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## **New directions in the numismatics of Alexander the Great. An exploration of data from the PELLA portal**

Julien Olivier

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Julien Olivier. New directions in the numismatics of Alexander the Great. An exploration of data from the PELLA portal. Simon Glenn; Frédérique Duyrat; Andrew Meadows. Alexander the Great: a linked open world, Ausonius Editions, pp.75-89, 2018, 9782356132352. <hal-04668913>

**HAL Id: hal-04668913**

**<https://hal.science/hal-04668913v1>**

Submitted on 7 Aug 2024

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# Alexander the Great. A Linked Open World

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Alexander the Great.  
A Linked Open World

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*Cover illustration:* Reverse of a tetradrachm of Alexander  
the Great, mint of Damascus (courtesy of the American  
Numismatic Society, 1947.98.276).

Ausonius Éditions  
— Scripta Antiqua 116 —

# Alexander the Great. A Linked Open World

*Simon Glenn, Frédérique Duyrat and Andrew Meadows*

— Bordeaux 2018 —

**Cataloguing notice:**

Glenn, S., Duyrat, F. and Meadows, A. (2018): *Alexander the Great. A Linked Open World*, Scripta Antiqua 116, Ausonius Éditions, Bordeaux.

**Keywords:**

Alexander the Great; transnational heritage; coin circulation; semantic web/Linked open data; numismatics; looting of cultural heritage; metal analysis; Classical Reception

AUSONIUS

Maison de l'Archéologie

F - 33607 Pessac cedex

<http://ausoniuseditions.u-bordeaux-montaigne.fr>



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ISSN : 1298-1990

ISBN : 978-2-35613-235-2

Printed by  
de Gráficas Calima  
Avenida Candina, S/n  
E - 39011 SANTANDER

Octobre 2018

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# New directions in the numismatics of Alexander the Great.

## An exploration of data from the PELLA portal

Julien Olivier<sup>1</sup>

PELLA is a thematic portal developed at the American Numismatic Society (ANS) by Peter Van Alfen and Ethan Gruber dedicated to coinages of Alexander the Great. It follows the definition of Martin Jessop Price in his monumental catalogue: *The Coinage in the name of Alexander the Great and Philip Arrhidaeus*<sup>2</sup>. In this paper, I aim to underline the potential of such a tool from the basic identification of Alexander coins to development of further studies.

### TACKLING THE CHALLENGE OF ALEXANDER'S COINAGE WITH PELLA

The title of his book makes clear the demarcation chosen by Price: Alexander coinage is composed of coins bearing the name of the conqueror or his successor Philip III, whatever the date of issue from the 4<sup>th</sup> to the 1<sup>st</sup> century BC<sup>3</sup>. However, it also includes some coins struck in the name of Lysimachus, one of the *diadochoi*, who died in 281 BC. The catalogue presents all gold, silver and bronze issues arranged by region then by mint from West to East. This type catalogue was a huge contribution to the study of the large and complex coinage inaugurated by Alexander, especially as a consequence of the conquest of the Achaemenid Empire. Before Price the most important contributions had been those of L. Müller<sup>4</sup> in the 19<sup>th</sup> century then E. T. Newell – who published several books and articles from 1911 onwards, mainly based on the study of the enormous Demanhur hoard<sup>5</sup> – and M. Thompson, especially her work dedicated to Alexander's drachm mints in Asia Minor<sup>6</sup>. In his *Preface*, Price also quoted Sydney Noe, Nancy Waggoner and Heidi Troxell<sup>7</sup>. In many ways Price's work was based on that of these scholars (and others) and now PELLA appears to be a new stage in this long story.

- 1 I wish to thank Caroline Carrier who was kind enough to share her ideas with me and Frédérique Duyrat for her careful reading of a draft of the current article.
- 2 Price 1991.
- 3 Price 1991, 24-25.
- 4 Müller 1855.
- 5 Newell 1916; Newell 1918; Newell 1921; Newell 1923a; Newell 1923b; Newell 1929. A complete list of publications can be found on the ANS website: <http://numismatics.org/newellworks/>
- 6 Thompson & Bellinger 1955; Thompson 1983; 1991.
- 7 Price 1991, 9.

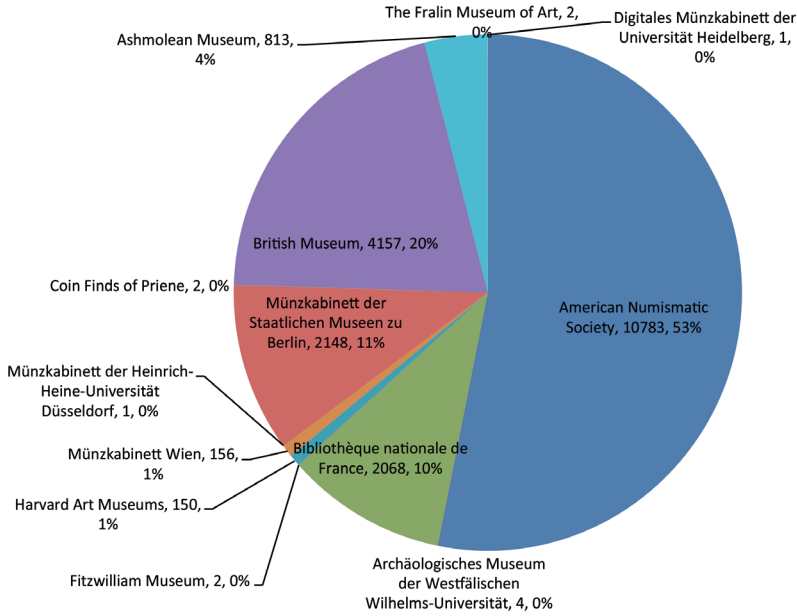


Fig. 1. Institutions in PELLA.

To date, PELLA gathers coins of 13 collections from US and Europe and aggregates 20,287 specimens (fig. 1)<sup>8</sup>. By far, the biggest collection is that of the ANS, representing more than half of the total with 10,783 coins. The huge collection bequeathed by Newell is an important factor here. The collection of the British Museum is also very important with no fewer than 4,157 coins (Newell was also partly responsible in this case<sup>9</sup>), then come the collections of Paris and Berlin, with about 2,000 coins each. At the time of writing, these four institutions contain 94.4 % of the coins available in PELLA.

#### AN IDENTIFICATION TOOL

Following Price's catalogue, the PELLA portal provides a single entry by type, a Price number with the main information (description, date, denomination, mint, and region), built with numismatic concepts such as mints, denomination, etc., created by the *Nomisma* project<sup>10</sup>. The description is supplemented by the map that locates mints and hoards referenced in the *IGCH*, data provided by another ANS project<sup>11</sup>.

8 As of 4<sup>th</sup> August 2017.

9 "E. T. Newell with characteristic generosity donated important sections of the great Demanhur hoard during the period 1910-1913", Price 1991, 83.

10 <http://nomisma.org/>

11 <http://coinhoards.org/>

Keyword

Refine Results

Stated Authority ▾

Authority ▾

Deity ▾

Denomination ▾

Issuer ▾

Material ▾

Mint ▾

Region ▾

Symbol ▾

Coin Type Number  
 Wildcards \* and ? are supported.

Date Range

From Date  
 A.D. ▾

To Date  
 A.D. ▾

<LF> in field to left  
 <RF> in field to right  
 <LW> below wing to left (gold coins)  
 <RW> below wing to right (gold coins)  
 <TH> under throne (silver coins)  
 <EX> in exergue (silver coins)

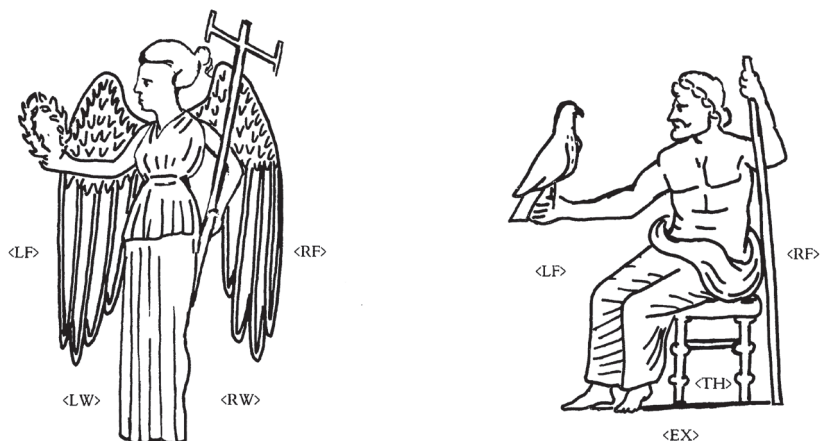


Fig. 2. Research fields together with symbol fields in PELLA (up) derived from Price's schema (down).

Functionalities offered by the portal allow easy identification of any variety. In *Browse*, results can be refined by multiple criteria, such as authority, iconography, physical description, mint, etc.. The *Symbol* option is especially convenient, making it possible to search by control-symbol or mark based on its position on the flan according to the Price schema (fig. 2)<sup>12</sup>. Undoubtedly it has a considerably superior functionality compared with the printed catalogue. At the bottom of the page, we find the coins themselves belonging to the different collaborating institutions with metrological data and an image linked to each original online catalogue. Finally, a section named *Quantitative Analysis* allows the user to synthesise the metrological data and offers the possibility of creating varied comparison graphs. The page *Visualize Queries* also provides tools to build graphs.

### A TOOL FOR NEW STUDIES

Although identification of coins is greatly facilitated by PELLA, the portal also provides useful tools for developing new studies. Here I will present some case studies to illustrate the possibilities offered by PELLA in the research field. This is not the place to develop these subjects fully, I aim simply to highlight the potential of PELLA.

### General arrangement of the coinage

By providing such a large amount of data, PELLA allows us to gather material for studies on large coinages quickly. For example, it provides an interesting overview of the geographic distribution of the recorded coins. The 20,287 coins on the portal are split between 101 mints; on average 200 coins per mint. As might be expected, a large part of the whole is concentrated in a few places: the ten biggest mints account for 60 % of the catalogued coins (fig. 3) – issues assigned to Amphipolis alone make up 13.5 % of the PELLA portal, more than 15 % of all silver coins – while 67 workshops are represented by fewer than 100 coins each. Unsurprisingly, the main mints, in terms of absolute numbers of coins, are located in Macedonia, Babylonia and Asia Minor.

Mint	Av	Ar	Ae	Total
Amphipolis	8	2,604	106	2,718
Babylon	148	1,518		1,666
Colophon	6	1,323		1,329
Sardis	106	762	29	897
Lampsacus	77	791		868
Miletus	84	591	172	847
Aradus	36	649	9	694
Abydus	95	591		686
Magnesia ad Maeandrum	35	581		616
Tarsus	35	513	64	612

Fig. 3. The ten main mints in PELLA.

Gold, silver and bronze coins are recorded in PELLA in dramatically different proportions. With 17,183 silver coins, silver represents 85 % of the whole. Gold and bronze are represented by a similar number of coins, about 1,400-1,500 each. From the number of types, we can deduce that the average number of coins by type, obviously with important disparities, is about two for gold and near to five for silver and bronze. The rather small number of bronze coins must be linked with the composition of public collections, perhaps reflecting a collecting habit of one specimen of each variety<sup>13</sup>, but also give some indication about the structure of coinage with Alexander's types. Indisputably the Attic stater and tetradrachm are the prevailing denomination for gold and silver respectively (fig. 4). The unusual gold distaters mainly come from Macedonian mint(s), while quarters of a stater come from Macedonia and Asia Minor. Silver drachms, nearly entirely struck in Asia Minor, are also numerous. Conversely, most of the 245 hemidrachms and obols come from the East: from Cilicia to Susa (184); only 37 are recorded in Amphipolis. This observation is true for virtually all the silver fractions of the drachm.

13 Unlike gold and silver, Alexander's bronze coinage has very few control marks, therefore significantly fewer varieties than precious metal coinages: in Price's catalogue, 291 entries are dedicated to bronze; 687 to gold, and 3,591 to silver.

Gold Denominations	N
Distater	48
Stater	1,382
Half of a stater	6
Quarter of a stater	36
Eighth of a stater	1
<b>TOTAL</b>	<b>1,473</b>

Silver Denominations	N
Decadrachm	6
Tetradrachm	11,848
Stater	20
Didrachm	42
Drachm	4,969
Fifth of a tetradrachm	5
Sixth of a stater	3
Pentobol	1
Hemidrachm	129
Diobol	20
Obol	116
Hemiobol	16
Thirtieth of a tetradrachm	7
Twelfth of a stater	1
<b>TOTAL</b>	<b>17,183</b>

Fig. 4. Gold and silver denominations in PELLA.

### The bronze system(s)

Fruitful future studies may be devoted to the bronze coins issued under Alexander, which have often received little attention. Price distinguished five typological groups among the bronze issues, which he assigned to no fewer than four different denominations: from a double unit to a fourth of a unit (fig. 5). With 846 coins bearing these types with known weight and diameter, PELLA data would help to clarify this organisation.

Obverse type	Reverse type	2 units	Unit	½ unit	¼ unit
Beardless Heracles	Quiver on bow and club		X	X	X
	Bow in bow-case and club	X	X	X	X
	Eagle on thunderbolt			X	
Male head	Horse			X	X
Macedonian shield	Macedonian helmet			X	X

Fig. 5. The Alexandrine bronze system according to Price 1991, 31.

In fig. 6 the specimens of bronze in PELLA have been plotted by types according to the Price groups<sup>14</sup>. Several observations immediately emerge from the graph. First, the Alexandrine coinage must be divided into two groups. The male head/horse, Heracles/eagle and shield/helmet coins (fig. 6, red circle) fall in a rather coherent area, from c. 3 to 5g and 14 to 18mm. These series seem to be composed of a single denomination, with the exception of very rare fractions of male head/horse around 1-1.3g and 12-13mm. The two Heracles/weapons – quiver or bow-case and club – coinages (fig. 6, blue circle) fit together in another schema. A main unit made of pieces weighing from c. 5 to 8g and with a diameter of c. 16 to 20mm is complemented by divisions of 1-2g and 10-14mm.

Does this graph reveal a unique coherent bronze system with three denominations, one main unit (1) struck with a half (2) and a quarter (3, 4)? At this stage it seems unlikely. The metrological data from the 167 bronzes bearing the name of Philip II in the BnF collection (fig. 7) match perfectly the two denominations of the Heracles/weapons series, unambiguously inherited from this previous coinage (blue circle). While it appears that the medium group (2) fits 157 Amyntas III (c. 393-370/69 BC) and Perdikkas III (365-359 BC) bronze coins in the BnF (Heracles/eagle) (red circle). Obviously these metrological approximations need to be confronted with circulation patterns and hoard information to be corroborated. It seems quite probable, however, that Alexander's bronze coinage as collected in Price's catalogue belongs to two different, separate systems, perhaps inherited from previous Macedonian kings.

#### The fifths and thirtieths of a tetradrachm

Thanks to its aggregation of major collections, PELLA is also an excellent place to study small or rare issues. Fifths and thirtieths of a tetradrachm, for instance, are unusual denominations in the Greek world. A catalogue of these may now be assembled as follows:

14 Price 1991, 31-32, puts together the coins depicting Apollo or Heracles/horseman and those with a male head/horse; the same for the rare Apollo/thunderbolt bronze with the Heracles/eagle coins.

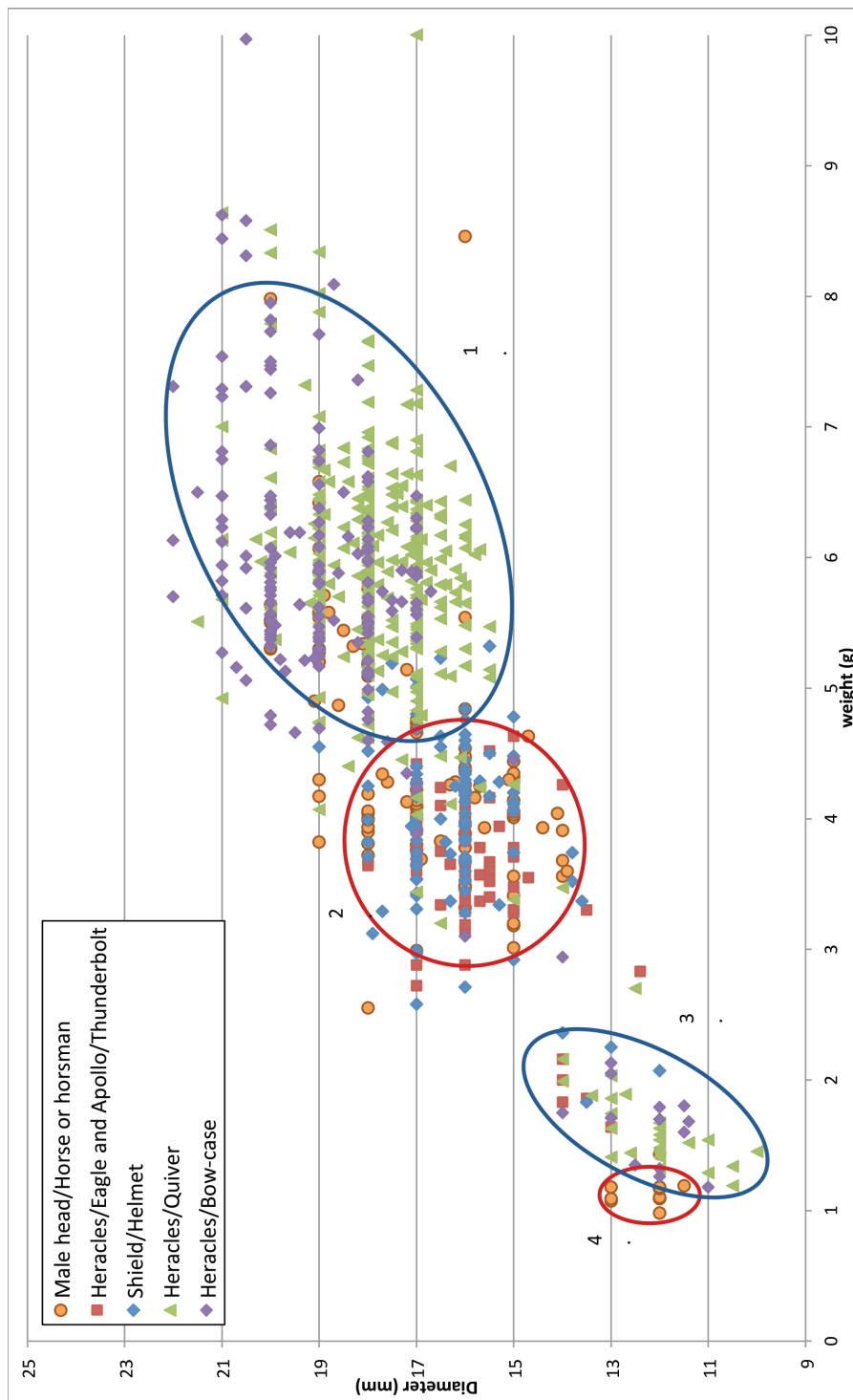


Fig. 6. Diameter/weight of Alexandrine bronze coinages recorded in PELLA (846 coins).

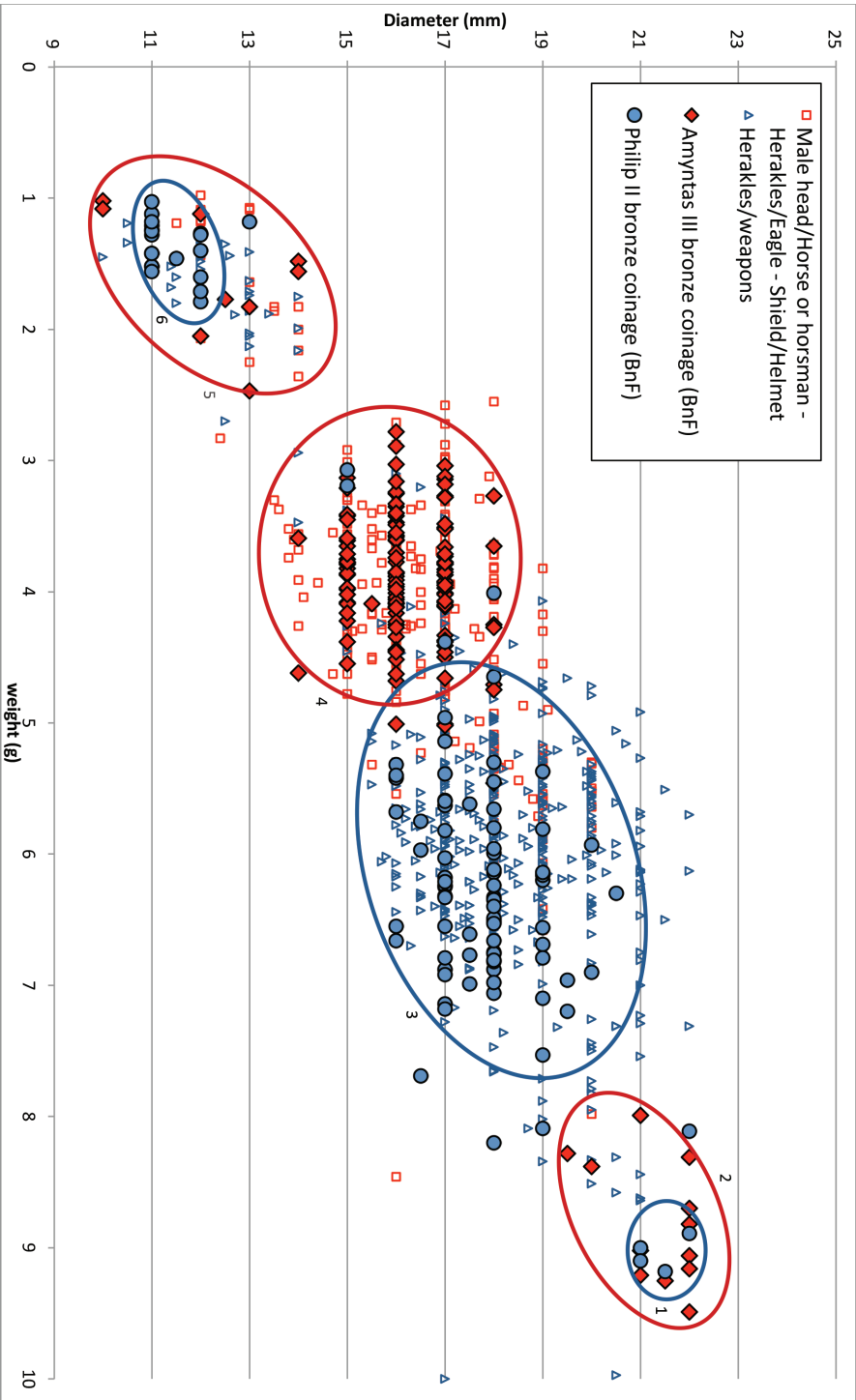



Fig. 7. Diameter/weight of Alexandrine bronze coinages recorded in PELLA compared with Amynntas III and Philip II issues from Paris (170 coins).

## CATALOGUE

A. "Fifths of a tetradrachm". 11 coins – 7 obverse dies (n/d 1.57)<sup>15</sup>, 8 reverse dies

Obverse: Head of beardless Heracles, right, wearing a lion skin headdress

Reverse: Quiver on bow and club


Price 3702:  left field

Price 3743:  in a wreath in left field; M (or MI) in right field

O1 R1 BnF, Fonds général 1047A. 3.10g; 15mm; 6h.

O2 R2 BnF, 1966.453.1055 (coll. Delepierre). 2.99g; 15mm; 4h.



O2 R2 Coll. Yoav Sasson (Spaer 1981, pl. I, 1). 3.19g; 15mm; 5h.

Price 3705:  in a wreath in left field; H in right field

O2 R3 CNG Triton VII, 337. 3.29g.

O3 R3 Fritz Rudolf Künker GmbH & Co. KG – Auction 94, 686. 3.21g.

O4 R4 BnF, 1973.1.415 (ex. coll. Seyrig). 3.34g; 15mm; 1h.

Price 3727:  in a wreath in left field;  in right field

O5 R5 ANS, 1944.100.80995. 3.22g; 16mm; 12h.

O5 R5 CNG Auction 93, 489. 2.79g; 17mm; 9h.

O6 R6 BM, 1986,0553.1. 3.32g; 4h.

O6 R7 BM, 2002,0101.899. 3.29g; 6h.

Price 3728A:  in a wreath in left field above 

O7 R8 CNG – Triton IX, Lot 1000; ex Münzauktion Tkalec & Rauch AG (16-17 November 1987). 3.40g; 12h.

## B. "Thirtieths of a tetradrachm". 30 coins – 17 obverse dies (n/d 1.77), 18 reverse dies

Obverse: Head of beardless Heracles right wearing a lion skin headdress

Reverse: Quiver on bow and club

Price 3706:  in a wreath in left field; H in right field

O1 R1 Münzen & Medaillen Deutschland 27, May 28<sup>th</sup> 2008, 2141; CNG Triton IX, January 10<sup>th</sup> 2006, 1001. 0.56g, 6h.

O1 R1 CNG 72, June 14<sup>th</sup> 2006, 883; Aufhäuser 8, October 9<sup>th</sup> 1991, 62, 883. 0.53g.

O2 R2 Numismatik Nauman 53, March 7<sup>th</sup> 2017, 371. 0.57g; 9mm.

O2 R2 CNG e-367, January 27<sup>th</sup> 2016, 249. 0.55g; 8mm; 9h.

O3 R2 CNG e-392, March 1<sup>st</sup> 2017, 325. 0.50g; 8 mm; 1h.

O4 R3 BM, 2002,0101.897. 0.41g; 2h.

O5 R4 CNG 93, May 22<sup>nd</sup> 2013, 490; ex Lawrence M. Cutler coll.; Numismatic Fine Arts Fall Mail Bid Sale, October 18<sup>th</sup> 1990, 184; Schweizerische Kreditanstalt 8 October 27<sup>th</sup> 1987, 756. 0.47g; 9mm; 3h.

O6 R5 Künker 136, March 10<sup>th</sup> 2008, 557. 0.43g.

O7 R6 CNG 64, September 24<sup>th</sup> 2003, 110. 0.55g.

Price 3729:  $\overline{\text{MP}}$  in a wreath in left field above  $\text{X}$

- O7 R7 Numismatik Nauman 47, October 9<sup>th</sup> 2016, 82. 0.53g; 9mm.  
 O7 R8 Baldwin-Markov-Münzen & Medaillen, The New York Sale XXX, January 9<sup>th</sup> 2013, 104. 0.51g; 2h.  
 O7 R8 Gorny & Mosch 160, October 9<sup>th</sup> 2007, 1392. 0.58g.  
 O7 R9 BM, 2002,0101.900. 0.52g; 3h.  
 O8 R9 BnF, Fonds général 686A. 0.50g; 9mm; 6h  
 O8 R8 CNG e-351, May 20<sup>th</sup> 2015, 113. 0.58g; 9mm; 6h.  
 O8 R8 CNG e-202, January 14<sup>th</sup> 2009, 73. 0.55g; 8mm; 6h.  
 O9 R8 Hauck & Aufhäuser 18, October 5<sup>th</sup> 2004, 80. 0.49g.  
 O10 R10 Ashmolean Museum, HCR23841. 0.57g; 8mm; 12h.

Price 3739:  $\overline{\text{MP}}$  in a wreath in left field;  $\overline{\text{P}}$  in right field

One coin from the Hersh coll.

Price 3744:  $\overline{\text{MP}}$  in a wreath in left field; M (or MI) in right field

- O1? R11 Coll. Yoav Sasson (Spaer 1981, pl. I,3). 0.52g; 8mm; 4h.  
 O7 R12 Ashmolean Museum, HCR23842. 0.51g; 9mm; 6h.  
 O7 R12 Nomos, Obolos 6, November 20<sup>th</sup> 2016, 327, 0.54g; 9mm; 3h.  
 O11 R12 ANS, 1944.100.80996. 0.52g; 10mm; 6h.  
 O12 R13 CNG 63, May 21<sup>st</sup> 2003, 190. 0.38g.  
 O12 R13 CNG 81, May 20<sup>th</sup> 2009, 574. 0.31g; 4h.

Price ?

- O13 R14 CNG 72, June 14<sup>th</sup> 2006, 883. 0.37g; 12h.  
 O14 R14 CNG e-286, September 5<sup>th</sup> 2012, 164. 0.35g; 7mm; 11h.  
 O15 R15 CNG e-237, July 21<sup>st</sup> 2010, 44. 0.50g; 9mm; 12h.  
 O16 R16 CNG e-346, March 11<sup>th</sup> 2015, 192. 0.32g; 7mm; 12h.  
 O17 R17 Gorny & Mosch 212, March 5<sup>th</sup> 2013, 1411. 0.51g.  
 O? R18 Coll. Yoav Sasson (Spaer 1981, pl. I,2). 0.46g; 9mm; 9h.

This catalogue may be summarised in tabular form (fig. 8):

Denomination	Fifths of a tetradrachm	Thirtieths of a tetradrachm
Coins in PELLA	6	6
Coins in Coinarchives	4	22
Coins in Price 1991 but not in PELLA	1	2
Total	11	30
Obverse dies	7	17
Reverse dies	8	18

Fig. 8. 1/5 and 1/30 tetradrachms series, the material.

The gathering of a corpus of 41 of these rare coins is therefore considerably simplified; the combination of PELLA and *CoinArchives* was enough to gather a reasonably large group of coins. While this corpus is insufficient to carry out a fully representative die study, it does

provide a general idea of the importance of the coinage – about 7-15<sup>16</sup> obverse dies for the fifths, 17-31 for the thirtieths – together with important elements about its organisation. The fact that all varieties are unified by a single common control mark (MP) and that one tetradrachm with the same monogram and H was recut on MI<sup>17</sup> might indicate a rather short production. The fact that obverse die n° 7 of the thirtieths of a tetradrachm links 3 varieties and the n° 2 of the fifths two varieties may be further evidence of a quick striking.

The same approach works for the study of metrology. Price identified these pieces as fifths and thirtieths of a tetradrachm. The first is a usual division in the Macedonian kingdom: G. Le Rider proposed this identification in 1977 for c. 2.3-2.4g Macedonian coins with the name and types of Philip II. These were struck with another fraction, tenths of a tetradrachm. He suggests that these small silver coins were produced to make the Thracio-Macedonian tetradrachms exchangeable with the Attic gold staters<sup>18</sup>. In some ways the fifths and thirtieths of a tetradrachm described by Price are very different from the Philips. First, contrary to the Philips, “fifths of a tetradrachm” with Alexander types are rare and go along with another fraction, unknown in Macedonia<sup>19</sup>. Above all, the weights of these two denominations do not conform to a fifth (3.44g) and a thirtieth (0.57g) of an Attic tetradrachm (fig. 9).

Fifths of a tetradrachms		Thirtieths of a tetradrachm		Lion staters (after Mazaios)	
Weight	Coins	Weight	Coins	Weight	Coins
3.31-3.40g	2	0.56-0.60g	5	17.11-17.30	8
3.21-3.30g	4	0.51-0.55g	12	16.91-17.10	15
3.11-3.20g	1	0.46-0.50g	6	16.71-16.90	20
3.01-3.10g	1	0.41-0.45g	2	16.51-16.70	13
2.91-3.00g	0	0.36-0.40g	2	16.31-16.50	12
2.81-2.90g	1	0.31-0.35g	3	16.11-16.30	1
2.71-2.80g	1	Average weight	0.49g	15.91-16.10	9
Average weight	3.18g	Median	0.51g	15.71-15.90	9
Median	3.215g			<15.61	6
				Average weight	16.52g

Fig. 9. Weight of fifths and thirtieths of a tetradrachm together with the Lion staters.

16 The estimative number of dies is obtained with Carter's simplified method: Carter 1983.

17 Houghton & Lorber 2002, vol. 1, 40.

18 Le Rider 1977, 357 et sq.

19 Le Rider 1977, 120, lists 96 fifth and 5 tenth tetradrachms but the most numerous issues (Amphipolis, group III-IV) are not exhaustively catalogued.

Despite the iconographic link with Alexander's coinage (Herakles, weapons), the fifth/thirtieth issues also could be considered closer to lion staters struck in the Babylonian mint from c. 331 to some time after 305 BC. The  $\overline{\text{MP}}$  (sometimes in a wreath) appears on some issues with different control marks, among them: M, MI and H<sup>20</sup>. Except for the very first emissions (bearing the name of Mazaios), these staters are noticeably lighter than the Attic tetradrachms, from c. 16g to a little over 17g<sup>21</sup>. G. Le Rider considered that these coins conformed to the Attic standard but their weights (and silver content) were less precise, probably because their circulation was restricted to the East<sup>22</sup>. Could the fifths and thirtieths of a tetradrachm in fact be fractions of the lion staters? In his short publication of 1980, A. Spaer explored this possibility following the discovery of a fifth of a tetradrachm in Jerusalem. Considering the weight of that coin (3.19g), he suggested that it might be a fraction of a lion stater. These coins bear the same control mark, and some were found in Israel. The author mentions that he bought two thirtieths of a tetradrachm and lion stater fractions in 1968-1969, probably discovered together in the Gaza Strip<sup>23</sup>. Interestingly, A. Houghton and C. Lorber choose in *Seleucid Coins I* to name these fractions "silver fifth (or thirtieth) stater" with the tetradrachm mention in brackets<sup>24</sup>. They attribute these coins to the first Seleucid issues struck in Babylon (c. 311-300). Might these fractions have been involved in the change of the new full Attic coinage with the local silver coinage (end after 305)? To date the weights approximation seems rather persuasive to question the possibility of this function.

These brief studies reviewed in light of the data available in PELLA show the added value of such a web portal. They also demonstrate the limits of a tool based on a printed book.

#### NEW STUDIES TO UPDATE PRICE

Some type categories are not described precisely enough to distinguish them; for example, coins without symbols, letters or monograms, or some bronze coins are difficult to classify. Sometimes, Price distinguished bronze types by the orientation of the bow or the club in the reverse design, but many inconsistencies remain between the descriptions and the plates. Are these slight differences relevant? Some missing details might have chronological implications. The position of Zeus' legs on the reverse of the tetradrachms and drachms, crossed or not, was not taken into account by Price while G. Le Rider has demonstrated its chronological significance<sup>25</sup>. Finally, several errors have to be corrected. While preparing this paper and working to integrate the BnF collections into the PELLA portal, we have worked with the Berlin and Oxford teams to complete a list of errors or problems encountered. To

20 Nicolet-Pierre 1999, 301; Houghton & Lorber 2002, 44-45.

21 Nicolet-Pierre 1999, 292.

22 Le Rider 2003, 277-278.

23 Spaer 1980, 2-3. Interestingly, Gaëlle Thévenin (Thévenin forthcoming) has recorded other examples of these coins in Gaza: 8 thirtieth of a tetradrachm and 4 imitations (1 fifth, 3 thirtieth) together with 33 other local style c. 0.30-0.50g silver coins with Alexandrine tetradrachm/drachm types. Most of them were found in the "emporium" area.

24 Houghton & Lorber 2002, 42.

25 Le Rider 1998; 1999, 14.

date, this document contains 119 lines. I give a number of examples, with the bronze issues most in need of further clarification:

Organisation of the coinage. From the study of Alexander's bronze coinage we have deduced a rather different system of denomination implying a required change to Price's classification.

Variety of descriptions. Price Nos 1501 and 1503 are types with the same description with the exception of the symbol: the first is described as "male left wearing the chlamys" and the second as "Hermes left", just because some coins show the character holding a sceptre. It is probably the same figure on both, the sceptre being usually off-flan.

Mistakes in the transcription of monograms and words. Price 1991, n° 320. The monogram is not complete on the coin in the BM seen by Price; a complete one is in Paris (cf. fig. 10). The same is true for Price 3702 (MP only) which probably does not exist. The die study of fifths of a tetradrachm has shown that the only coin belonging to this number (cat. n° 6, BnF, 1966.453.1055) has a reverse die linked with Price 3743 (MP, M or MI).

This final point exposes another limit of the colossal work of Price. The catalogue is mainly based on British and American collections and did not take into account several other large collections, such as that of Paris. Today, 400 coins in the BnF collection cannot be integrated into PELLA because their varieties are not in Price (fig. 11). This represents about 15 % of the Paris collection. Some of these pieces are not intended for entry into PELLA, being forgeries for example, or cannot be integrated due to uncertainty about their true identification. Nevertheless, 173 coins in the name of Alexander or Philip, 6.8 % of the BnF collection, are currently omitted from PELLA. For these examples, it would be necessary to create new numbers.



Fig. 10. The Monogram of Price n° 320: BnF, Luynes coll. n° 1675 (left) and BM, RPK, p85C.9.AleIV (right).

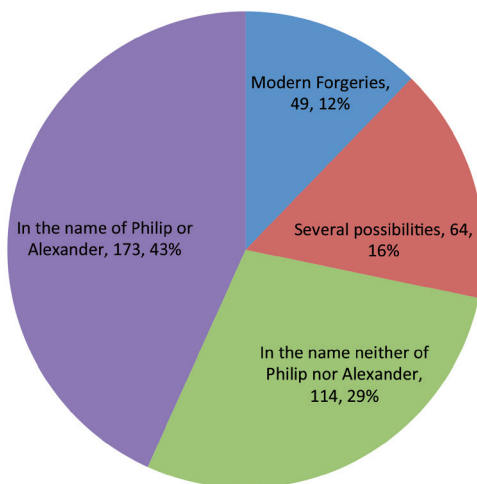


Fig. 11. Alexanders in Paris that cannot be integrated into PELLA.

The problem of coins with the types of Alexander, but the name of other kings also arises. It is clear that most of the entries in the catalogue concern Alexander. Coins of Philip III were also systematically catalogued by Price with 253 types. Some types in the name of Lysimachus have been included, but the work is not as complete as for the two previous kings. Finally, Price added some types for barbarous imitations and forgeries (fig. 12).

Coinage in the name of	Number of entries in Price
Alexander	4269
Philip III	253
Lysimachus	50
'Barbarous' (not in PELLA)	44
Forgeries (not in PELLA)	110

Fig. 12. Number of entries per ruler in Price catalogue.

This list does not include Ptolemy, Seleucus, Antiochus, Antigonos Gonatas, Monounius and some others under whom coins with the types of Alexander were struck. This restriction derives directly from Price's choices and excludes from the portal coins sometimes struck along with series in the name of Alexander by kings who are not represented in the catalogue. For Paris, this accounts for 114 coins, 4.5 % of the collection. Obviously, these coins will be recorded in other places, such as dynastic portals for the Ptolemies or the Seleucids (as part of the ANS' Hellenistic Royal Coinages project, for example). But it may also be pointed out that the fifths and thirtieths of a tetradrachm from Babylon presented above are to be found in Price, dated 317-311 BC, but also in *Seleucid Coins I*, n° 84 with another chronology, c. 311 to c. 300. This cross reference of Alexandrine coinage can also be found for many early Seleucid and Ptolemaic issues.

## MOVING FROM PRICE TO PELLA

How should we deal with these problems? It is necessary to update Price's work by taking into account the development in research since 1991. How and on which criteria should this be done? How should we deal with Alexander-type coins in the names of other kings? Should we wait for the development of other portals to link to, or incorporate them in PELLA? How also should we solve the discrepancies when the same issue is included in two reference works with two different interpretations?

To conclude, the PELLA project confirms again the quality of Price's monumental work, and his catalogue is still correctly recognised as the basis of any study devoted to Alexander coinage. Thanks to PELLA, we now have the possibility of constantly improving this work by correcting errors and imprecisions, but also by updating the chronologies, attributions, and adding new type numbers in light of recent studies. This observation highlights the effect of PELLA, making our knowledge of Alexander's coinages available to the greatest number of people, highlighting the limits of our studies and opening new and rich research fields. PELLA opens possibilities of extremely stimulating collaborative work on these questions. Ultimately, after Müller, Newell and Price, PELLA should become the new reference for Alexander coinage.

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