K., and Wilson, A. (2009). Quantifying the Roman economy: Integration, growth, decline? In A. K. Bowman and A. Wilson (Eds.), *Quantifying the Roman economy: Methods and problems* (pp. 3–84). Oxford: Oxford University Press.
- Castrizio, D. (2010). *Le monete della necropoli nord di Antinoupolis (1937–2007)* [=Scavi e materiali 2]. Florence: Istituto papirologico G. Vitelli.
- Christiansen, E. (1985). The Roman coins of Alexandria (30 B.C. to A.D. 296): An inventory of hoards. *Coin Hoards*, 7, 77–140.
- Christiansen, E. (2004). *Coinage in Roman Egypt: The hoard evidence*. Aarhus: Aarhus University Press.
- Christiansen, E. (2005). Coin circulation in Roman Egypt before Diocletian's currency reform. In F. Duyrat and O. Picard (Eds.), *L'exception égyptienne ? Production et échanges monétaires en Égypte hellénistique et romaine. Actes du colloque d'Alexandrie, 13–15 avril 2002* [=Études Alexandrines 10] (pp. 279–283). Cairo: Institut français d'archéologie orientale.
- Christiansen, E. (2006). Single finds. The case of Roman Egypt. *Nordisk Numismatisk Årsskrift*, 2000–2002, 9–24.
- Crawford, M. (1970). Money and exchange in the Roman world. *JRS*, 60, 40–48.
- Cuvigny, H. (2013). *Conductor praesidii*. In R. Ast, H. Cuvigny, T.M. Hickey and J. Lougovaya (Eds.), *Papyrological texts in honor of Roger S. Bagnall* [=American Studies in Papyrology 53] (pp. 67–74). Durham, NC: The American Society of Papyrologists.
- Duncan-Jones, R. (1990). *Structure and scale in the Roman economy*. Cambridge: Cambridge University Press.
- Duncan-Jones, R. (2002). *Structure and scale in the Roman economy*. Cambridge: Cambridge University Press.
- Harl, K. W. (1996). *Coinage in the Roman economy, 300 B.C. to A.D. 700*. Baltimore: Johns Hopkins University Press.
- Katsari, C. (2011). *The Roman monetary system: The Eastern provinces from the first to the third century AD*. Cambridge: Cambridge University Press.
- Lichocka, B. (1995). Une trouvaille des monnaies alexandrines du Haut Empire dans la maison H à Kôm el-Dikka (Alexandrie). *EtTrav*, 17, 111–115.
- Majcherek, G. (1990). Excavations at Kom el-Dikka in Alexandria in the 1989 season. *PAM*, 1, 75–83.
- Majcherek, G. (1991). Excavations in Alexandria in 1989–90. *PAM*, 2, 19–24.

- Nappo, D., and Zerbin, A. (2011). On the fringe: Trade and taxation in the Egyptian Eastern Desert. In O. Hekster and T. Kaizer (Eds.), *Frontiers in the Roman world. Proceedings of the ninth Workshop of the International Network Impact of Empire (Durham, 16–19 April 2009)* (pp. 61–78). Leiden: Brill.
- Picard, O., Bresc, C., Faucher, T., Gorre, G., Marcellesi, M.-C., and Morrisson, C. (2012). *Les monnaies des fouilles du Centre d'études alexandrines les monnayages de bronze à Alexandrie de la conquête d'Alexandre à l'Égypte moderne* [=Études Alexandrines 25]. Alexandria: Centre d'études alexandrines.
- Rathbone, D. (2002). The ancient economy and Graeco-Roman Egypt. In W. Scheidel and S. von Reden (Eds.), *The ancient economy* (pp. 155–169). New York: Routledge.
- Sartre, M. (1997). *Wschód rzymski: prowincje i społeczeństwa prowincjonalne we wschodniej części basenu Morza Śródziemnego w okresie od Augusta do Sewerów (31 r. p.n.e.–235 r. n.e.)* [*The Roman East: Provinces and provincial societies in the eastern Mediterranean from Augustus to the Severan dynasty*]. (S. Rościcki, Trans.). Wrocław: Zakład Narodowy im. Ossolińskich [in Polish].
- Sidebotham, S. E. (2011). *Berenike and the ancient maritime Spice Route*. Berkeley: University of California Press.
- Sidebotham, S. E., Hense, M., and Nouwens, H. M. (2008). *The Red Land: The illustrated archaeology of Egypt's Eastern Desert*. Cairo: American University in Cairo Press.
- Sutherland, C. H. V. (1955). Diocletian's reform of the coinage: A chronological note. *JRS*, 45, 116–118.
- van Minnen, P. (2008). Money and credit in Roman Egypt. In W. Harris (Ed.), *The monetary systems of the Greeks and Romans* (pp. 226–241). Oxford: Oxford University Press.
- von Reden, S. (2010). *Money in classical antiquity*. Cambridge: Cambridge University Press.
- Wendrich, W. Z., Tomber, R.S., Sidebotham, S. E., Harrell, J.A., Cappers, R. T. J., and Bagnall, R.S. (2003). Berenike crossroads: The integration of information. *Journal of the Economic and Social History of the Orient*, 46(1), 46–87.

---

## CONTENTS

---

## CONTENTS

ACKNOWLEDGMENTS .....	10
ABBREVIATIONS.....	11

### PAM REPORTS

PCMA FIELD MISSIONS AND PROJECTS IN 2012 AND 2013 (WITH MAP) .....	17
--	----

### EGYPT

#### ALEXANDRIA: KOM EL-DIKKA

ALEXANDRIA: EXCAVATIONS AND PRESERVATION WORK ON KOM EL-DIKKA,  
SEASONS 2012 AND 2013

<i>Grzegorz Majcherek</i> .....	29
---------------------------------	----

ISLAMIC NECROPOLIS AT KOM EL-DIKKA IN ALEXANDRIA:  
RESEARCH IN THE 2010–2013 SEASONS

<i>Emanuela Kulicka</i> .....	62
-------------------------------	----

ISLAMIC GLASS FROM AREA U (2012–2013)

<i>Renata Kucharczyk</i> .....	73
--------------------------------	----

#### MARINA EL-ALAMEIN

RESEARCH AND CONSERVATION IN MARINA EL-ALAMEIN IN THE 2012  
AND 2013 SEASONS. THE POLISH–EGYPTIAN CONSERVATION MISSION

<i>Rafał Czermer, Grażyna Bąkowska-Czermer, Wiesław Grzegorek</i> .....	87
---	----

SELECTED CONSERVATION WORK IN MARINA EL-ALAMEIN IN THE 2012  
AND 2013 SEASONS

<i>Marlena Koczorowska, Wojciech Osiak</i> .....	101
--	-----

RESEARCH AND CONSERVATION IN THE ROMAN BATHS OF MARINA EL-ALAMEIN  
IN THE 2012 AND 2013 SEASONS (POLISH–EGYPTIAN CONSERVATION MISSION)

<i>Rafał Czermer, Grażyna Bąkowska-Czermer, Grzegorz Majcherek</i> .....	113
--	-----

#### TELL EL-RETABA

TELL EL-RETABA, SEASON 2012

<i>Sławomir Rzepka, Józef Hudec, Łukasz Jarmużek, Lucia Hulková, Veronika Dubcová</i> .....	139
---	-----

APPENDIX: TELL EL-RETABA 2012. PRELIMINARY REPORT ON ARCHAEOBOTANICAL  
INVESTIGATIONS

<i>Claire Malleson</i> .....	156
------------------------------	-----

TELL EL-RETABA 2012: THE POTTERY

<i>Anna Wodzińska</i> .....	164
-----------------------------	-----

# CONTENTS

## TELL EL-FARKHA

TELL EL-FARKHA. EXCAVATIONS, 2012–2013

*Marek Chłodnicki, Krzysztof M. Ciałowicz* ..... 173

## TELL EL-MURRA

TELL EL-MURRA (NORTHEASTERN NILE DELTA SURVEY). SEASONS 2012–2013

*Mariusz A. Jucha, Grzegorz Bąk-Pryc, Natalia Małecko-Drozd* ..... 199

## SAQQARA

SAQQARA: SEASONS 2012 AND 2013/2014

*Karol Mysliwiec* ..... 215

APPENDIX: CONSERVATION WORK IN SAQQARA (2012 AND 2014)

*Zbigniew Godziejewski, Urszula Dąbrowska* ..... 224

SAQQARA 2012: THE POTTERY

*Teodozja I. Rzeuska* ..... 230

## WEST THEBES (ASASIF, DEIR EL-BAHARI) AND VALLEY OF THE NILE

THE TOMBS OF ASASIF: ARCHAEOLOGICAL EXPLORATION  
IN THE 2013/2014 SEASON

*Patryk Chudzik* ..... 239

TEXTILES FROM TOMB II IN DEIR EL-BAHARI: PRELIMINARY REPORT  
FROM SEASON 2012/2013

*Aleksandra Hallmann* ..... 247

DEIR EL-BAHARI. TEMPLE OF TUTHMOSIS III, CAMPAIGNS 2012–2013

*Monika Dolińska* ..... 257

REPORT FROM FIELD RECONNAISSANCE AT GEBELEIN, KHOZAM AND EL-RIZEIQAT

*Wojciech Ejsmond, Julia M. Chyla, Cezary Baka* ..... 265

## DAKHLEH OASIS

DAKHLEH OASIS PROJECT, PETROGLYPH UNIT: SEASONS 2012 AND 2013

*Ewa Kuciewicz, Paweł Polkowski, Michał Kobusiewicz* ..... 275

## BERENIKE

BERENIKE PROJECT. HELLENISTIC FORT, ROMAN HARBOR, LATE ROMAN TEMPLE, AND  
OTHER FIELDWORK: ARCHAEOLOGICAL WORK IN THE 2012 AND 2013 SEASONS

*Steven E. Sidebotham, Iwona Zych, Joanna K. Rądkowska, Marek Woźniak* ..... 297

## SUDAN

### DONGOLA

DONGOLA. SEASONS IN 2012–2013

*Włodzimierz Godlewski* ..... 325

APPENDIX: THE SKELETAL REMAINS FROM THE SANCTUARY OF ANNA  
IN THE MONASTERY ON KOM H

*Robert Mahler* ..... 340

---

## CONTENTS

---

WALL INSCRIPTIONS IN THE SOUTHWEST ANNEX TO THE MONASTERY ON KOM H AT DONGOLA: REPORT ON WORK IN THE 2013 SEASON <i>Adam Łajtar</i> .....	344
CRYPT 3 IN THE NORTHWEST ANNEX OF THE MONASTERY ON KOM H IN DONGOLA: REPORT ON THE EXPLORATION IN 2012 <i>Robert Mahler, Włodzimierz Godlewski, Katarzyna Danys-Lasek, Barbara Czaja</i> ....	352
BANGANARTI AND SELIB	
BANGANARTI AND SELIB IN 2011/2012 AND 2013 <i>Bogdan Żurawski</i> .....	369
EXCAVATIONS AT SELIB 2 IN 2012 <i>Roksana Hajduga, Katarzyna Solarska</i> .....	389
SELIB 1. PRELIMINARY REPORT FOR THE 2012 AND 2013 SEASONS <i>Aneta Cedro</i> .....	397
FAUNAL REMAINS FROM THE FORTIFIED SETTLEMENT AROUND THE CHURCH AT BANGANARTI IN SUDAN <i>Marta Osypińska</i> .....	411
EARLY MAKURIA (MTOM) PROJECT	
ANIMAL REMAINS FROM THE EARLY MAKURIAN CEMETERY IN EL-ZUMA (SEASON 2013) <i>Urszula Iwaszczuk</i> .....	425
GHAZALI	
GHAZALI 2012: PRELIMINARY REPORT <i>Artur Obłuski, Grzegorz Ochala, Miron Bogacki, Wiesław Małkowski, Szymon Maślak, Zaki ed-Din Mahmoud</i> .....	431
CYPRUS	
NEA PAPHOS	
NEA PAPHOS. SEASONS 2012 AND 2013 <i>Henryk Meyza</i> .....	443
LEBANON	
JIYEH	
PRELIMINARY REPORT ON THE 2012 AND 2013 EXCAVATION SEASONS AT JIYEH (PORPHYREON): WORK IN SECTOR D (RESIDENTIAL QUARTER) <i>Tomasz Waliszewski, Magdalena Antos, Piotr Jaworski, Piotr Makowski, Marcin Romaniuk, Rafał Solecki, Agnieszka Szymczak</i> .....	453
PRELIMINARY RESULTS OF A STRATIGRAPHIC ANALYSIS OF LATE ROMAN AND EARLY BYZANTINE ARCHITECTURE IN THE RESIDENTIAL QUARTER OF JIYEH <i>Michał Dzik</i> .....	475



## CONTENTS

---

RESULTS OF A SURVEY CONDUCTED IN THE AREA OF THE JIYEH MARINA RESORT HOTEL COMPLEX IN THE 2012 SEASON <i>Zofia Kowarska, Szymon Lenarczyk</i> .....	491
---	-----

### KUWAIT

#### AL-SUBIYAH AND FAILAKA ISLAND

TUMULUS BURIAL FIELD ON THE NORTH COAST OF KUWAIT BAY. PRELIMINARY EXCAVATION REPORT ON THE SPRING SEASON IN 2012 <i>Łukasz Rutkowski</i> .....	505
CHRISTIAN SETTLEMENT AT FAILAKA, QUSUR SITE (KUWAIT): EXCAVATIONS IN 2011 AND 2013 <i>Magdalena Żurek</i> .....	529
PRELIMINARY REPORT ON THE ARCHAEOLOGICAL SURVEY OF THE JOINT KUWAITI–POLISH MISSION, FAILAKA ISLAND, 2012 <i>Franciszek Pawlicki</i> .....	547
FAILAKA ARCHAEOLOGICAL RESEARCH PROJECT. PRELIMINARY RESULTS AFTER THE FIRST SEASON OF EXCAVATION AT THE KHARAIB EL-DESHT SITE IN 2013 <i>Agnieszka Pieńkowska</i> .....	560
APPENDIX 1: KHARAIB EL-DESHT 2013: POTTERY. PRELIMINARY REPORT <i>Marta Mierzejewska</i> .....	571
APPENDIX 2: SURVEY OF KHARAIB EL-DESHT BAY ON FAILAKA ISLAND: PRELIMINARY REPORT <i>Magdalena Nowakowska</i> .....	579

### IRAQI KURDISTAN

NEWCOMERS AND AUTOCHTHONS. PRELIMINARY REPORT ON 2013 ACTIVITIES IN THE KURDISTAN AUTONOMOUS REGION, IRAQ <i>Dorota Ławecka</i> .....	591
---	-----

### PAM STUDIES

LEVALLOIS TRADITION EPIGONES IN THE MIDDLE NILE VALLEY: SURVEY IN THE AFFAD BASIN <i>Marta Osypińska, Piotr Osypiński</i> .....	601
ZOOMORPHIC CLAY FIGURINES FROM TELL ARBID. PRELIMINARY REPORT <i>Maciej Makowski</i> .....	627
PLANT MACROFOSSILS FROM THE SITE OF TELL ARBID, NORTHEAST SYRIA (3RD–2ND MILLENNIUM BC). PRELIMINARY REPORT <i>Aldona Mueller-Bieniek, Krystyna Wasylikowa, Anna Smogorzewska</i> .....	657
THE ANIMAL ECONOMY OF PEOPLE LIVING IN THE SETTLEMENT OF TELL RAD SHAQRAH (SYRIA) <i>Joanna Piątkowska-Matecka, Rafał Koliński</i> .....	675

---

## CONTENTS

---

THE SOLAR ALTAR IN THE TEMPLE OF HATSHEPSUT AT DEIR EL-BAHARI: ARCHITECTURE AND IDEOLOGY <i>Andrzej Ćwiek</i> .....	693
FAIENCE OBJECTS FROM THE TOMB MMA 1152 AT SHEIKH ABD EL-GURNA <i>Patryk Chudzik, Andrzej Ćwiek</i> .....	701
INDIAN STEEL: A FORGOTTEN COMMODITY OF THE GREAT TRADE ROUTES <i>Marek Woźniak</i> .....	709
MONETIZATION OF ROMAN EGYPT DURING THE FLAVIAN DYNASTY (AD 69–96): THE CASE OF ALEXANDRIA AND BERENIKE <i>Katarzyna Lach</i> .....	727
CROSS-CULTURAL BEAD ENCOUNTERS AT THE RED SEA PORT SITE OF BERENIKE, EGYPT. PRELIMINARY ASSESSMENT (SEASONS 2009–2012) <i>Joanna Then-Obluska</i> .....	735
A NEW LOOK ON SOME OLD GLASS FINDS FROM PALMYRA <i>Krystyna Gawlikowska</i> .....	779
NEW INSIGHTS INTO NUBIAN ARCHERY <i>Łukasz Zieliński</i> .....	791
INDEX OF SITES .....	803
GUIDELINES FOR AUTHORS .....	804
PCMA PUBLICATIONS .....	805

*POLISH ARCHAEOLOGY IN THE MEDITERRANEAN (PAM)*  
*Annual of the Polish Centre of Mediterranean Archaeology, University of Warsaw*

PAM Editor-in-chief: Iwona Zych

Volume 24/1: Research

All texts peer-reviewed.

<http://www.pcma.uw.edu.pl/en/pam-journal/pam-independent-reviewers/>

Press-reviewing process: Urszula Wicenciak

Bibliographic editor: Aleksandra Zych

Language consultation: Iwona Zych

Technical editor: Iwona Zych

Digital processing: Ewa Czyżewska-Zalewska

Image processing and copyediting assistance: Ewa Czyżewska-Zalewska, Szymon Maślak, Marta Momot, Marek PuszkarSKI, Urszula Wicenciak

Original graphic design: Jerzy Kowalski, updated by Ewa Czyżewska-Zalewska for PCMA

DTP: Ewa Czyżewska-Zalewska, assisted by Agnieszka Dzwonek

Cover: Tumulus SB 100 from the Al-Subiyah region of Kuwait during exploration  
(Photo M. Makowski)

**ISSN 1234–5415 (Print), ISSN 2083–537X (Online)**

© Polish Centre of Mediterranean Archaeology, University of Warsaw, Warszawa 2015

© Wydawnictwa Uniwersytetu Warszawskiego, Warszawa 2015

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the Polish Centre of Mediterranean Archaeology of the University of Warsaw.

Polish Centre of Mediterranean Archaeology, University of Warsaw

00-497 Warszawa, Poland, ul. Nowy Świat 4

e-mail: [pam.pcma@uw.edu.pl](mailto:pam.pcma@uw.edu.pl)

[www.pcma.uw.edu.pl](http://www.pcma.uw.edu.pl)

Orders can be placed c/o Agnieszka Pieńkowska

[a.pienkowska@uw.edu.pl](mailto:a.pienkowska@uw.edu.pl)

University of Warsaw Press

00-497 Warszawa, Poland, ul. Nowy Świat 4

[www.wuw.pl](http://www.wuw.pl); e-mail: [wuw@uw.edu.pl](mailto:wuw@uw.edu.pl)

Internet Bookshop: [www.wuw.pl/ksiegarnia](http://www.wuw.pl/ksiegarnia)

*Printed in Poland*

## POLISH ARCHAEOLOGY IN THE MEDITERRANEAN

Published annually since 1990

PAM XXIV/1 *Research*

### REPORTS

Fieldwork projects carried out by PCMA teams in the Ancient Near East and Africa

- scope: archaeological, geophysical, restoration and study work
- areas of interest: Egypt, Sudan, Cyprus, Syria, Lebanon, Kuwait, Iraq
- timespan: ten millennia from prehistory and protohistory through the medieval period

### STUDIES

- archaeological, architectural and material research within the fields of study covered by PCMA fieldwork

PAM XXIV/2 *Special Studies*

*Deir el-Bahari Studies*

Editor Zbigniew E. Szafrński

Volume dedicated to research on specific egyptological and archaeological themes resulting from the ongoing work of the Polish conservation and restoration project in the Temple of Queen Hatshepsut in Deir el-Bahari (West Thebes, Luxor, Egypt). The 11 contributions included in this book concern mostly a later phase in the occupation of the complex, in the Third Intermediate Period (11th–8th century BC), when the abandoned temple was reused as a burial ground. A few of the articles refer to the original architectural form and decoration of the temple from the times of Hatshepsut (15th century BC). Also included is an article on tombs of three other queens of the Eighteenth Dynasty in the Valley of the Kings.

Available as full texts on-line at [www.pcma.uw.edu.pl](http://www.pcma.uw.edu.pl)

PAM volumes 17 to the present available on-line from [www.ceeol.com](http://www.ceeol.com)

Information and orders:

[www.pcma.uw.edu.pl](http://www.pcma.uw.edu.pl)

[pcma@uw.edu.pl](mailto:pcma@uw.edu.pl)

[pam.pcma@uw.edu.pl](mailto:pam.pcma@uw.edu.pl)

[www.wuw.pl/ksiegarnia](http://www.wuw.pl/ksiegarnia)



RESEARCH

PAM XXIV/1

POLISH CENTRE OF MEDITERRANEAN ARCHAEOLOGY  
UNIVERSITY OF WARSAW

# POLISH ARCHAEOLOGY IN THE MEDITERRANEAN

## XXIV/1

RESEARCH

