

Volume 31

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Front cover: Photo of the Alexander tetradrachm, no. 68 (see article of Lloyd Taylor Fig 1 page 52)



NUMISMATIC ASSOCIATION OF AUSTRALIA INC

President's Report

With COVID-19 now endemic, the Association has not been able to hold a conference because of the upsurge this year of the virus Australia-wide, but nevertheless the NAA has continued to function with an upgraded website and the publication of this double volume JNAA31, which is available for free download at the NAA website. We plan to hold a conference next year in Adelaide, 19 – 20th October 2023, hosted by the Numismatic Society of South Australia.

I am delighted to announce the award of the Ray Jewell Silver Medal to our Managing Editor, Associate Professor Gillan Davis for his services to the NAA, and his numismatic work both in Australia and overseas for which he has an international reputation. Congratulations Gil from all of us.

The NAA continues to enjoy sponsorship at a sustainable level, with Noble Numismatics (Gold), Coinworks, Downies (Silver), Coins & Collectables Victoria, Drake Sterling, Mowbray Collectables, Sterling & Currency and Vintage Coins & Banknotes (Bronze) all contributing to ensure the Association's continued success. Membership is being maintained, and with the contributions by sponsors and members, the Association can function in these difficult times.

The NAA now has a new Secretary, Bridget McClean, and a new address in Nunawading, Victoria. This is convenient as the NAA is incorporated in Victoria. Much time has been spent changing bank signatories and updating Consumer Affairs Victoria; nothing happens quickly these days!

The Numismatic Association of Australia now has a functioning PayPal account linked to president@numismatics.org.au. This is very convenient for payments coming from overseas and avoids most international bank fees. Like with banking, setting up a PayPal account is not a five-minute exercise, but well worthwhile.

I am impressed with the considerable work our Managing Editor Gil Davis has put into this volume notwithstanding his being extraordinarily busy transferring between universities and setting up new programmes at the Australian Catholic University. Also, I am grateful to Barrie Newman for his on-going work in getting the journal set up and printed, taking on the tasks of both layout and copy editor.

Council continues to meet by ZOOM, hosted by David Galt at Mowbray Collectables.

Finally, the Association cannot function without the dedication of its secretary and its treasurer (Lyn Bloom); thank you both Bridget and Lyn.

Professor Walter R. Bloom

President, NAA

www.numismatics.org.au

3rd August 2022

Editor's note

This volume has been a long time in the making. Usually, an issue is based around the NAA annual conference, but COVID-19 made that impossible. More importantly, as the peak body for numismatics in the country, we are focussed on making each volume wide ranging, interesting and impactful. So, we waited on the completion of a couple of key contributions and have brought out a combined two-year issue which I have dubbed 'the professors' volume' on account of the academic attainment of most of the authors. I trust you will agree that the results justify the decision, because here we offer a splendid collection of eleven articles on an eclectic range of topics with some of the best numismatic analysis and writing I have read. Personally, I have learnt a lot, and I expect that you will too. The collection is rounded out by an obituary by NAA stalwart Peter Lane of the late Maurice B Keain, a real character on the Australian scene.

There are two articles on Australian topics. Vincent Verheyen offers a forensic scrutiny of 'proofs' and 'specimens' from the Melbourne and Perth mints issued in just two years, 1955 and 1956 and seeks to differentiate between them. Walter Bloom provides an interesting study of Western Australian numismatic medallions and badges with an emphasis on the Castellorizian Brotherhood which represented the émigrés from that Greek island.

Lloyd Taylor gives us a Hellenistic trilogy which is a tour de force in numismatic analysis. He starts with a brief but compelling argument correcting one of Hersh's additions to Price's Alexander typology showing that it was already in the corpus. Next, he reattributes Macedonian imperial coinage attributed to Berytos to Byblos. Finally, he shows that an issue of tetradrachms struck in the name of Philip III was in fact a posthumous issue of Seleukos.

There are four articles on a Roman theme:

- Bruce Marshall moves us into the turbulent period of the late Roman Republic with a study of 'labels' on a small number of denarii which he contends fed into the contemporary political discourse.
- Graeme Stephens and John McDonald offer us something unusual and valuable. They document and analyse an unpublished hoard of fourth and fifth centuries AD Roman coins and local imitations from Sri Lanka.
- Andrew Chugg explores the veracity of commemorative medallions of Antinous, paramour of the emperor Hadrian who was deified after his death in the Nile, arguing that there are ways of distinguishing between genuine and fake examples.
- John Melville-Jones offers us a magnificent work listing the names of Roman coins as used by the Romans themselves and sometimes just by modern numismatists.

Written in John's inimitable style, this is an invaluable reference for collectors, students and scholars.

The next article by Emy Kim and Cristiana Zaccagnino takes us into the fascinating world of a numismatic collection of some 600 Greek and Roman coins housed at Queen's University in Canada that is being used in teaching and research. They show just how valuable coins can be when treated as artefacts used to inform historical and scientific understanding. This represents a welcome trend in modern scholarship to integrate numismatics into cross-disciplinary studies.

Finally, we publish a long autobiographical article by Maria Caltabiano. This is justified by the profound impact which she has made on numismatics in a lifetime as professor of numismatics at the University of Messina in Sicily. Along the way, she describes many of her projects with a particularly fascinating exposition of an example of iconic programmatic minting in late fifth century BC Kamarina in the period of the 'signing masters' – some of the most exquisite ancient coinage ever struck. Sadly, we tend not to know enough about numismatics in early Europe, and this article goes some way towards filling the gap.

I sincerely thank the many diligent anonymous reviewers who have done so much to improve the papers. Likewise, I thank the members of the editorial board who stand ready and willing to help when called upon, and John Melville-Jones who happily proofreads the articles. Above all, I pay tribute to Barrie Newman without whose tireless efforts across the years, these volumes would not see the light of day.

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Articles must comprise original research on numismatic material including but not limited to Australasian numismatics (coins, tokens, medals, banknotes) or ancient or mediaeval numismatics. Manuscripts can be emailed to any member of the Editorial Board in your area of research, along with a copy to the Managing Editor.

The case for reattribution of the Berytos Alexanders to Byblos

Lloyd W. H. Taylor

Abstract

A tetradrachm die study of the Macedonian imperial coinage attributed to Berytos by Price establishes that this was a compact, yet complex emission struck from seven obverse dies and at least 43 reverse dies. Based on mint controls and their varied placements, seventeen different types are identified in a sequence that is tightly die linked. Forty percent of the types identified are previously undocumented. The coinage has all the hallmarks of a short duration emission from an ephemeral mint. Influences derived from Arados and Sidon are identified in the diversity of iconographic detail and style. It is inferred that resources were possibly drawn from these mints to strike the coinage. One specific iconographic detail on some of the reverse dies is also found on some of the Year 13 dated issues of Sidon otherwise absent on all other Alexander's struck in Phoenicia. In all likelihood, the coinage was a contemporary of this Sidon issue, struck in association with the transit of the Macedonian royal army from Egypt to the assembly at Triparadeisos. The hoard record of the coinage and its historical context converge to suggest that it was struck at Byblos, a vassal kingdom on the Phoenician coast, rather than Berytos, which at the time was a small port within the territory of the kingdom of Sidon.

Key words

[Berytos] [Byblos] [Die study] [Alexander mints] [Phoenician mints] [Philip III]

Introduction

In discussing the coinage that he attributed to Berytos, Price wrote:

The issues attributed to this mint form a compact group all marked with the letter B. The city is not known to have coined under the Persians, and the style of the few extant examples places their issue c. 323 BC or a little later. This makes them parallel to the later issues of the lifetime and early posthumous group at Aradus, although the royal title is not found at Berytus. The gold issue quoted by Müller shares the Aradus fashion of having a letter on the obverse.¹

¹ Price 1991: 429. Ancient Berytos is located beneath modern day Beirut.

Based on mint controls and denominations, Price defined 15 different types in the coinage (Price 3406-3420). Eleven of these are tetradrachms, the subject of this die study. Three types of obol (Price 3408-9 and 3417) bear mint controls that are also found on the tetradrachms. A gold stater (Price 3411) was also attributed to the mint. Notably, it is missing the letter B mint mark, the abbreviated ethnic identifying the city of the mint.² Instead, the stater is described as carrying two mint marks, Λ on the obverse, and ΛΙ on the reverse. The only evidence of this gold stater is limited to a mid-19th century description.³ Its association with the coinage is doubtful. In the absence of a specimen for examination it will not be considered further.⁴

Catalogue

The catalogue of tetradrachms is compiled from published sources,⁵ plus the PELLA online portal⁶ of the American Numismatic Society (ANS), augmented by a survey of coins in commerce. Based on mint controls, the sequence types, or issues, identified in the catalogue are sequentially numbered from 1 to 17 (bold text in catalogue below). Coin entries denoted by an asterisk are illustrated on the accompanying **Plates 1 and 2**. The coinage was struck with unadjusted dies.

Obverse: Head of Herakles r. in lion skin headdress, dotted border.

Reverse: ΑΛΕΞΑΝΔΡΟΥ on r., Zeus seated l. on *diphros*, or high-backed throne, holding eagle and sceptre, Greek letter mint marks in left field and/or beneath the *diphros*/throne as indicated, dotted border.

1. - , - (Price -)

	<i>Obv. / Rev.</i>	<i>Grams</i>	
1.	A1 / P1	17.17	CNG eAuction 402 (2017), 43.
2. *	A1 / P2	16.85	Auction World 22 (2020), 1572. B mint mark initially omitted from reverse die P2.

2 Taylor 2020(a): 34 ... the attribution of Alexander's coinage to specific Phoenician and Syrian mints relies on the interpretation of the significance of mintmarks. Except for Tyre, these mints used a primary mintmark that identified the mint with Greek letters, or monograms, an abbreviation of the name of the city in which the mint was located. At Tyre (Ake of Price), the abbreviated name of the vassal king Ozmilko (Azemilkos) in Phoenician letters (accompanied the regnal date) served to identify the mint.

3 Müller 1855: 276.

4 A gold stater in the Münzkabinett Wien, inventory no. GR10432, is incorrectly identified as example of Price 3411 in the PELLA portal. However, it is the type example of Price 4024 (Uncertain mint).

5 Bellinger 1951 based on Dunand 1939. The latter was not available to the author.

6 <http://numismatics.org/pella/> accessed 2 December 2020.

2. **B, -** (Price 3406)
3. * A1 / P2 16.97 Kenneth W. Dorney SKU:7147.
B mint mark added to reverse die P2.
- 4-17. A2 / n.r. n.r. Bellinger 1951: nos. 37-50; Byblos Hoard (*IGCH* 1515) nos. 6372-6385. Reverse dies not recorded by Bellinger.
3. **- , B** (Price 3407)⁷
18. A2 / P3 n.r. Bellinger 1951: no. 35; Byblos Hoard (*IGCH* 1515) no. 6388.
19. A2 / P3 n.r. Bellinger 1951: no. 36; Byblos Hoard (*IGCH* 1515) no. 6389.
4. **A, -** (Price -)
20. * A1 / P4 17.19 VAuctions 353 (2020), 19; VAuctions 347 (2020), 15; Pars Coins PCW-G6977. A1 - forehead and nose outline recut.
5. **A, B** (Price 3410)
21. * A1 / P5 16.93 BnF 986. A1- forehead and nose outline recut.
22. * A2 / P6 n.r. Stack's Bowers Galleries (2017), 70008.
23. A2 / P6 16.68 Heritage 231825 (2018), 63020.
24. A2 / P7 17.03 CNG 66 (2004), lot 245; CNG 60 (2002), 337. Retrograde letter N in legend.
25. * A2 / P7 17.01 Triton XXIII (2020), 515; Berk 103 (1998), 105.
26. * A2 / P8 16.55 Numismatica Ars Classica Auction P (2005), 1422.
27. A2 / P8 n.r. Bellinger 1951: no. 34; pl. VI, 34; Byblos Hoard (*IGCH* 1515) no. 6390.
6. **Ⱳ, H** (Price -)
28. * A3 / P9 16.72 LWHT Coll. 302; Solidus Numismatik 29 (2018), 46.
7. **- , IO** (Price -)
29. * A4 / P10 n.r. LWHT Coll. 316; CNG eAuction 453 (2019), 28.

⁷ Excluding two tetradrachms that are incorrectly attributed to Berytus as Price 3407 in the PELLA database; Bibliothèque nationale de France (Fonds général 985) and Münzkabinett Berlin 18254337. These were struck at Tarsos (Price 3000) more than a decade before Price 3407. They exhibit the distinctly earlier Tarsos style that readily differentiates them from the coinage attributed to Berytos. Even the manner of engraving of the letter B mint mark on these coins is different.

8. B, OI (Price 3420)

- | | | | |
|-------|----------|-------|--|
| 30. | A5 / P11 | n.r. | CNG eAuction 461 (2020), 223. |
| 31. | A5 / P12 | 16.87 | Heritage 231930 (2019), 64003.
OI mint control mostly off-flan. |
| 32. | A5 / P13 | 17.08 | Pars Coins PCW-G3941; Stack's Bowers Galleries
Baltimore Auction (2012), 11578. |
| 33. * | A5 / P13 | 17.20 | BM 2002,0101.781; Hersh Coll.; Auctiones 13 (1983), 162;
Price 3419 corr. (this coin); Price 3420 (this coin). Price
(3419), erroneously recorded the mint marks; θ I rather
than OI and O, B rather than B. Price (3420) then correctly
referenced the mint marks on the identical coin. |
| 34. | A5 / P13 | 16.69 | CNG eAuction 425 (2018), 240. |
| 35. | A5 / P13 | 17.01 | Gärtner 32 (2015), 34134. |
| 36. | A5 / P14 | 17.14 | Heritage Europe (15 May 2019), 2831. |
| 37. | A5 / P15 | 16.90 | Künker 168 (2010), 7242. |
| 38. | A5 / P15 | 16.83 | Naville Numismatics 41 (2018), 51. |
| 39. | A5 / P15 | n.r. | Heritage 231934 (2019), 64017. |
| 40. | A5 / P16 | 16.52 | Naville Numismatics 48 (2019), 38. |
| 41. | A5 / P17 | 17.22 | UBS Gold & Numismatics 61 (2004), 4270. |
| 42. | A5 / P18 | 16.61 | Praefectus Coins SKU: GRA5334; Heritage 231952 (2019),
64011. |
| 43. | A5 / P19 | 16.86 | Naville Numismatics 38 (2018), 74. |
| 44. | A5 / P20 | 16.76 | CNG eAuction 356 (2015), 238. |
| 45. * | A6 / P21 | 16.90 | ANS 1944.100.34970; Newell (1923) Pl. VII, 1; <i>Demanhur</i>
3653 corr. B not OB in left field and OI not AI beneath
throne. Subsequently, incorrectly attributed as an example
of Price 3412. |
| 46. | A6 / P22 | 17.00 | Roma Numismatics E-Sale 84 (2021), 360. Controls
struck off-flan. Sequence type confirmed by rev. die
match to no. 47. |
| 47. | A6 / P22 | 17.06 | ANS 1944.100.34969. |

Bellinger 1951: no. 33, Byblos Hoard (*IGCH* 1515) no. 6387, is another specimen of type 8. Dies unidentified.

9. B, AI (Price 3415)

48. * A5 / P23 17.22 BM 1968,0803.5; Price 3415, pl. XCVIII.
 49. A5 / P23 17.06 Münzkabinett Berlin 18252929.
 50. A5 / P23 17.08 iNumis 18 (2012), 14.
 51. A5 / P23 16.72 Münzen & Medaillen 14 (2004), 575.
 52. A5 / P23 16.94 Auctiones GmbH eAuction 55 (2017), 37.
 53. A5 / P24 16.92 Münzkabinett Berlin 18254329.
 54. * A5 / P24 17.00 Münzkabinett Berlin 18252930.
 55. A6 / P24 16.81 Künker 153 (2009), 8233. A6 worn
 56. A6 / P24 16.95 Elsen 93 (2007), 158; Peus 324 (1989), 106.
 57. A5 / P25 17.05 Hess Divo 1 (2010), 88.
 58. A6 / P25 17.10 CNG eAuction 417 (2018), 299.
 59. * A5 / P24 16.55 Tyll Kroha 104 (2016), 39.
 60. * A6 / P24 17.10 CNG eAuction 172 (2007), 28. A6 very worn.
 61. A6 / P25 16.95 Elsen 97 (2008), 70; Elsen 94 (2007), 523; Hirsch 187 (1995),
 280. A6 very worn and broken.
 62. A6 / P25 16.89 Heritage 231434 (2019), 63014.
 63.* A7 / P26 16.84 BM 2002,0101.778; Hersh Coll.
 A7 very well worn, in final state of wear.
 P26 in identical style to P36-P42 (type 16) to which it is
 obverse die linked.

10. O, AI (Price -)

64. * A5 / P27 16.91 Savoca Numismatik 26 (2018), 45
 65. A5 / P28 16.71 CNA XIV (1991), 62. A5 worn.

11. O, AI (Price -)

66. * A5 / P29 16.77 Münzkabinett Berlin 18252931. A5 worn.
 67. * A7 / P29 16.87 Stack's Bowers Galleries Baltimore Auction (2012), 11584.
 A7 in earliest unworn state.

12. O, IA (Price -)

68. A7 / P30 17.02 Heritage 3057 (2017), 32028.
 69. * A7 / P30 16.96 CNG eAuction 421 (2018), 399; Aureo and Calicó 295
 (2017), 18.

13. O B, IO (incompletely erased)/AI (Price 3414)

70. * A7 / P31 16.97 BM 2002,0101.777; Hersh Coll; Price 3414.
IO between diphros struts barely visibly; incompletely
erased from the die. AI control added in the exergue
between feet of *diphros* and truncated by flan edge.
71. A7 / P31 16.98 Münzkabinett Berlin 18252897.
72. * A7 / P31 16.21 CNG eAuction 258 (2011), 95.

14. O above B, AI (Price 3413)

73. * A7 / P32 16.63 ANS 1944.100.34974; Abu Hommos Hoard (*IGCH* 1667).
74. A7 / P32 16.82 BM 1851,0312.1; Price 3413, pl. XCVIII.
75. A7 / P33 17.01 CNG eAuction 420 (2018), 272; Freeman & Sear (2004).
76. A7 / P33 n.r. Heritage (2003), 14127.
77. A7 / P34 16.57 Rahmani, *Schweizer Münzblätter* 16 (1966), coin 58; Tel
Tsippor Hoard (*IGCH* 1514).
78. A7 / P34 16.50 Tyll Kroha 105 (2016), 96.
79. A7 / P34 16.83 BnF 1974.387.

15. O above  IA (Price 3416)

80. A5 / P35 17.20 BM 1886,0610.16; Price 3416; pl. XCVIII.
81. * A5 / P35 17.04 Münzkabinett Berlin 18252898. A5 very worn.

16. O above B, AI (Price 3412)

82. A5 / P36 17.20 Pegasi Numismatics 139 (2010), 59.
83. A5 / P36 16.34 CNG eAuction 369 (2016), 246. A5 very worn.
84. A7 / P37 16.51 ANS 1944.100.34971; Mesopotamia Hoard (*IGCH* 1764).
85. * A7 / P38 16.83 LWHT Coll. 307; Eukratides Ancient Numismatics
BB886.
86. A7 / P38 17.11 ANS 1944.100.34972.
87. A7 / P39 16.69 ANS 1944.100.34973.
88. A7 / P39 16.34 Harvard Art Museums 1942.176.274.
89. A7 / P40 16.80 CGB.fr Monnaies 38 (2009), 120.
90. A7 / P41 17.03 Künker 124 (2007), 7914; UBS 64 (2006), 53.
A7 well worn.
91. A7 / P41 16.79 Stack's Bowers Galleries NYINC Auction (2014), 10017.

92. A7 / P42 16.97 ANS 2002.46.541.
 93. A7 / P42 17.07 BM 1881,0102.32; Price 3412, pl. XCVIII.
 94. A7 / P42 16.80 Münzkabinett Berlin 18252928. A7 very well worn.

Bellinger 1951: no. 32, Byblos Hoard (*IGCH* 1515) no. 6386 is another specimen of type 16. Dies unidentified.

17. **B, MI** (Price 3418)

95. * A7 / P43 16.94 ANS 1974.26.572; Price 3418.
 96. * A7 / P43 17.03 BM 2002,0101.780; Hersh Coll. A7 very well worn.

Table 1. Sequence summary and obverse dies.

Sequence Type	Mint Controls	Price	A1	A2	A3	A4	A5	A6	A7
1.	- , -	-	x						
2.	B , -	3406	x	x					
3	- , B	3407		x					
4.	A , -	-	x						
5.	A , B	3410	x	x					
6.	Ϡ , H	-			x				
7.	- , IO	-				x			
8.	B , OI	3420					x	x	
9.	B , AI	3415					x	x	x
10.	O , AI	-					x		
11.	O , AI	-					x		x
12.	O , IA	-							x
13.	O B , IO/AI	3414							x
14.	O / B , AI	3413							x
15.	O / Ϡ , IA	3416					x		
16.	O / B , AI	3412					x		x
17.	B , MI	3418							x

Commentary

The sequence outlined in the catalogue includes seven previously undocumented types (types, 1, 4, 6, 7, 10, 11 and 12), summarised in Table 1. All but type 6 lack the letter B mint mark, while the latter is in retrograde on type 6. Type 1 was struck from reverse dies initially put into use without the B mint control. Subsequently the B mint mark was added to the left field of the P2 die initiating the type 2 issue. The B mint mark is missing from type 4, apparently an engraving omission on a single reverse die intended for type 5. However, in this case no example of the rectified reverse die has come down to us in the surviving corpus of the coinage. Also missing the letter B mint mark is type 7, which in the absence of a die link is associated with the sequence by a reverse style that is aligned to that of the succeeding type 8 issue, plus the presence of the IO mint control, unknown at any other Alexander mint. This mint mark is interpreted to be the retrograde equivalent of the OI mint control found on the type 8 issue. Obverse die links directly associate types 10-12 with the sequence bearing the primary mint mark B.

Type 6 bears a retrograde B mint mark in the left field, plus the letter H beneath the throne. Its association with the emission is via the retrograde B mint mark, which is unknown at any other Alexander mint.⁸ The manner of the engraving of the retrograde B is identical but mirror imaged to that of the correctly oriented letter B, consisting of two separate loops which do not meet in the centre of the line defining the vertical edge of the letter (Figure 1). In both cases, the top of the B is defined by a dot. The manner and style of engraving of this letter suggests that the retrograde B and its normally engraved counterpart originated in the same mint. In the absence of a die link, the position of types 6 in the sequence is based on the progression of mint controls. Single letter mint controls place type 6 early in the sequence, prior to the introduction of secondary mint controls consisting of two letters.



Figure 1. Retrograde and normal letter B.

A correction to Price 3419 is noted for catalogue no. 33. Price erroneously recorded the mint control beneath the diphros as θ I rather than OI. As a result, the sole known example of Price 3419 is but another example of Price 3420 (type 8) and the θ I control is eliminated from the suite of mint controls. Compounding the error, Price overlooked the fact that the sole example of Price 3419 in his typology (Auctiones 13, 162) is the same coin as that in the Hersh collection (BM 2002,0101.781) that he recorded as an

⁸ Price 1991: 578.

example of Price 3420. Therefore, catalogue no. 33 has the unique distinction of being entered twice in Price's compendium as an example of two separate types, one of which does not exist. An additional correction to past studies is identified at catalogue no. 45 where a correction is noted to Newell's reading of the mint controls on *Demanhur* 3653.⁹ Based on Newell's description, Price identified this coin as an example of type 16 (Price 3412) when in fact it is an example of type 8 (Price 3420).

Seven obverse dies and 43 reverse dies are identified in catalogue.¹⁰ Obverse die links between the different types are summarised in Table 1. Dies A1 and A2 were used to strike types 1-5. It is possible that the two dies were used in parallel for this component of the coinage. Later, two reverse dies (P24 and P25) link obverse dies A5 and A6 in an interwoven manner (catalogue nos. 53-62) during the striking of type 9, while another reverse die (P29) links A5 and A7 during the striking of type 11. From this pattern of die linkage, it appears that dies A5 and A6, and subsequently A5 and A7 were used simultaneously to strike types 9-17 in an interwoven manner, indicative of parallel striking on two anvils. Dies A5, and A7 struck ten of the seventeen sequence types. Each of these dies was very productive, paired to 18 and 14 reverse dies respectively (Figure 2), in total representing 75 percent of the reverse dies identified in the catalogue. This leaves little doubt that the emission was a short duration mintage, consistent with Price's observation that "the issues attributed to the mint form a compact group."¹¹

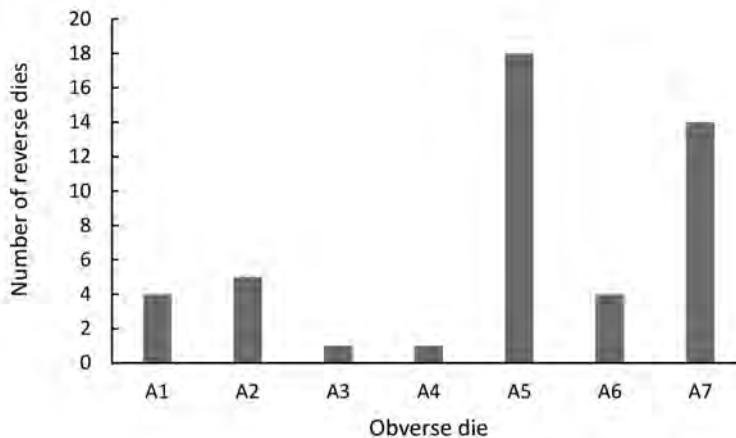


Figure 2. Die pairing ratios (P/A).

9 Newell 1923: 53 incorrectly recorded the mint controls, as O, B in left field and AI beneath the throne. In reality, the mint marks are B in left field and OI beneath the throne. A strike from a broken and worn die contributed to the misreading of the mint controls.

10 The number of reverse dies is a minimum number, for Bellinger (1951) did not identify the reverse dies on catalogue nos. 4-19 in his summary of the Byblos Hoard for which no images were available to the author.

11 Price 1991: 429.

It is notable that nine different letter mint marks are arranged in various combinations, orientations and placements so as to define seventeen different sequence types (Table 1). The presence of such a large number of control combinations in a compact coinage struck from a handful of obverse dies is remarkable. However, this apparent complexity is reduced once it is recognised that half of the sequence types represent nothing more than engraving variants, or errors, in an underlying progression of seven basic sets of mint controls (Table 2). The seventeen types are reduced to seven distinct issues defined on the basis of the underlying suite of controls, regardless of the placement and/or retrograde character of individual mint marks. The apparent complexity in the assemblage of mint controls is largely the result of inaccuracy in the execution of the mint controls on the reverse dies. The overall impression is that the mint controls were the last elements added to each reverse die, and then in haste by a relatively unskilled mint worker(s) contributing to a number of engraving inaccuracies taking the form of retrograde mint controls and/or omitted mint marks (Table 2).

The control environment in the mint was dynamic. It evolved rapidly from a single primary mint mark (B) to which a secondary mint control was added, after which an additional mint control put into use, before reverting to two mint controls on the last issue. The implementation of secondary and tertiary mint controls on the coinage occurred during the parallel use of dies A5 and A7. This might reflect an additional level of official scrutiny and oversight imposed during the peak of the mint's operation using two anvils to strike coinage. Support for this inference comes from the last issue of the mint (type 17) struck towards the end of the life of die A7. This issue reverts to a single secondary control, coincident with striking from a single obverse die as the mint's output wound down in the closing stage of its operation.

It is possible that the omission of the O mint control from a type 16 die results in the anomalous appearance of the last of the type 9 issue struck from a very well-worn obverse die A7 (catalogue no. 63). The reverse die (P26) from which this coin was struck is of a completely different style to the balance of type 9 dies (P23-P25) but is of identical style to the type 16 reverse dies (P36-P42) to which it is obverse die linked. The omission of the O mint would result in the same set of mint controls as a type 9 issue. Alternatively, catalogue no. 63 may be the result of the revival of type 9 mint control set in the closing stage of the mint, which saw the tertiary mint control dropped from the control set. The small sample does not permit us to discriminate between these possibilities.

Table 2. Mint controls and their engraving variants.

Control Set	Variant Form	Source of variant control set
B, -	- , - -, B	Mint control initially omitted from die. Control placement variant on a single die.
A, B	A, -	Engraving omission of B (the Byblos ethnic) from a single die.
B, H	B , H	Known only from the retrograde control set: an engraving error on a single die.
B, OI	-, IO	Engraving omission of B, combined with retrograde engraved OI on a single die.
B, AI		No variant identified.
O / B, AI	O, AI O, AI O, IA O / B , IA O / B, AI O B, IO/AI	Engraving omission of B on two dies. Engraving omission of B on a single die, while A engraved without crossbar. Engraving omission of B on a single die, accompanied by retrograde engraved AI. Retrograde control set: engraving error on a single die. Letter A engraved without crossbar on 3 dies. Placement variant of letter O on a single die, while the incompletely erased IO was intended to be replaced with AI mint mark beneath the throne; a poorly executed correction to the control set on the die.
B, MI		No variant identified.

A tangible indication of an error in the engraving of mint controls is found on reverse die P31 from which type 13 was struck. On coins struck from this reverse die (catalogue nos. 70-72), it appears that two controls, IO and AI, were placed beneath the *diphros*. However, located between the two struts of the *diphros* the former is barely visible. It was mostly but incompletely erased from the die and the AI control added in an unusual position, beneath the feet of the *diphros*, in the exergue. This is a poorly executed correction to an engraving error, one in which the OI control of type 8 was engraved in retrograde, the error recognised and the die put aside, subsequently salvaged with the controls recut for the striking of type 13, itself a variant of the type 16 control set.

It is noteworthy that despite its significance as the identifying mark of the mint, the absence of the B mint mark from the eight reverse dies of types 1, 4, 7 and 10-12 was

insufficient to justify the re-striking of coins. As far as can be established from the small surviving sample of the coinage, a correction to the omission of the primary B mint mark via the addition of the missing B only occurred on reverse die P2 that struck types 1 and 2. This might reflect a limitation in our small sample of the coinage, or it could be that once put into use most of these reverse dies were used to the end of their life without correction by the simple expedient of adding the B mint mark. Similarly, retrograde mint controls remained uncorrected with one exception, that of type 13 as noted above. The mostly uncorrected mint control omissions and errors suggest a mint under pressure to achieve a high output in a short time, so that engraving inaccuracies in a suite of mint controls were for the most part tolerated, rather than corrected.

Iconographic style

The diversity of style and detail among the seven obverse dies used to strike the coinage is remarkable (Figure 3). So different are the dies that it is probable that each was cut by a different engraver. Price considered that the style of both the obverse and reverse of the coinage is that of the late 320s BC which is most certainly correct. The more naturalistic flowing and rounded depictions of Herakles head are distinctly later than the rigid Tarsos style that was the basis of the earliest Alexander emissions from the Phoenician mints, while the reverse dies exhibit many details that date to the years after 325 BC (Table 3). Newell considered that the styles expressed in the iconography of the emission were allied to some of the issues of Arados (Byblos of Newell and Price) and Sidon in the late 320s BC.¹² The die study supports this proposition with specific examples of iconographic detail that can only have been derived from these two mints (Table 3).

Obverse dies A1 and A3 are notable for the depiction of a knot in the lion skin around Herakles's neck that is different to that of the other five dies. On these two dies the knot lacks the lion's paw extending forward from the knot beneath Herakles' chin. A1 and A3 portray the form of an overhand knot in which both paws are placed together, to the left of the knot (Figure 3, A3) adjacent to the neck truncation.¹³ In the Alexander coinage of Phoenicia pre-dating 320 BC this depiction is only encountered at Arados, and its nearby mainland port of Karne.¹⁴ Its first appearance is at Arados, on Duyrat Group IV, Series 4, obverse die D36¹⁵ (Price 3316), after which it becomes increasingly frequent in the later Arados sequence where the paws of the lion skin in the overhand knot initially overlie the neck of Herakles. The depiction evolves and the paws move down to straddle the neck truncation, eventually to sit completely below the neck as on Duyrat's Arados

12 Newell 1923: 126 'closely allied by style with the coinages of both Byblus and Sidon.' Taylor 2020(a) for the reattribution from Byblos to Arados II.

13 This is most apparent on catalogue no. 28 from die A3 on which a complete strike is present. Catalogue nos. 1 and 2 best illustrate the overhand knot on die A1.

14 Duyrat 2005a, Group IV for Arados and Taylor 2019, Series 2 for Karne.

15 Duyrat 2005a: 17, pl. 3, 169.

Group 4, Series 11, obverse die D113.¹⁶ The latter is identical to the depiction of the overhand knot in the lionskin headdress found on die A3. At Arados this style dates to late in the period c. 324-320 BC. An identical depiction is also to be found on the three Series 2 obverse dies of Karne dated to c. 321/0 BC that may have been engraved at Arados and shipped to Karne for use.¹⁷ Two years later, the depiction of an overhand knot was adopted at Sidon starting with the emission dated year 15 (letter O) in 319/8 BC (Newell's obverse die XXII).¹⁸



Figure 3. Obverse dies.

16 Duyrat 2005a: 25, pl. 8, 555. The style of Duyrat's Arados obverse die D113 is very close to that of Type 6 die A3 (No. 27). Most certainly the former influenced the latter, if not engraved by the same hand.

17 Taylor 2019. Where applicable, dates are referenced to the Macedonian lunar year commencing in September/October of the Gregorian solar calendar year.

18 Newell 1916, 17 and pl. III, 18.

Table 3. Iconographic affinities and chronology.

Type	Dies	Iconographic detail	Affinity and Chronology
6	A1, A3	Knot in the lion skin with both paws located below the neck truncation.	Arados, Duyrat Group IV, Series 11 (321/0 BC), and Karne, Taylor Series 2 (321/0 BC).
5	P6	Zeus's l. leg drawn back before the r. in a Λ style.	Arados, Duyrat Group IV, Series 4-11 dated to 322-320 BC. Initially introduced on the later Babylon Group II coinage (c. 324/3 BC).
1-17	P1-P5, P7-P43	Zeus's r. leg drawn back behind the l. in a crossed legs style.	Earliest occurrence Sidon year 9, Newell Sidon 26 reverse die α (325/4 BC). Consistently used at Sidon after its introduction.
1,5, 6, and 17	P1, P5- P9 and P43	Zeus seated on high-backed throne.	Arados, Duyrat Group IV, Series 4-11 dated to 322-320 BC and Karne, Taylor Series 2 (321/0 BC).
1-4, and 7-17	P2-4 and P10-42	Zeus seated on <i>diphros</i> .	The mint of Sidon retained the depiction of a <i>diphros</i> throughout its dated Alexandrine coinage.
7-9	P10 and P12-P25	Differentiated struts on the <i>diphros</i> , one defined by dots, the other by a solid line.	Found only on some of Sidon year 13 (321/0 BC) - on some examples of Price 3501 and P169.

The reverse dies also exhibit a diversity of detail and style. All reverse dies but one (P6) depict Zeus with crossed legs, his right leg drawn back behind the left (that closest to the viewer). This depiction was first introduced on Alexander the Great's coinage at Sidon dated year 9 (325/4 BC).¹⁹ This provides a *terminus post quem* for the coinage which Price attributed to Berytos. On reverse die P6 the left leg of Zeus (that closest to the viewer) is drawn back before the right leg so that the legs below the knees define a Λ

¹⁹ Taylor 2020(b), table3; Newell 1916, 13, no. 26 and pl. II, 10.

shape, in contrast to the crossing legs style of subsequent dies. Among the Phoenician mints, the only directly analogous depiction to that of die P6 is found on the coinage of Arados dated to the period 323-320 BC (Price 3316, 3321-3329 and 3332; Duyrat Group IV, Series 4-11).²⁰ This is a pointer to the date of the coinage and the possible origin of the die P6. This depiction was first introduced at Babylon on some (but not all) of the early coinage of Waggoner's Group II,²¹ following which it appears to have been adopted as a standard iconographic convention on the coinage of Arados I.

Seven reverse dies (P1, P5-P9 and P43) are notable for the portrayal of Zeus seated on a high-backed throne, rather than the *diphros* that prevails on the balance of reverse dies. The depiction of the high-backed throne was initiated on the coinage of the mint of Babylon, associated with the return to the city of Alexander the Great after his eastern anabasis.²² The adoption of this depiction among the Phoenician mints was limited to Arados in Duyrat Group IV, Series 4-11 (Price 3316-32),²³ and the nearby mint of Karne, on some of Series 2 emission (Price 3430) that was possibly stuck from dies engraved at Arados.²⁴ Duyrat dates the Arados Group IV emission to the period c. 324/3- c. 320 BC. The Karne Series 2 emission is dated to c. 321/0 BC. The Phoenician mints of Sidon and Tyre exclusively maintained the *diphros* depiction throughout the mintage of their dated Alexander coinage.²⁵ The appearance of the high-backed throne on the reverse dies used for some of types 3, 6 and 8 is interpreted as further evidence of the influence of Arados mint workers in the early part of the sequence, reinforcing the similar observation made on the style of obverse dies A1-A3.



Figure 4. Differentiated horizontal struts on reverse die P24 (catalogue no. 59).

20 Duyrat 2005a: 17-30 and pl. 3-10.

21 Waggoner, 1968; Waggoner 1979: 275, pl. 32, 1g, 1o-3 and pl. 33, 9a, 10a, 11a, 11d and 12a.

22 Taylor 2018: 18-19.

23 Duyrat 2005a: group 4, Series 4, 216, from dies D51-R86 marks the first occurrence of the high-backed throne on the coinage of Arados I. It immediately became an iconographic convention at the mint that was employed on the balance of its coinage.

24 Taylor 2019.

25 Similarly, at the Macedonian imperial mint of Arados II where it was only in the last 16 reverse dies of the sequence that the high-backed throne appeared in c. 301/0 BC; Taylor 2020(a); 66.

Other variable elements on the reverse include the depiction of Zeus with feet resting either on a footstool, or alternatively an exergual or ground line, while the legs of the *diphros* are braced by one or two horizontal struts. On reverse dies P10 and P12-P25 (types 7-9), the manner of depiction of the two horizontal struts is unusual, consisting of one strut defined by a line of dots, while the other one is represented by a solid line (Figure 4). The depiction of two differentiated struts in the twin strut portrayal of the *diphros* is known from only one other mint in Phoenicia, and then for the issues of a single year; some of the year 13 (321/0 BC) dies of Sidon.²⁶ This provides a chronological and geographic reference point for the origin of the reverse dies bearing the distinctive depiction of differentiated horizontal struts on the *diphros*.

It is evident from the die study that there is no consistency in the iconographic style, or detail in the dies from which the coinage was struck. No iconographic conventions that characterize the output of a single mint are apparent in this variability, which is unusual for a small mintage from a single mint. Rather, it is the absence of conventions and the diversity of iconographic detail that sets this coinage apart from others of the period. Based on the variations in both the obverse and reverse style observed in the coinage, the work of up to seven die engravers can be identified in both obverse and reverse dies. In this diversity two specific influences, or affinities can be discerned. That of Arados is apparent on some of types 1-6, while that of Sidon is more evident in types 7-17. Table 3 summarises the varied iconographic affinities noted in the die study and the chronological implications these hold for the interpretation of the coinage.

Statistics

The catalogue of coins provides a significant sample from which can be estimated the original number of dies employed at the mint (Table 4). The characteroscopic index (n/d) of the sample of obverse dies is 13.7 suggesting a complete sample of the obverse dies commissioned at the mint. However, this figure is influenced by the large number of coins in the sample struck from obverse dies A2, A5 and A7 which account for 85 percent of the sample (Figure 5). Seventeen of the 22 coins struck from die A2 came from the Byblos hoard. These comprise 90 percent of the 'Berytos' component in the hoard,²⁷ and may have entered the hoard en bloc immediately after striking, in which case this component would not constitute a random sample of the coinage. The large number of coins from dies A5 and A7 appears to reflect the fact that these were unusually productive dies, an assessment based on their very high reverse die pairing ratios (Figure 2) accompanied by advanced die wear evident on the last strikes from these dies.

26 Zervos 1979: 299-301 details the origin of this depiction on the earliest Alexanders of Egypt. It is found, on the Memphis issues Price 3964 and 3971 (323-321 BC).

27 Bellinger 1951: 41.

Table 4. Catalogue statistics.

	A dies	P dies
Sample size (n)	96	96
Observed Dies (d)	7	43+
Singletons (d_1)	2	20
Characteroscopic Index (n/d)	13.7	2.2
Coverage (C_{est})	0.98	0.79
Estimated Dies (D_{est})	7.6	77.9
95% Confidence Interval	7.0-8.2	60.2-100.8
Observed P/A		6.1
Estimated P/A		10.3

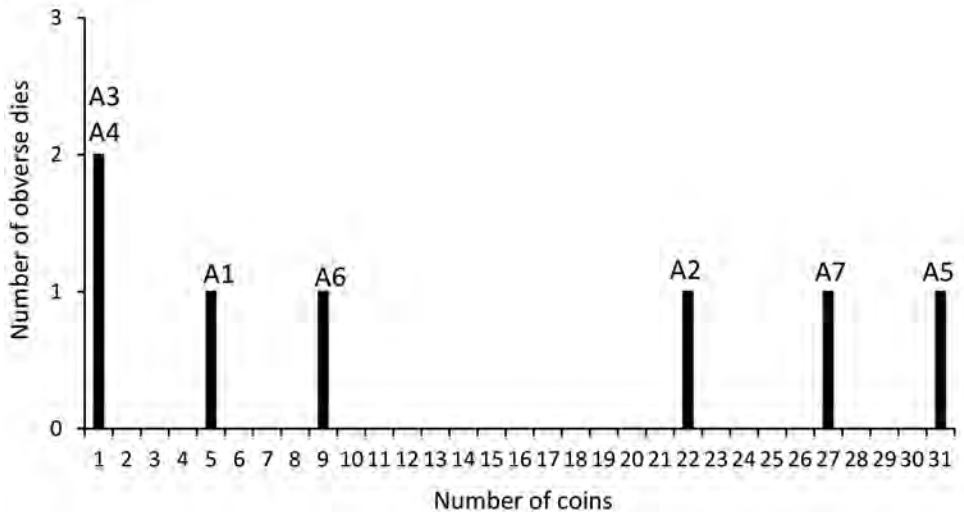


Figure 5. Frequency of obverse dies in the sample.

The sample has a high statistical coverage (C_{est}) of 0.98; further suggesting a comprehensive sample.²⁸ Estimation of the original number of obverse dies (D_{est}) employed in the emission yields a figure of 7.6 within a 95 percent confidence interval of 7.0-8.2 dies (Table 4).²⁹ It is notable that this estimate does not change materially even if we remove from the calculation the 17 examples struck from die A2 from the Byblos hoard, which may represent a non-random component in the sample. All aspects considered, it is likely that the number of obverse dies identified in the surviving sample of the coinage is essentially complete, although one additional die beyond those present

28 Esty 2006: 357, formula 1.

29 Esty 2011: 43-58.

in the sample remains a possibility. With an assumed average obverse die productivity of about 20,000 coins,³⁰ seven obverse dies may have struck around 140,000 coins; the equivalent of about 92 Attic talents of silver. The minimum duration of a mintage from seven obverse dies, at least half of which appear to have been used in parallel striking, may have been less than one month, based on an average daily striking rate of 3,000 coins per anvil.³¹

The statistical coverage of reverse dies ($C_{est} = 0.79$) is appreciably less than that of the obverse dies. It is estimated that 78 original reverse dies, within a 95% confidence interval of 60-101 dies, were commissioned at the mint (Table 3). This defines an average die pairing ratio (P/A) of 10.3, substantially more than the observed ratio of 6.1 but considerably less than the observed ratios for the two long lived obverse dies, A5 and A7 (Figure 2). This ratio implies an average reverse die productivity of approximately 2,000 coins. For that part of the coinage possibly struck in parallel on two anvils, this would have necessitated the commissioning of two to three new reverse dies daily. This might explain the presence of the work of numerous engravers in a small compact coinage.

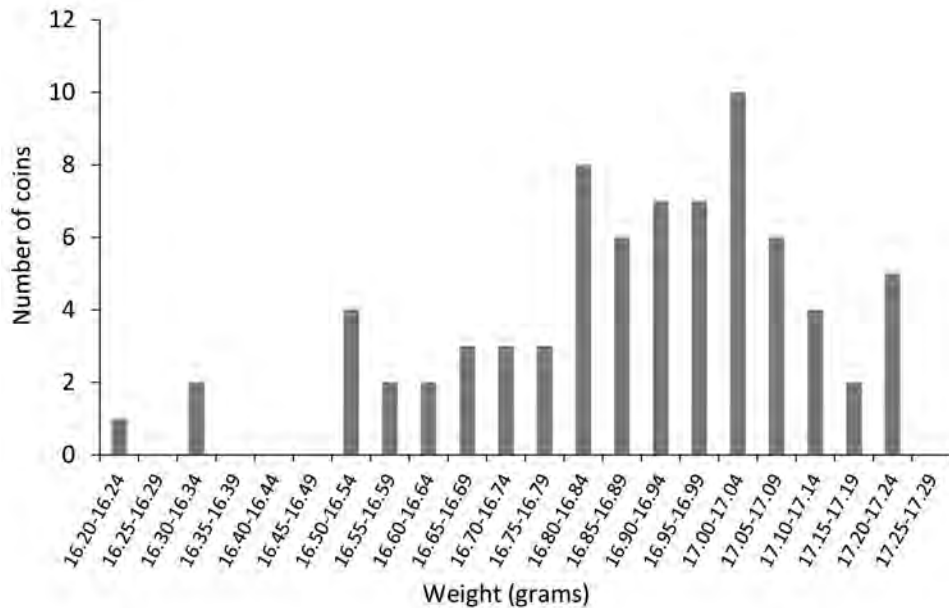


Figure 6. Histogram of weights.

30 Callataj 2011: 9.

31 Such a daily striking rate was determined by Callataj 1997 for the dated tetradrachms issues of Mithradates VI Eupator. In this wartime coinage up to 5 obverse tetradrachm dies were used per month, suggesting an average striking rate of up to c. 3,000 coins per day, based on an assumed average obverse die productivity of 20,000 coins.

Metrology

The range of weights of the coins in the catalogue is 16.21-17.22 grams. The average weight is 16.88 grams with a standard deviation of 0.22 grams in a distribution that exhibits a strong negative skew (- 0.8). In part, the latter reflects the influence of some worn and poorly preserved coins in the sample. The histogram of weights (Figure 6) exhibits a modal class in the range 17.0-17.04 grams. Notably the heaviest end of the weight distribution is defined by five coins with weights of 17.20 grams (3 coins) and 17.22 grams (2 coins), precisely that of the Attic weights standard applicable to tetradrachms of the time. It appears that the tetradrachms were somewhat imprecisely adjusted, possibly to a weight target of c.17.05 grams, even though the Attic weight standard of the time was a tetradrachm of 17.2 grams. This distinguishes this coinage from its contemporaries in other eastern mints which were more precisely weight adjusted to the Attic weight standard.³² It suggests that the coinage was struck with little consideration of precise weight adjustment, yet another indicator of haste in its mintage.

Chronology

The hoard record of the coinage summarised in Table 5.

Table 5. Hoard record of the coinage.

Hoard	Burial Date BC	Content	Number of examples
Demanhur (<i>IGCH</i> 1664)	318	8,000 AR	1
Abu Hommos 1919 (<i>IGCH</i> 1667)	311-310	1,000 AR	1
Tel Tsippor (<i>IGCH</i> 1514)	shortly after 311	63 AR	1
Byblos 1931 (<i>IGCH</i> 1515)	309-308	141 AR	19
Aleppo 1893 (<i>IGCH</i> 1516)	c. 305	3,000 AR	2
Mosul 1862-3 (<i>IGCH</i> 1756)	after 305	88 AR	1
Beirut 1964 (<i>IGCH</i> 1519)	c. 300	27 AR	1
Prilepec 1950 (<i>IGCH</i> 448)	c. 280	208 AR	1
Mesopotamia before 1920 (<i>IGCH</i> 1764)	c. 230	94 AR	1
Saida 1862-3 (<i>IGCH</i> 1594)	c. 140	70 AR	1

Based on the hoard record, the geographic dispersion of this small mintage was mostly in the east, with only a single find in Europe (*IGCH* 448). The earliest hoard occurrence of the coinage is in the Demanhur Hoard (*IGCH* 1664) that closed in 318 BC based on the

³² It is informative of the matter of weight adjustment to compare and contrast the broad weight distribution of the coinage with that of the very tight distribution of the coinage from the Alexander mints of Arados II (Taylor 2020(a): figs. 2-3), Damaskos (Taylor 2017: fig. 1) and Babylon (Taylor 2018: fig. 1).

latest dated coins of Sidon and Tyre contained in the hoard.³³ This included a tetradrachm of Type 8 struck from obverse die A6 (catalogue no. 45),³⁴ the penultimate obverse die in the sequence. This offers a definitive *terminus ante quem* for the emission. A *terminus post quem* is provided by the portrayal of Zeus with crossed legs, which dates the coinage to a time after the first appearance of this depiction on the tetradrachms of Sidon (Price 3487) dated year 9 (325/4 BC) and at Tyre (Ake of Newell and Price; Price 3265 and 3267) dated year 26 (c. 324/3 BC).³⁵ On this evidence Price dated the coinage to 'c. 323 BC or a little later'.³⁶ However, the analysis of the iconographic details, plus the timing of analogous developments on the tetradrachms of Arados and Sidon serve to refine this estimate. They suggest a date two to three years later (Table 3). In particular, the differentiated depiction of the two horizontal struts of the *diphros* found on 14 reverse dies of Types 7-9 is a definitive chronological peg. In Phoenicia this depiction is only found on a few examples of the tetradrachms of Sidon dated year 13, equivalent to 321/0 BC (Price 3501 and P162). This proposed date for the mintage is further supported by the detail of the overhand knot depicted on die A3. Prior to 320 BC, the only other occurrence of this detail in the Alexander coinage of the Phoenician mints is to be found on the closing issue (Price 3332) of the Arados I mint and on the very small Series 2 emission (Price 3430) of its mainland port, Karne, dated to 321/0 BC.³⁷ All indications from an analysis of the stylistic variations suggest that the coinage dates to a brief period in 321/0 BC.

Attribution

Price's attribution of the coinage to Berytos followed that of Newell, who in his discussion of the Demanhur Hoard (*IGCH* 1664) stated that:

The assignment to Berytus of No. 3653 [catalogue no. 45] is fairly certain. The six known varieties of this group all bear the letter B in the field and are closely allied by style with the coinages of Byblus and Sidon. In fact, the indications as furnished by the style are so strong, that hardly any other attribution is possible.³⁸

33 Newell 1923: 152-154; Zervos 1980; Duyrat 2005b.

34 Newell 1923: 53 corrected for his misreading of the mint controls as noted on catalogue no. 45.

35 Lemaire 1976; Le Rider 2007:126-130 for the reattribution of the coinage of Ake to Tyre. Taylor 2020(b): table 1 for dating of each of the Sidon and Tyre series. The dating of the coinage reattributed from Ake to Tyre follows from the work of Elayi 2006:11-44, 25-28 and table 3, plus Elayi and Elayi 2009: 371-395 that convincingly established the era of Ozmilk commencing in 349 BC, thus associating the Macedonian conquest of Tyre in 333/2 BC with Ozmilk regnal year 17.

36 Price 1991: 429.

37 Taylor 2019.

38 Newell 1923: 126. Newell's attribution of the coinage bearing the B ethnic to Berytos was constrained by the fact that he had previously re-attributed the coinage bearing the ligate AP monogram to Byblos, rather than Arados.

In this assessment, Newell was strongly influenced by the fact that he had attributed the Alexander coinage characterised by a solitary ligate AP mint mark (\mathcal{A} ; Price 3422-3428) to Byblos. This was based on his view that this \mathcal{A} mint mark was to be deciphered as the abbreviation of the name Addirmilk (Adramalek in Greek), who he posited succeeded Aynel (Enylos in Greek) as the vassal king of Byblos.³⁹ Newell made this attribution based on his inferred succession of vassal kings at Byblos during the early years of Alexander the Great's suzerainty. However, recent studies have established that Addirmilk preceded Aynel.⁴⁰ As a result, the attribution to Byblos of the coinage bearing the \mathcal{A} mint mark cannot be sustained. Most plausibly, this monogram is an abbreviation of the minting city's name, Arados,⁴¹ so that the coinage is more correctly reattributed to a second mint at Arados.⁴² This reverts to Newell's original interpretation and attribution,⁴³ one that he subsequently changed in favour of the Addirmilk (Adramalek) postulate. It leaves Byblos without any Macedonian imperial coinage of consequence,⁴⁴ notwithstanding its prior status as one of four Achaemenid vassal kingdoms in Phoenicia. At the time, Berytos was a small port that fell within the territory of the kingdom of Sidon. It had no autonomy from the latter in the Persian era,⁴⁵ and there is no record that it enjoyed such under Alexander the Great. Only in the later Seleukid and Roman eras did Berytos develop into an autonomous, prosperous commercial centre, eclipsing its neighbour Sidon, 40 kilometres to the south. The establishment of a Macedonian imperial mint at the minor port of Berytos, in close proximity to the major centre of Sidon, would have been an unusual, if not inexplicable initiative by the Macedonians, for Sidon already possessed a mint that was employed to strike Macedonian imperial coinage on an annual basis from 332-305 BC.⁴⁶ Therefore, the B mint control on the coinage attributed to Berytos by Newell and Price might be more correctly interpreted as the mint mark identifying the city known to the Greeks as Byblos,⁴⁷ a vassal kingdom in Phoenicia, and a city with a prior history of coinage under Achaemenid rule, located 35 kilometres to the north of Berytos.

The hoard record (Table 5) also challenges the Berytos attribution. The most significant find of the coinage was in the Byblos Hoard (*IGCH* 1515), recovered from a controlled

39 Newell 1923: 122-125.

40 Elayi 2006: 11-43, table 3.

41 Arados is the ancient Greek name given to the island city named Arvad in Phoenician. The latter is the source of the modern-day Arabic name Arwad, by which Arados is frequently referred to in modern studies.

42 Taylor 2020(a): for a detailed account of the basis for, and the consequences of the reattribution of the Byblos coinage to Arados II.

43 Newell 1912: 45 and 47-49

44 Taylor 2020(a): 33-34. Only the Aynel (Enylos) tetradrachm issue (Price 3421) from a single obverse die is retained at Byblos following the reattribution of the ligate AP monogram coinage to Arados II.

45 Elayi 2006: 14.

46 Taylor 2020(b); Le Rider 2007: 113-117; Newell 1916.

47 Byblos is the ancient Greek name given to the city of bearing the Phoenician name of Gubla.

excavation in the ancient city of Byblos. Nineteen tetradrachms of the type assigned to Berytos by Price were present in this hoard of 141 coins, of which 139 were Alexander II, or Philip III tetradrachms.⁴⁸ Nineteen tetradrachms attributed to Berytos comprise 14 percent of the hoard, third only to those originating from Tyre (17 percent) and Babylon (28 percent). Types 2, 3 5, 8 and 16 are represented in this hoard, which was buried around 309/8 BC, or a little later. In contrast, a hoard in commerce, the Beirut (Berytos) 1964 Hoard (*IGCH* 1519) buried around 300 BC contained only one tetradrachm of Price's Berytos attribution among 27 tetradrachms.⁴⁹ The preponderance of the coinage in the Byblos Hoard and its relative dearth in the Beirut Hoard suggests that the former might be in closer proximity to the mint's location. Additionally, in the archaeological excavations at Berytos the coinage that Price attributed to the city is absent, although bronze Alexander issues (Herakles head/ club, bow and quiver) from Macedonia, Arados, and Salamis were found in controlled excavations.⁵⁰

Table 6 summarises the circumstantial evidence for reattribution to Byblos. It leans more strongly towards the assignment of the Phoenician Alexanders bearing the letter B mint control to Byblos rather than Berytos. Such a reattribution would bring the Alexander mintage at Byblos into line with that of the three other vassal kingdoms of Phoenicia in the years following the Macedonian conquest. It locates the origin of almost all of Alexander's coinage in the leading cities of the littoral eastern Mediterranean from mints with a precursor history of Achaemenid mintage. Certainly, the case for reattribution of the coinage to Byblos is far stronger than that for its maintenance at Berytos.

Table 6. Relative merits of alternative attributions.

Argument/Evidence	Byblos	Berytos
B mint mark - initial of the city.	Yes	Yes
Controlled excavation finds of coinage in the city.	Yes <i>IGCH</i> 1515 (19 coins)	No -
Inferred local hoard in commerce	-	<i>IGCH</i> 1519 (1 coin)
Capital of a Phoenician kingdom.	Yes	No
Probable treasury location.	Yes	No
Precursor Achaemenid era mint.	Yes	No
Precursor early Alexander emission.	Yes	No

⁴⁸ Bellinger 1951.

⁴⁹ <http://coinhoards.org/id/igch1519> (accessed 18 October 2018).

⁵⁰ Sawaya 2011: 376.

Synthesis

With a reattribution from Berytos to Byblos, the coinage joins a probable Byblos tetradrachm issue (Price 3421: ANS 1947.98.296) bearing the Phoenician letters *ayin-yod*. The latter was interpreted by Newell to be an abbreviation of name of the vassal king Aynel (Enylos in Greek) who surrendered Byblos to Alexander the Great.⁵¹ This type with its early style must pre-date the issues bearing the letter B mint mark, separated from the latter by a number of years.⁵² This initial issue of Byblos may have been struck in acknowledgement of the submission of Aynel to Alexander the Great. Potentially in a sign of subservience the abbreviation of the vassal king's name, *ayin-yod*, was subordinated to that of Alexander the Great, whose name, ΑΛΕΞΑΝΔΡΟΥ (of Alexander) was prominently displayed in full.⁵³

Even with the reattribution of the coinage to Byblos, the city still has a relative dearth of coinage compared to its counterparts at Sidon, Tyre and Arados, where in each case the mint operated throughout the 320s BC (Figures 7 and 8).⁵⁴ In contrast, the Byblos mint saw two brief phases of operation. Based on its early style, the Aynel issue, from a single obverse die, is dated the period *c.* 332-327 BC, while the coinage bearing the letter B mint control was issued in 321/0 BC; a hiatus of 6-12 years. This requires explanation. The maintenance of three Alexander mints, Tyre, Sidon and Byblos along a 100 km stretch of the Phoenician coast could hardly have been necessary, or efficient. Therefore, the decision might have been taken to cease mint operations at Byblos after the initial submission issue bearing the mark of Aynel.⁵⁵

The reactivation of a mint at Byblos for an ephemeral emission in 321/0 BC is explained by the sequence of events culminating in the assembly of the Macedonian armies at Triparadeisos in 321/0 BC.⁵⁶ This assembly followed the assassination of the Macedonian regent Perdikkas during the abortive military campaign to wrest control of Egypt and the mortal remains of Alexander the Great from Ptolemy. Following the assassination of Perdikkas, his brother-in-law Attalos in command of the naval fleet seized the campaign treasury of 800 talents that had been left at Tyre.⁵⁷ This large sum had been deposited at Tyre for military pay at campaign's end. Without it the army's loyalty was sorely tested.

51 Newell 1923: 125.

52 Taylor 2020(a): 33-34 for an analysis of the Aynel issue.

53 Schell 1998: 31.

54 Taylor 2020(a): 81-87 for details of the analysis underpinning these graphs.

55 Mørkholm 1991: 47 recognised that under Alexander the Great 'the Phoenician and Cypriot city-states under their local kings retained the management of their mints, although they naturally had to operate within the general regulations laid down by the central administration.'

56 This included the royal Macedonian army under the interim leadership of Peithon and Arrhidaios, plus the Macedonian armies headed jointly by Antigonos and Antipatros the viceroy of Macedonia. The armies and their leaders assembled at Triparadeisos to resolve upon the new order of leadership in the Macedonian Empire following the assassination of Perdikkas, the regent and commander of the royal army.

57 Le Rider 2007: 152 citing Diodorus 18.37.3-4.

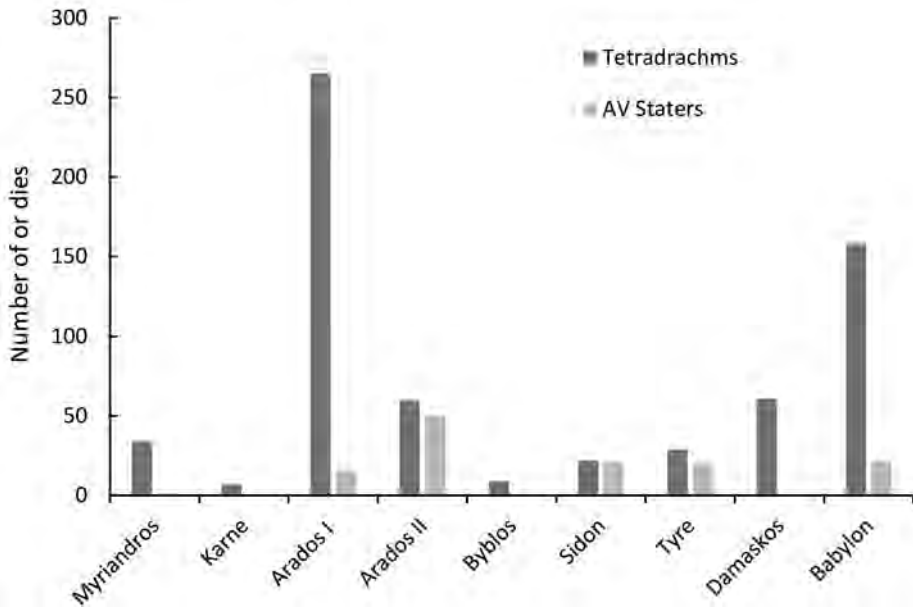


Figure 7. Eastern mints 332-320 BC: estimated number of dies.

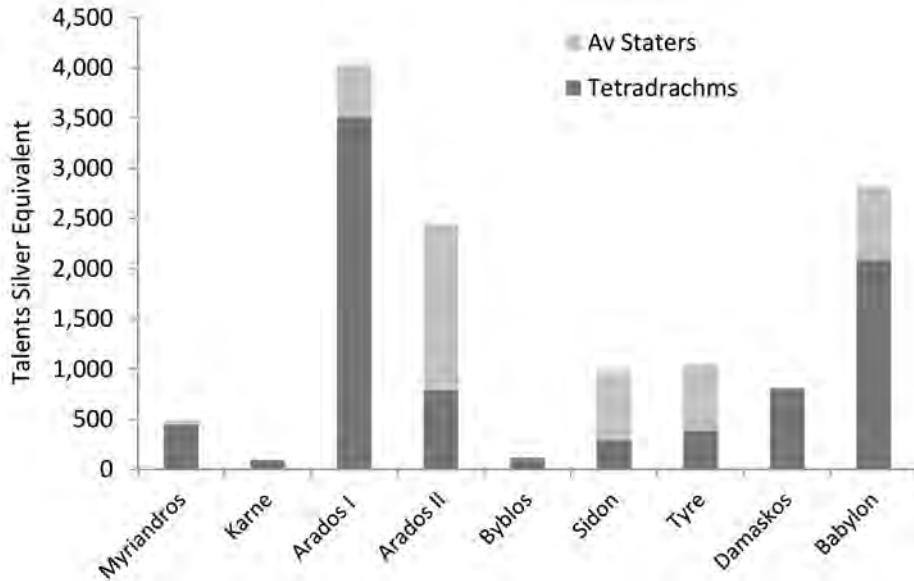


Figure 8. Estimated output 332-320 BC: talents silver equivalent.

This culminated in a near mutiny of the royal army at Triparadeisos, where the life of the viceroy, Antipater, was placed under threat by troops when he acknowledged that there were insufficient funds available immediately to make good the arrears in pay.⁵⁸ In view of the circumstances, it is likely that in the lead up to the assembly at Triparadeisos, the mints of southern Phoenicia were requisitioned for coinage to pay the royal army during its transit from Egypt to Triparadeisos. On this route were Tyre, Sidon and Byblos. We find evidence to support this hypothesis in the numismatic record of each of the mints.

At Tyre the year 29 (321/0 BC) mintage was small; one new stater die and one new tetradrachm die were employed that year.⁵⁹ Probably depleted by Attalos' action it could not sustain a large mintage. In contrast, the year 13 (321/0 BC) Sidon emission saw four gold stater dies plus five tetradrachm dies put to use in the mintage; a more than four-fold increase in the value of the coinage struck in the prior and the following year.⁶⁰ Additionally, it is notable that year 13 (321/0 BC) at Sidon saw the city's first issue in the name of Philip III who accompanied the royal army, potentially providing the catalyst for a mintage in his name. Tyre, in contrast, never issued coinage in the name of Philip III.

Based on the noted die counts, the value of the year 13 coinage from Sidon is estimated to have been about 198 Attic talents of silver equivalent,⁶¹ consisting of 13.2 talents of gold and 66 talents of silver. Cumulative die counts, indicate that this quantity represented around 25 percent of the Sidon mint's output in the period from 333/2 BC to 321/0 BC, in value matched only by the emission of year 10 (324/3 BC). However, it was well short of the 800 talents destined for army pay, that was seized by Attalos from the treasury at Tyre. After Sidon, Byblos was the last of the three vassal kingdoms with a treasury on the route of the royal army to Triparadeisos. The reactivation of a mint at Byblos to strike available silver (c. 92 talents) into coinage for military pay would have been a logical step towards addressing the shortfall in coinage arising from the actions of Attalos. Even so the cumulative total from Sidon and Byblos would have been around one third of the 800 talents originally destined for the army's payroll. This shortfall might have precipitated the near mutiny of the royal army at Triparadeisos.

Due to the elapsed time since the previous operation of a mint at Byblos, it would have been expeditious to bring in skilled workers and/or dies from other nearby mints. The nearest mints were Sidon to the south, and Arados to the north. This approach to commissioning a temporary mint at Byblos would explain the affinities of some components in the diversely styled iconography of the coinage with some of the

58 Billows 1990: 25-26.

59 Newell 1916: 47, Series V, 31, dated regnal year 29; Taylor 2020(b) for the equivalent BC date, reflecting the dating of the reign of 'Ozmilk, the king of Tyre by Elayi and Elayi 2009.

60 Newell 1916: 15-16.

61 Based on a relative gold to silver valuation of 1:10 noted by Le Rider 2007: 149.

contemporary output from mints at Arados and Sidon, in particular with the Sidon emission dated year 13 (321/0 BC). This raises the possibility that the coinage was struck from dies initially cut at Arados, then Sidon, that were transferred to Byblos, after which mint controls were added in haste by relatively unskilled mint workers, the latter explaining the plethora of engraving errors apparent in the suite of mint controls (Table 2).

The historical circumstances of 321/0 BC can explain the ephemeral operation of a mint at Byblos, one that apparently drew upon resources from Arados and then Sidon.⁶² After the gathering at Triparadeisos, the assembled Macedonian armies dispersed to the north (along the northern Phoenician coast into Asia Minor), south (to Egypt) and east (to Babylonia) thus facilitating the rapid dispersal of the coinage that is evidenced in the hoard record.⁶³

62 A similarly brief emission from the northern Phoenician mint of Karne (Series 2) appears to have been struck as the Macedonian royal army travelled north into Asia Minor under the leadership of Antigonos, following the conclusion of the assembly at Triparadeisos; Taylor 2019:16.

63 The historical circumstances also explain the very large Arados I emission of Price 3332 (Duyrat Group IV, Series 11) from 88 obverse tetradrachm dies. From Triparadeisos, Antogonos led the royal army north into Kilikia passing Arados on the route. This large mintage would have served to settle the pay dispute, thus securing the complete commitment of the troops. Immediately after, mint operations ceased at Arados I with the city firmly under the control of Antigonos who retained the imperial mint of Arados II as the sole facility in the island city.

Plate 1



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Plate 2



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Author

Lloyd Taylor has a PhD in Geology and Geophysics from the University of Sydney. Now retired, he independently researches the eastern coinage of Alexander the Great and his successors.

Acknowledgements

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Bibliography

- Bellinger, A. R. 1951. An Alexander Hoard from Byblos. *Berytus X*: 37-49.
- Billows, R. A. 1990. *Antigonos the One-Eyed and the Creation of the Hellenistic State*. Berkeley: University of California Press.
- Callataÿ, F. de. 1997. *L'histoire des Guerres Mithridatiques vue par les Monnaies*. Numismatica Lovaniensia 18, Louvain-la-Neuve.
- Callataÿ, F. de. 2011. Quantifying Monetary Production in Greco-Roman Times: A General Frame. In *Quantifying Monetary Supplies in Greco-Roman Times*, edited by F. de Callataÿ: 7-29. Pragmateiai 19. Bari: Edipuglia.
- Dunand, M. 1939. *Fouilles de Byblos*. Paris: Geuthner.
- Duyrat, F. 2005a. *Arados Hellénistique. Étude historique et monétaire*. Bibliothèque archéologique et historique 173. Beirut: Institut Français du Proche-Orient.
- Duyrat, F. 2005b. Le trésor de Damanhour (IGCH 1664) et l'évolution de la circulation monétaire en Égypte hellénistique, 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*: 17-51. Le Caire: Institut Français d'Archéologie Orientale.
- Elayi, J. 2006. An Updated Chronology of the Reigns of Phoenician Kings During the Persian Period (539-333 BC). *Transeuphratene* 32 (2006): 11-43.
- Elayi, J and A. G. Elayi. 2009. *The Coinage of the Phoenician city of Tyre in the Persian Period (5th-4th cent. BCE)*. *Orientalia Lovaniensia Analecta* 188; *Studia Phoenicia* XX. Leuven: Peeters.
- Esty, W. W. 2006. How to Estimate the Original Number of Dies and the Coverage of a Sample. *Numismatic Chronicle* 166: 359-364.

64 <http://numismatics.org/pella/> accessed 2 December 2020 and <https://opendatacommons.org/licenses/odbl/1.0/>

- Esty, W. W. 2011. The Geometric Model for Estimating the Number of Dies. In *Quantifying Monetary Supplies in Greco-Roman Times*, edited by F. de Callataÿ: 43-58. Pragmateiai 19. Bari: Edipuglia.
- Lemaire, A. 1976. Le monnayage de Tyr et celui dit d'Akko dans la deuxième moitié du IV^e siècle avant J.-C. *Revue Numismatique* 18: 11-24.
- Le Rider, G. 2007. *Alexander the Great: Coinage, Finances and Policy*. Translated by W. E. Higgins. Philadelphia: American Philosophical Society.
- Mørkholm, O. 1991. *Early Hellenistic Coinage from the Accession of Alexander to the Peace of Apamea (336-186 B.C.)*, eds. P. Grierson and U. Westermark. Cambridge: Cambridge University Press.
- Müller, L. 1855. *Numismatique d'Alexandre le Grand, suivie d'un Appendice Contenant les Monnaies de Philippe II et III*. Copenhagen: Imprimerie de Bianco Luno.
- Newell, E. T. 1912. Reattribution of Certain Tetradrachms of Alexander the Great. *American Journal of Numismatics* 45/46: 5-62.
- Newell, E. T. 1916. *The Dated Alexander Coinage of Sidon and Ake*. Oxford: Oxford University Press.
- Newell, E. T. 1923. *Alexander Hoards II Demanhur, 1905*. American Numismatic Society Numismatic Notes and Monographs No. 19. New York: American Numismatic Society.
- Price, M. J. 1991. *The Coinage in the Name of Alexander the Great and Philip Arrhidaeus*. London: British Museum/Swiss Numismatic Society.
- Rahmani, L.Y. 1966. A hoard of Alexander coins from Tel Tsippor. *Schweizer Münzblätter* 16: 129-144.
- Romm, J. (ed.) 2010. *The Landmark Arrian*. New York: Pantheon Books.
- Sawaya, Z. 2011. The Coin Finds from Hellenistic and Roman Berytos (Fourth Century BC - Third Century AD). In *Proceedings of the XIVth International Numismatic Congress Glasgow, 2009* edited by N. Holmes: 376-381. London: Spink & Son Ltd.
- Schell J. A. 1998. Iconography of the Control Marks on the Alexander Issues of Soli, Cyprus. *American Journal of Numismatics* Second Series 10: 29-35.
- Taylor, L. W. H. 2017. The Damaskos Mint of Alexander the Great. *American Journal of Numismatics* Second Series 29: 47-100.
- Taylor, L. W. H. 2018. The Earliest Alexander III Tetradrachm Coinage of Babylon: Iconographic Development and Chronology. *American Journal of Numismatics* Second Series 30: 1-44.
- Taylor, L. W. H. 2019. The Karne Alexanders. *Journal of the Numismatic Association of Australia* 29: 1-23.
- Taylor, L. W. H. 2020(a). On the Reattribution of some Byblos Alexanders to Arados II. *American Journal of Numismatics* Second Series 32: 31-92.

- Taylor, L. W. H. 2020(b). Sidon to Tyre: The Macedonian administration and relative chronology. *KOINON The International Journal of Classical Numismatic Studies* III: 43-53.
- Waggoner, N. M. 1968. *The Alexander Mint at Babylon*. Ph.D Dissertation, Columbia University.
- Waggoner, N. M. 1979. Tetradrachms from Babylon. In *Greek Numismatics and Archaeology Essays in Honor of Margaret Thompson*, edited by O Mørkholm and N. Waggoner: 269-280. Wetteren: Cultura.
- Zervos, O. H. 1979. Near Eastern Elements in the Tetradrachms of Alexander the Great: The Eastern Mints. In *Greek Numismatics and Archaeology Essays in Honor of Margaret Thompson* edited by O. Mørkholm and N. M. Waggoner: 295-305. Wetteren: Cultura.
- Zervos, O. H. 1980. Additions to the Demanhur Hoard of Alexander Tetradrachms. *Numismatic Chronicle* 140: 185-188.

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