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COINS FROM UNDER THE SEA

The belief that coinage was rarely transported in bulk by sea forms part of an argument that paper transfers of money were more normal, and the Roman economy more sophisticated, than has often been supposed.¹ I have no wish to dispute the possibility of paper transfers of money, for which I have always argued.² But the evidence for transport of coinage by sea has long been more extensive than Toby Parker supposed, and has been much augmented in recent years: thus Parker claimed 73 shipwrecks from which at least one coin had been reported, of which 4 were from below the step of the mast,³ 4 were probably the personal cash of a passenger or of a member of the crew,⁴ 4 formed part of a cargo of scrap-

¹ W.V. Harris, 'A Revisionist View of Roman Money', *JRS* 96 (2006), pp. 1–24 = *Rome's Imperial Economy. Twelve Essays*, Oxford 2011, pp. 223–54, with addenda, 'A revisionist view of Roman money', at p. 4 = p. 227; idem, 'The nature of Roman money' in W.V. Harris (ed.), *The Monetary Systems of the Greeks and Romans*, Oxford 2008, pp. 174–207, at pp. 198–9. K. Verboeven, 'Currency, bullion and accounts. Monetary modes in the Roman world', *RBN* 105 (2009), pp. 91–124, on the social nature of money, rather repetitively discusses a monetary, a commodity, and an account mode, but does not address the question of transport of coin. For shipwrecks and the economy in general see, e.g., F. Meijer, 'Wrecks in the Mediterranean as evidence of economic activity in the Roman Empire', in W. Jongman, M. Kleijwegt (eds), *After the Past. Essays in Ancient History in Honour of H.W. Pleket* (Mnemosyne Supplement, 233), Leiden 2002, pp. 135–55.

² M.H. Crawford, 'Money and exchange in the Roman world', *JRS* 60 (1970), pp. 40–8, at p. 45.

³ A.J. Parker, *Ancient Shipwrecks of the Mediterranean and the Roman Provinces*, Oxford 1992, p. 30: the catalogue lists 9 cases; D.N. Carlson, 'Mast-step coins among the Romans', *IJNA* 36.2 (2007), pp. 317–24, surveys the possible intended functions.

⁴ These cannot be identified from catalogue or index; M. Jurišić, *Ancient Shipwrecks of the Adriatic*, Oxford 2000, p. 46, does not mark an advance.

metal,⁵ 23 were cases of one or two coins only; of the remainder, very few were identifiable as hoards.

Although details are lacking for many discoveries, the volume of available evidence is now considerable, with Part C below listing 47 or 48 hoards; there is enough evidence to show that the pattern is complex; and it is now clear that there was a large increase in the practice of transporting substantial quantities of coin by sea in Late Antiquity, as already tentatively suggested by Parker, on the basis of only three shipwrecks.⁶ The phenomenon requires integration into the economic history of the Roman Empire, the core area of the research of Jerzy Kolendo.

The preferred option for a state, even though the Customs Law of Asia is neutral as between land and sea in mentioning transport of coin (§§ 25–7),⁷ was presumably always transport by land under military escort. The legal sources describe the transport or escort of *pecunia fiscalis* as a personal *munus* (*Dig. L.* 4, 18, 3 [Arcadius Charisius]), from which age or bodily weakness may excuse someone (*Dig. L.* 5, 2, 7 [Ulpian]). And Cicero wished to avoid the dangers of sea-transport by leaving at Laodicea both the surplus from his expenses allowance and his booty, at the end of his governorship of Cilicia, in return for written security (*ad fam.* II, 17 = 117 SB, 4).

A pirate ship obviously had no choice but to transport its loot by sea, as with the ship intercepted by Verres, full of *argentum factum* and *signatum* (Cicero, *II in Verr.* 5, 63), some or even all of which might of course have been seized on land; and the younger Cato had no choice but to transport the treasury of Ptolemaic Cyprus at any rate part of the way to Rome by sea: he attached a large piece of cork to the end of a long rope fixed to the *angeion*, so that if the ships sank the device would mark the spot on the bottom (Plutarch, *Cato Min.* 38: did he know that ships were more vulnerable close to land?). It may be that the Haifa hoard (see Part C below) is the consequence of the same practical problem as that faced by Cato.

In the course of the civil wars, Pompey in 48 BC set off from Syria to Egypt by sea, with large quantities of money (see below); and in due course, Brutus took over at Carystus ships full of money coming from Asia under the command

⁵ These cannot be recovered from catalogue or index; and if Parker had Megidim A or Ayia Galini in mind, the coins were more probably the cash float of the metal-worker concerned; Favoritx, Minorca, is also a probable case, the coins not in the index.

⁶ Parker (n. 3), whence Harris (2006 = 2011 [n. 1]), attributing the increase to a change in the monetary system (p. 4 = p. 227, n. 27) or to the fact that credit arrangements were now much harder to make (Addenda, p. 254).

⁷ M. Cottier et al, *The Customs Law of Asia*, Oxford 2008.

of Apuleius (Plutarch, *Brut.* 24, 4–5); and Antistius handed over 500,000 dr. of what he was taking to Italy, presumably by sea (Plutarch, *Brut.* 25, 1). Similarly, in a much earlier period, the owls accumulated by Sparta after the collapse of the Athenian Empire could only make the journey back by sea, a journey in the course of which some were purloined by Gylippus, to whom they had been entrusted.⁸

It is not surprising that, in due course, the sacred stone of Elagabalus made the journey overland to Rome, along with the Emperor, rather than being sent by sea.⁹

There are, as we have already seen, a number of cases of coins as foundation deposits under the mast (or elsewhere); and single pieces, found without archaeological context, may also once have formed such a deposit. The clear cases of coins under the mast form Part A. Some of the coins found in shipwrecks are clearly no more than the loose change in the pouches of one or more crew or passengers, which I list separately in Part B; the mix in some cases provides an interesting snapshot of the practice of cabotage. I adopt the principles for inclusion in Part C that gold will never have been loose change and that more than 20 denarii will not have been loose change either. The second principle is obviously arbitrary; and it is of course possible that largish groups of bronze may have been perceived as savings in the course of transfer (see below). The owner of a hoard of more than 20 denarii may also have had in mind a use for it in connection with the journey during which it was lost: Parker's concern (n. 3) was only with whether there was a sufficient volume of coinage to pay a crew or engage in trade. I ignore the smaller hoards in the analysis with which this article ends.

All three lists are as far as possible in chronological order, and include pre-Roman coins where known to me; I have noted in Part B cases that I have come across, but have not set out to update systematically Parker's list, since the reward would be unlikely to repay the effort involved. I hope that Part C is reasonably complete, and am reasonably certain that the pattern is clear enough for it to be unlikely to be upset by further cases. I have included finds from rivers, where these appear to be of a hoard, rather than of a votive deposit. Unless otherwise stated, it may be assumed that there is in all cases clear archaeological evidence of a shipwreck.¹⁰ The information from Parker and from the other bibliography cited is sometimes overlapping, rather than being identical, since Parker also drew on unpublished information from excavators.

⁸ Diod. XIII, 106, 8–10; B. Niese, *RE* VII 2 (1912), cols. 1968–9.

⁹ F. Cumont, *RE* V (1905), cols. 2219–22.

¹⁰ Parker tends to refuse to assign a running number to what is on internal grounds clearly a hoard from under the waves, if there is no other evidence of a shipwreck: this seems to me perverse.

A – Coins found under the mast (except where otherwise stated)

I exclude Grado, listed by Carlson (n. 3), for the reasons given by Carlson herself.

(1) La Chrétienne A, Parker, no. 302; F. Dumas, *Épaves antiques*, Paris 1964, Photographie 52 (obverse only), bronze coin of Cossura.

(2) Plane A, Parker, no. 819, bronze coin of Tarraco/Cese.

(3) Cap del Vol, near Gerona, Parker, no. 186; Carlson (n. 3), coin perhaps of Saguntum/Arse.

(4) La Madrague de Giens, Parker, no. 616, A. Tchernia et al., *L'épave romaine de la Madrague de Giens* (*Gallia* Supp. 34, 1978), pp. 15–16, second-century BC as.

(5) Spargi, Parker, no. 1108, 2 coins, probably second century BC.

(6) Arles-Rhône 3, S. Marlier (ed.), *Arles-Rhône 3 = Archaeonautica* 18 (2014), pp. 109, 263 (preliminary publication in S. Marlier [ed.], *L'opération Arles-Rhône 3*, Arles 2013, p. 65, denarius of C. Cato, *RRC* 274, 123 BC, found inserted in the timbers of the prow during the construction of the ship in the middle of the first century AD; although the coin has circulated, and acquired a series of punch-marks in the course of circulation (not prior to deposit), it has not acquired a century and three-quarters of wear.

Suction pumps enabled the recovery of numerous coins from the deposits covering the general area (Marlier [2014], pp. 36–8, 63–4), of which 364 are dateable between the middle of the first and the middle of the second century AD, coins the nature of whose association with each other and/or the shipwreck is unknowable.

The 'plusieurs centaines de monnaies en bronze', with also some silver and a solidus of Valentinian I, seem to come from a different area (L. Long, *Les secrets du Rhône*, Arles 2008, pp. 215–16); the solidus might make one wonder about a dispersed gold hoard.

(The level of co-ordination between the various publications that I have seen leaves something to be desired.)

(7) Le Titan, Parker, no. 1149; *Gallia* 16 (1958), p. 6, superseded by P. Tailliez, in J. du Plat Taylor (ed.), *Marine Archaeology*, London 1965, pp. 76–93: one illegible as, 9.70 gr.; one as, Prow I., 11.80 gr, the latter embedded in a hole in the keel from which the dowel was missing (*Nouvelles plongées sans cable* [1967], pp. 148–9, the coin catastrophically mis-described as 'un semis, du type oncial, en vigueur à l'époque romano-campanienne' [!!!]).

(8) Diano Marina, Parker, no. 364; *Bollettino di archeologia subacquea* 2–3 (1995–6), pp. 127–39, at p. 136, Roman Imperial as (ε).

(9) Calanque de l'Âne A, Parker, no. 158; *Cahiers d'Archéologie subaquatique* 12 (1994), p. 109, sestertius of Domitian (a sestertius of Titus among the cargo of tiles).

(10) Blackfriars, London, Parker, no. 606; P. Marsden, *A Ship of the Roman Period from Blackfriars*, London 1967, as of Domitian, rev. Fortuna (RIC II, Domitian 371).

(11) La Luque A, Parker, no. 610, 2 coins of Hadrian.

(12) Port Vendres A, Parker, no. 874, coin of Constantine (see also Part B).

(13) Cavalière, near Le Lavandou, Parker, no. 282, 3 illegible coins (see also Part C).

B – Probably loose change

Even though the shipwrecks in question may have different dates, I have grouped those with coins of Massalia, given that bronzes of Massalia formed the prototype of one of the two big imitative, unofficial coinages of Campania;¹¹ shipwrecks provide no evidence that bronzes of Ebusus travelled widely in the Mediterranean.

See also Calanque de l'Âne A in Part A, Antikythera A in Part C.

I know of no case of loose change from a shipwreck of the Classical period, which might suggest that there was a substantial increase in the use of coined money with the beginning of the Hellenistic period.

I ignore cases where the coins cannot be or have not been identified: Fiumicino C, Parker, no. 403, 9 bronzes; Le Grotticelle, Parker, no. 486, coins; Imera, Parker, no. 514, coins; Les Laurons C, Parker, no. 579, coins; Valle Ponti, Parker, no. 1206, coin; Yassi Ada B, Parker, no. 1240, illegible bronze coins; see also Arles-Rhône 3; Le Titan, in Part A.

A.M. McCann, J.P. Oleson, *Deep-water shipwrecks off Skerki Bank* (JRA Supp. 58, 2004), pp. 41–89, at p. 81, publish a shipwreck of 80–50 BC, with which a coin of the fourth century AD was found, clearly from another shipwreck in the same place.

(1) Kyrenia, Parker, no. 563; *Master Seafarers: the Phoenicians and the Greeks*, London 2003, pp. 122–6, 4 bronze coins of Antigonos Monophthalmos and Demetrios Poliorketes, c. 316–294 BC.

¹¹ See most recently R. Hobbs, *Currency and Exchange in Ancient Pompeii: Coins from the AAPP Excavations at Regio VI, Insula 1*, (BICS Supplement, 116) London 2013.

(2) La Chrétienne C, Parker, no. 304; J.-P. Joncheray, *L'épave C de La Chrétienne* = *Cahiers d'archéologie subaquatique* Supp. 1 (1975), p. 103, fig. 49, anonymous denarius, RRC 55/1 (ξ) (in any case not Sydenham 140 = RRC 44/5 as *Gallia* 31 [1973], p. 603, n. 21).

(3) Fos A, Parker, no. 422, as weighing 37 gr.

(4) Galaxidi, Locris, *IGCH* 238; *CH* II (1976) no. 85, out of c. 60, 4 bronze coins of Amphipolis, 8 bronze coins of Macedonia, Alexander III to Perseus.

(5) 'Atlit North Bay, *Excavations and Surveys in Israel* 19 (1999), p. 99, 'several dozen small Ptolemaic bronze coins'.

(6) Nevé Yam, *Excavations and Surveys in Israel* 19 (1999), p. 100, 'several Ptolemaic bronze coins'.

(7) Sanguinaires A, Corsica, http://www.wmaker.net/ARASM/EPAVES-DE-VERRE-EN-CORSE_a14.html, accessed 13/01/16, bronze coin of Ptolemy III or IV.

(8) Punta Scaletta, Giannutri, Parker, no. 960 (c. 150 BC); *RSL* 30 (1964), pp. 248–50, 4 bronze coins of Neapolis (inv. 12192, 12193, 12710, one found by A. Tchernia: including *HNItaly* 596 or 601, not silver); Parker, also 1 bronze coin of Ptolemy VI Philometor; 1 plated victoriatum.

(9) Capo Graziano A, Parker, no. 233; *Archeologia subacquea* 2 = *BdA* 29 Supp. (1985), pp. 107–8, fig. 121, a–b, 4 asses, incl. one of MD and bull, RRC 142, 189–180 BC; the others are similar in style and none seems very worn.

(10) Pointe du Brouil, Parker, no. 844, 2 asses.

(11) Cap Taillat, Parker, no. 200, 1 illegible coin; *Cahiers d'archéologie subaquatique* 6 (1987), p. 150, with photograph, probably an as.

(12) Cap Camarat B, Parker, no. 180 (c. 75–25 BC) (*Archéologie sous-marine*, Arles 1983 [ENS, H AR gé 342 F 8o] no. 92: no details; *Archaeonautica* 4 [1984], p. 182: no details; *Gallia* 43 [1985], p. 569: no details; *Archaeonautica* 8 [1988], p. 155: no details; *Gallia informations* 51 [1987–8], p. 37: no details), asses.

(13) Port-Vendres B, Parker, no. 875; D. Colls et al., *L'épave Port-Vendres II* = *Archaeonautica* 1 (1977), p. 132, quadrans of Iltirida.

(14) Grand Bassin B, Parker, no. 469, 4 coins of Tarraco/Cese.

(15) Isla Pedrosa, near Gerona, Parker, no. 520 (c. 150–140 BC); *Inmersion y Ciencia* 8–9 (1975), pp. 73–8 (non vidi); C. Stannard, 'Iconographic parallels between the local coinages of central Italy and Baetica in the first century BC', *Acta Numismatica* 25 (1995), pp. 47–97, at pp. 88–92; idem, 'Overstrikes and imitative coinages in central Italy and the late Republic', in A. Burnett et al. (eds.), *Coins of Macedonia and Rome. Essays in Honour of Charles Hersh*, London 1998, pp.

209–29, at pp. 227–8, 2 bronzes of Massalia (?), 2 of Kaiantolos, 4 of Neapolis, 4 plated denarii, 1 second-century BC as, 9 lead imitations.

(16) Bagaud B, Parker, no. 77 (c. 110–100 BC), coin of Massalia.

(17) Cavalière, near Le Lavandou, Parker, no. 282 (c. 100 BC), 5 coins of Massalia, 5 of Numidia (not ‘rarely found outside N. Africa’), 1 of Carteia.

(18) La Fourmigue C, Parker, no. 425 (c. 80–60 BC); C. Baudoin et al., *Une cargaison de bronzes hellénistiques. L’épave Fourmigue C à Golfe-Juan* = *Archaeonautica* 12 (1994), p. 94, fig. 84, bronze coin of Massalia.

(19) Apollonia A, Parker, no. 47; A. Laronde, ‘Recherches sous-marines dans le port d’Apollonie de Cyrénaïque’, *BSNAF* 1987, pp. 322–30, 2 second-century BC Ptolemaic bronze coins.

(20) Dramont A, Saint-Raphaël, Parker, no. 371: as; *Gallia* 43 (1985), pp. 569–72: denarius of L.CENSOR.

(21) La Madrague de Giens, Parker, no. 616; A. Tchernia et al., *L’épave romaine de la Madrague de Giens* (*Gallia* Supp. 34, 1978), pp. 15–16: 1 denarius of M. Baebius Tampilus, 1 of C. Naevius Balbus, 1 of L. Farsuleius Mensor, 1 illegible denarius (see also Part A); *Gallia* 43 (1985), pp. 559–67: altogether 20 bronze coins, 15 denarii from Q. Marcius Libo to L. Farsuleius Mensor and C. Egnatius Maxsumus.

(22) Le Grand Radeau, Les-Saintes-Maries-de-la-Mer, Parker, no. 475; *Gallia* 11 (1953), p. 111, denarius of Cn. Pompeius, *RRC* 469.

(23) Capo Rasocolmo A, Parker, no. 247; *Rassegna di archeologia subacquea* 6 (1994), pp. 115–22 (the summary in *ArchRep* 1995–6, p. 81, wrongly cites also 5 [1992], pp. 227–35); G.M. Bacci, M.L. Lazzarini, M.A. Mastelloni et al. ‘?’, in G.M. Bacci, G. Tigano (eds), *Da Zancle a Messina* II, 1, Messina 2001, pp. 273–98, a Pompeian ship caught, burnt and sunk off Capo Rasocolmo, while attempting to escape to Messina after the battle of Naulochus (Bacci, pp. 275–6, doubts this because of the presence of the coins of M. Antonius and of various eastern mints; but there had been much contact between M. Antonius and Sex. Pompeius, and the eastern bronzes are exactly what one might expect a soldier of the triumviral period to have picked up: compare Preveza in Part C), 3 asses of CN.MAG.IMP, 24 asses of MAGNVS PIVS IMP, 4 denarii of Philippus (*RRC* 425/1), C. Vibius C.f. C.n. (*RRC* 449/2), P. Carisius (*RRC* 464/5), P. Clodius M.f. (*RRC* 494/23), 1 bronze coin of C. Clouius (*RRC* 476/1b), 2 denarii of Sex. Pompeius (*RRC* 511/3), 2 bronze coins of Panormus, 1 bronze coin of Syracuse, 6 ‘Fleet’ bronze coins of M. Antonius, of M. Oppius Capito, 1 bronze coin of Corcyra, 2 bronze coins of Messene, 1 bronze coin of Cnossus, 1 bronze coin of Antiochus XII, 3 unrecognisable coins, and 7 lumps of metal, with parts and equipment of the ship, ballast,

a Spanish lead ingot of M. Laetilius M. l. Teodosius, perhaps also ballast, 15 sling bullets, and a crescent-shaped sheet of bronze inscribed CN:MAGNVS, not in my view a slave collar.

(24) Port Vendres 9 = I, *Bilan scientifique DRASSM* 2009, pp. 38–40, 1 semis of Emporiae, 2 bronze coins of Antipolis.

(25) Cap Gros, Le Secanion, Parker, no. 1059; *Archéologie du midi méditerranéen* 8 (1983), pp. 37–8; *Cahiers d'archéologie subaquatique* 6 (1987), pp. 78–80, fig. 15 bis, sestertius probably of Ti. Sempronius Gracchus (*RIC* I2 [1984] Augustus, no. 348), 17 BC.

(26) Porto Cristo A, Balearic Islands, Parker, no. 885; Cl. Domergue, 'Un envoi de lampes du potier Caius Clodius', *MCV* 2 (1966), pp. 5–50, 1 sestertius of Gaius (*RIC* I1, Gaius, nos. 23–5 = *RIC* I2 [1984] Gaius, nos. 32, 40, 48), with cargo of lamps, fragments of pottery, an amphora neck (see also Conillera in Part C).

(26) Porto Nuovo, Corsica, *Cahiers d'Arche'ologie subaquatique* 20 (2013), pp. 168–70, quinarius aureus of Tiberius (for the wreck as a whole, see *JRA* 11 [1998], pp. 53–81; R. Mazeran, in E. Rieth [ed.], *Méditerranée antique*, Paris 1998, pp. 135–8).

(27) Porto Azzurro B, Parker, no. 881; M. Zecchini, *Relitti romani dell'Isola d'Elba*, Pisa 1982, pp. 97–127, sestertius of Gaius (*RIC* I2 [1984] Gaius, no. 55).

(28) Cavallo A, Parker, no. 283, two coins, perhaps dupondii of Tiberius (*RIC* I2, Tiberius, nos. 77–8), slightly mis-described.

(29) Zaton A, Parker, no. 1249, coins of Vespasian.

(30) Agde, *IJNA* 2 (1973), pp. 196–7 (Parker, p. 46, bottom), halved bronze coin of Nimes; 1 each of Nero, Domitian, Trajan, with bronze potters' stamps, terra sigillata, amphorae.

(31) Ilovik, Jurišić (n. 4) p. 65, sestertius of Trajan.

(32) Caen A and B, Parker, nos. 134–5, Pius.

(33) Hof Hacarmel A, Parker, no. 504, down to Pius and Faustina the Younger.

(34) Port Vendres C, Parker, no. 876, 4 coins down to Faustina the Younger.

(35) Camarina, Relitto delle colonne, on display, Museo di Camarina, 7 denarii of Vespasian, 17 sestertii, Hadrian to Marcus Aurelius.

(36) Monaco A, Parker, no. 708, bronze of Marcus Aurelius.

(37) Les Laurons B, Parker, no. 578; *Archaeonautica* 4 (1984), p. 76, 2 coins, incl. denarius of Diuus Pius.

(38) Torre Sgarrata, Parker, no. 1163, coins down to Commodus.

(39) Druten, Parker, no. 379, late second century/early third century coin.

(40) Capo Ognina, Parker, no. 755; *IJNA* 3 (1974), pp. 151–3, 1 sesterlius of Pius (☿), 1 bronze coin of Smyrna of Hadrian, 1 of Perinthus of Severus, 1 of Nicaea of Severus, 1 of Peloponnese of Severus, 1 of Byzantium of Geta Aug.

(41) Capifort, Minorca, *Cahiers d'archéologie subaquatique* 2 (1973), p. 171, bronze coins including one with SC and one of Philip I (AD 244–9) of Heliopolis.

(42) Pommègues A, Parker, no. 851; *Archaeonautica* 2 (1978), p. 104, 1 bronze coin of Pius, 1 of Laodicea of Philip I (AD 244–9), 1 illegible bronze coin.

(43) Camarina, Relitto delle lucerne, 'Camarina 1990', *Rassegna di archeologia subacquea* 5 (1992), pp. 175–206, at pp. 192–6, 'Il relitto romano', bronze coins of Severus, Balbinus, Philip I (AD 244–9), so also Pannello; but, on display, 8 bronze coins, Domitian to Marcus Aurelius, with lamps, marble bowl, silver bowl, etc.

(44) Caesarea C, Parker, no. 138, coins of the early second century AD and of Philip I (AD 244–9).

(45) Cabrera III, see Part C.

(46) St Peter Port, Guernsey, Parker, no. 1007, 43 coins, including radiates.

(47) London, County Hall, Parker, no. 607, 4 coins down to AD 296.

(48) Scauri, Pantelleria, S. Tusa, *Versunkene Antike*, Darmstadt, Mainz 2011, pp. 128–31, coin of Constantine I.

(49) Les Laurons D, Parker, no. 580, coins, incl. Constantine I.

(50) Skerki Bank, "Isis" shipwreck, Parker, no. 517; A.M. McCann, J. Freed, *Deep Water Archaeology* (*JRA* Supp. 13, 1994), pp. 17–18, 1 coin of Constantius II (AD 355–61), 1 illegible coin.

(51) Port Vendres A, Parker, no. 874; *RANarb* 1 (1968), pp. 267–9; *IJNA* 3 (1974), pp. 319–47, at p. 325, 64 bronze coins down to AD 383–392 (see also Part A).

(52) Hof Hacarmel B, Parker, no. 505, 7 coins of Arcadius.

(53) Mateille A, Parker, no. 682, 4 coins of Theodosius II.

(54) Olbia, M. Giacobelli (ed.), *Lezioni Fabio Faccenna*, Bari 2004, p. 69, coins of the fourth and fifth centuries AD, including one of Theodosius I.

(55) Favartix, Minorca, Parker, no. 397, hundreds of bronze plates, keys, chains, candelabra, stuettes, balances and coins, from Antiochus I onwards, of 'a metal-worker who was supplying liturgical items'.

(56) Ashqelon North, *Excavations and Surveys in Israel* 19 (1998), pp. 101–2, 'dozens of 40-numia bronze coins bearing the busts of Justin and Sofia'.

(57) Punta Secca A and B, Parker, nos. 967–8, coin of the seventh century AD.

(58) Tel Ashqelon, *Excavations and Surveys in Israel* 111 (2000) pp. 83–4, 'coins from the Byzantine period'.

C – Hoards

See also Arles-Rhône 3 in Part A.

(1) Ghazzat, Gaza, Triton XIX, Classical Numismatic Group 05/01/2016, no. 82, 29 archaic Greek silver coins, similar in date and composition to the Asyut hoard, from the sea.

(2) Kefar Shamir South, Israel, Parker, no. 541, fifth century BC coins, presumably Phoenician, with tin ingots.

(3) Kiti, near Larnaca, Cyprus, *CH* VI (1981) no. 13, 6 darics, fourth century BC, from the sea.

(4) Lido Signorino, near Marsala, S. Tusa, *Versunkene Antike*, p. 134, a Carthaginian electrum shekel (Jenkins & Lewis, Group VII, before 270 BC) is perhaps more likely to be what is left of a hoard than loose change, from the sea.

(5) Cala Tramontana, Pantelleria, A. Cutroni Tusa, R. Lasi, 'Il ritrovamento monetale di Cala Tramontana', in L. Abelli (ed.), *Archeologia subacquea a Pantelleria*, Bologna 2012, pp. 231–44, 3471 Sardo-Punic coins, Head of Tanit I. / Horse's head r., 264–241 BC, as *SNG Copenhagen* 192 ff.

(7) Sophikon (near), Argolis, *IGCH* 179, with T. Hackens, 'À propos de la circulation monétaire dans la Péloponnèse au IIIe s. av. J.-C.', in *Antidorum W. Peremans sexagenario ab alumnis oblatum*, Louvain 1968, pp. 69–95, at pp. 71–2, 945 tetradrachms and drachms of Macedonia, Demetrius Poliorcetes (also 1 triobol), Antigonus Gonatas, Lysimachus, Seleucids, Ptolemies, Attalus I, Aetolia, Boeotia, Athens, Sparta, Rhodes, down to c. 220 BC, from the sea (the hoard is rather obviously not from the Peloponnese: J.N. Svoronos, *JIAN* 2 [1899], pp. 289–96).

(8) Haifa, Israel, *Coin World*, 20 June 1994 (non vidi), whence *Int. Num. Newsletter* 25 (Autumn 1994) p. 3, 20 kilos of coins stuck together + 1800 coins = 40 kilos, all tetradrachms of Ptolemy VI of 145 BC on Cyprus (?).

(9) Megadim A, Parker, no. 689; *IJNA* 14 (1985), pp. 353–5: 'dozens of Ptolemaic bronze coins minted at Paphos and Kition in Cyprus and some Seleucid bronze coins. The latest coins are of the 30s of the second century BC'.

(10) Haifa, Israel, *RN* VI, 16 (1974), pp. 42–8 = *CH* III (1977) no. 63, out of a larger number, 36 tetradrachms of the Seleucids, down to Antiochus IX (113/112 BC), from the sea.

(11) Antikythera A, Parker, no. 44; N. Yalouris, 'The shipwreck of Antikythera' in *Eumousia*, Sydney 1990, pp. 135–6, = *CH* VIII (1994) 521; N. Kaltsas et al. (eds), *The Antikythera Shipwreck*, Athens 2012, pp. 216–26, 36 cistophori down to

c. 67 BC, over 40 bronze coins, including Catana, Panormus, Cnidos, and Ephesus, probably of c. 70–60 BC; the astrolabe on board had been set in 80 BC; it was far-fetched of Parker to suppose that the ship was carrying ‘reparations exacted from the city of Pergamum after the Mithridatic War’.

(12) Cap-Siclé (= Le Brusc, *RRCH* 284), Parker, no. 198, 20 denarii down to L. Rutilius Flaccus, 74 BC.

(13) Preveza, Parker, no. 905 bis; *BCH* 107, 2 (1983), p. 774: 2 Lysimachi of Byzantium, 122 denarii down to 17 with LEG, from the sea, perhaps the same hoard as *RRCH* 473.

(14) Casablanca, J.D. Brethes, *Contribution à l'histoire du Maroc par les recherches numismatiques*, Casablanca 1939, pp. 5–17, 168 denarii to Augustus, out of a larger number (see A.M. Burnett, ‘Africa’, in A.M. Burnett, M.H. Crawford [eds], *The Coinage of the Roman World in the Late Republic*, Oxford 1987, pp. 175–85, at p. 181), from the beach.

(15) Stintino, near Sassari, *AIIN* 20 (1973), pp. 268–83, out of probably over 400, 231 denarii down to C.L. Caesares (*RIC* I1, Augustus 350 = I2, Augustus 207–8: it is not clear why it is suggested that the hoard went down to Tiberius), from the sea, in a jug, along with a fibula.

(16) Conillera (Conejera), Ibiza, Parker, no. 334; T. Falcon-Barker, *Roman Galley beneath the Sea*, Leicester 1964, p. 74 (it is quite unclear whether the coins illustrated on pp. 8–9, 75, 88–9, 104–5, 122–3, have anything to do with the shipwreck, as is assumed by D. Bailey, *A Catalogue of the Lamps in the British Museum* II, London 1988, p. 93, suggesting however very plausibly that Porto Cristo A, Balearic Islands [see Part B], this wreck, and a further wreck from the same area are one and the same), coins of Claudius and Nero, the latter including one aureus; both ‘excavation’ and publication by Falcon-Barker were so incompetent that it is impossible to tell how many wrecks in addition to the primary wreck with Beltran 4B amphorae were involved, but one seems to have included a significant number of coins.

(17) Garonne Estuary, Parker, no. 108; R. Étienne, M. Rachet, *Le trésor de Garonne*, Bordeaux 1984, out of a probably larger number, 3997 sesterii, dupondii and asses down to AD 159/161.

(18) Brindisi, *Documenti inediti per servire alla storia dei musei d'Italia* II, Firenze, Roma 1879, p. 13: ‘ventisei monete antiche di oro ritrovate negli scavi del porto, cioè due di Traiano, venti di Adriano, una di Antonino Pio e tre di Faustina’.

(19) Caesarea, M. Thirion, *Liberchies* (1972); *IJNA* 22 (1993), pp. 67–8, c. 100 local Roman provincial bronzes to Trajan, ‘several’ mainstream bronzes to Alexander Severus, from the sea.

(20) Carmel coast III (incl. II, contra publication), *Excavations and Surveys in Israel* 10 (1991), pp. 162–3, 33 denarii from Vespasian to Trajan, 56 mainstream and Roman provincial bronzes down to Macrinus, from the beach.

(21) Punta Ala, near Castiglione della Pescaia, Parker, no. 912; P. dell'Amico, F. Pallarès, *Il relitto 'A' di Punta Ala*, Rome 2006, pp. 147–51, two hoards of bronze coins, originally in two cloth bags, 10 × 5.5 cm. and 6 × 4 cm., including Alexander Severus, Gordian (mainstream and Berytus) and Philip I (from Parker: AD 244–9).

(22) Cabrera III, Parker, no. 125; J.-P. Bost et al., *L'épave Cabrera III (Majorque)*, Paris 1992, 965 sesterii to Valerian and Gallienus; the 2 antoniniani of Philip I (AD 244–9) and Valerian may have formed loose change, rather than being part of the hoard.

(23) Rimigliano, near Populonia, A. de Laurenzi, *Un Tesoro dal mare* (Soprintendenza per i Beni Archeologici della Toscana 2004), 2 denarii, c. 3500 antoniniani down to Gallienus and Postumus, from the sea.

(24) Eastern Mediterranean, *CH* II (1976) no. 268, 409 antoniniani down to Gallienus, presumably from the sea.

(25) La Ciotat D, Parker, no. 315; *RN* VI, 1 (1958), pp. 79–104, at p. 80, n. 1, from *RN* V, 3 (1939), p. 129, 80 kilos of antoniniani down to Claudius II and Quintillus or perhaps a bit later, from the sea, 6 km. out.

(26) Lava, Corsica, Parker, no. 338; S. Estiot, *Trésors monétaires* 24 (2009–10) pp. 91–152, 403 aurei + 44 multiples down to AD 272/3, 2 gold rings, a gold disk.

(27) Camarina, loc. Ciaramiraro 1991–6, Parker, no. 166; G. Guzzetta, *Il 'tesoro dei sei imperatori': 4472 antoniniani da Gallieno a Probo*, Catania 2014, 4472 antoniniani, Gallienus to Probus, from 200 m. out to sea (18 extraneous fifth century to second/first century BC bronzes, 1 extraneous Pegasus).

(28) Ayia Galini, Parker, no. 68, coin of Augustus (from E. Kirsten, in F. Matz, *Forschungen auf Kreta*, Berlin 1951, p. 136, n. 4), 259 coins, including antoniniani, down to Probus.

(29) Port Vendres 11 = K, *Bilan scientifique DRASSM* 2005, p. 40; 2008, p. 51, over 1052 coins, principally imitations of Aurelian and Tetricus I and II, originally in at least three separate bags.

(30) Astypalaea, *AR* 2009–10, p. 165, c. 30,000 third century AD coins and 250 coins 'adhering together'.

(31) Fontanamare A, Parker, no. 415; *Boll.Num.* 21 (1993), pp. 136–8; 36–9 (2001–2) pp. 83–126, 2.465 + 91.19 + 7.42 = 103.075 kilos of coins down to Diocletian.

(32) Partinico, Sicily, Parker, no. 688; V. Drost, G. Gautier, *Trésors monétaires* 24 (2009–10), pp. 153–76, 139 aurei + 35 multiples down to AD 308, from the sea.

(33) Mangub, Libya, Parker, no. 645; P. Salama, *Libya Antiqua* 3–4 (1966–7), pp. 21–7, 20,000 nummi (1922/3) + 8000 nummi in amphora (1930), AD 306–312, from the sea.

(34) Vignale, Parker, no. 1217, c. 1000 coins to Maxentius.

(35) Grand Bassin D = Gruissan, Parker, no. 471; *Archaeonautica* 3 (1981), pp. 14–15, 117–37, 1 bronze coin of Pius, 1 antoninianus (both perhaps extraneous), nearly 4000 bronze coins, AD 306–313, some stuck together, from the beach, thrown up by modern dredging; no evidence of sorting by emperor or mint, the bulk produced by the mints of Roma and Ostia.

(36) Carmel Coast I, *Excavations and Surveys in Israel* 10 (1991), pp. 162–3, apparently many bronze coins of Maximian, Constantine I, Crispus, from the beach.

(37) Vachetta, Parker, no. 1198, 400 bronze coins of Constantine I.

(38) Anse Saint Roch, Antibes, Parker, no. 43 bis; *Archaeonautica* 3 (1981), pp. 265–434; *Archéologie du midi méditerranéen* 8 (1983), p. 55, out of c. 10,000, 2232 bronze coins recovered and identifiable, AD 300–317, half from the mint of Arelate, from the harbour.

(39) Meloria, near Livorno, Parker, no. 691 bis; *FA* 18–19 (1963–4), p. 794, no. 11901; G. Poggesi, P. Rendini (eds), *Memorie sommerse* (Soprintendenza ai Beni Archeologici della Toscana 1998), pp. 38–45, 3695 bronze coins, down to AD 361.

(40) Le Scole A, Parker, no. 1055, 500 silver and bronze coins, down to AD 378.

(41) Bastia, D. Schaad, ‘Trésor monétaire du IV^e siècle après J.-C. trouvé en mer près de Bastia’, *Bull. Soc. Sc. Hist. Nat. de la Corse* (ENS, HF p 152 C 8o) 115, 674–5 (1996), pp. 31–45, in an amphora, c. 20,000 bronzes, AD 335–92, along with an imitation of an antoninianus.

(42) Astypalaea, *AR* 2002–3, p. 78, 182 kilos of fourth century AD coins.

(43) Erbalunga, Corsica, *Cahiers d’Arche’ologie subaquatique* 20 (2013), pp. 70–2, amphora containing 21219 fourth-century AD bronze coins.

(44) Loire River, Checy, *Gallia* Supp. 12 (1958), pp. 273–341, 24 solidi of Arcadius and Honorius, with silver ornaments.

(45) Haarlemmermeer, J.H. Evers, ‘The Haarlemmermeer hoard’, *Oudheidkundige Mededelingen van het Rijksmuseum van Oudheden te Leiden* 47 (1966), pp. 31–101, pls. 33–6, c. 12,389 bronzes down to AD 402, from a river, probably with a link to the sea.

(46) Mateille A + Gruissan, Parker, no. 682; *Archaeonautica* 3 (1981), pp. 176–223, 553 bronzes, forming ‘une petite partie’, down to Theodosius II.

(47) Dramont E, Parker, no. 375; C. Santamaria, *L'Épave Dramont "E" à Saint-Raphael* = *Archaeonautica* 13 (1995), 143 bronzes, House of Constantine down to (perhaps) AD 425/455.

(48) Yassi Ada A, Parker, no. 1239, 70 coins, incl. 16 gold coins, down to AD 626.

(49) Grazel B, Parker, no. 483, 101 coins down to AD 630/1.

The pattern of occurrence of what I have described as loose change broadly follows the pattern of frequency of shipwrecks in general, as displayed by Parker (n. 3) p. 549, Fig. 3. And the occurrence of some large assemblages of coins in shipwrecks of the Hellenistic period may reasonably be explained by the political fragmentation of the Mediterranean world after Alexander the Great, with a consequent absence of facilities for paper transfers of money. The Cala Tramontana hoard is clearly to be associated with the First Punic War, the Preveza find (or finds) is clearly a consequence of the battle of Actium.¹² It is perhaps surprising that there are two large Augustan finds; but one possible Neronian hoard and one Trajanic hoard are probably what one would expect in a politically unified Mediterranean world, where paper transfers of money were the norm. None of what we have seen so far departs from a general pattern of two or three hoards per century from shipwrecks.

But the reign of Pius has given us one of the largest bronze hoards of the high Empire, as well as a gold hoard that, given the circumstances of its discovery, may well have been much larger than the 26 aurei actually attested. And three hoards from the first half of the third century AD is perhaps a harbinger of things to come.

The size of the bronze hoard under Pius, however, raises a problem that needs discussion, before turning to the pattern under the Late Empire, namely the use of bronze for army pay and other payments. It is obvious that from c. 157/156 BC onwards Roman soldiers were largely paid in denarii; and the pattern of hoarding, to which I hope to return elsewhere, from the gigantic issue of aurei of A. Hirtius in 46 BC onwards shows that gold then became a normal part of the circulating medium and presumably an element in military pay. The legionary aurei of Mark Antony perhaps suggests that officers were by then normally paid in gold; and the charming letter home from a naval recruit at Misenum shows that

¹² For the argument that Carthage preferred sending craftsmen to Italy and using locally available metal to transporting coin by sea, see M.H. Crawford, *Vjesnik Arheoloskog muzeja u Zagrebu* (3 ser.) 45 (2012), pp. 211–6.

lower ranks might also receive gold by the first century AD (*Select Papyri* I [1932] no. 112).

But an episode of the civil wars shows that it was then thought appropriate for a part of military pay to be in bronze: Pompey set off for Egypt from Syria in 48 BC, *pecunia societatis sublata et a quibusdam priuatis sumpta*, 'when money had been abstracted from the company of *publicani* and had also been received from certain private individuals', *et aeris magno pondere ad militarem usum in nauis imposito*, 'and when a considerable weight of bronze for military use had been loaded on the ships' (Caesar, *BC* III, 103).¹³ The countermarks applied to Roman bronze issues on the Rhine frontier are clearly the result of a policy of making regular payments to the troops in bronze, treating a countermark as a cheap alternative to producing an issue from scratch.

That the policy continued emerges from the demonstration that there was a one-off production of quadrantes under Domitian and their despatch to the Rhine frontier;¹⁴ and from the presence of six newly-minted asses of Domitian from Inchtuthil.¹⁵ It is on the other hand to go far beyond the evidence to maintain 'that bronze played a, if not the major role in the supply of coin to the army, and that silver was less important'.¹⁶

The spectacular change comes with the middle of the third century AD, with 24 hoards over the next two centuries, some of them enormous.

It is of course unknowable whether *CTh* IX, 23, 1 (AD 356), had a precedent in earlier Imperial legislation; given how incompetent and muddle-headed it is, perhaps not. It seems at least to be aware of the existence as a phenomenon of sea-borne coin, in recognising that traders by sea might need to equip themselves with coin, in order to be able to offer it, *promere*, in exchange for goods, and in allowing them, but not others to 'buy' coin, always provided that the coin in question was legal tender.

But I cannot see how this or any other piece of Imperial legislation might have spurred men to begin transporting large quantities of coin by water. Nor, given the likelihood that the Roman monetary system suffered no significant shock before Aurelian,¹⁷ can I see how developments of that system could have

¹³ It is baffling that R. Wolters, 'Bronze, silver or gold? Coin finds and the pay of the Roman army', *Zephyrus* 53–4 (2000–1), pp. 579–88, should deny the existence of textual evidence.

¹⁴ F. Kemmers, 'Quadrantes from Nijmegen. Small change in a frontier province', *SNR* 82 (2003), pp. 17–35.

¹⁵ A.S. Robertson, 'Two groups of asses from north Britain', *NC* (7th ser.) 8 (1968), pp. 61–6, citing also other cases.

¹⁶ D. Wigg-Wolf, 'Coin supply and the Roman army re-visited', in M. Reddé (ed.), *De l'or pour les braves. Soldes, armées et circulation monétaire*, Bordeaux 2014, pp. 161–79.

¹⁷ I hope to return to this question in the Introduction to the forthcoming edition of the Aphrodisias copies of the Prices Edict and the Currency Dossier.

acted as the trigger. Increasing political instability, and the long-term existence of separatist areas, may well have made it much harder to make credit arrangements; but I suspect that this was only part of a much wider uncertainty: the risks of sea-borne transport came to seem less than the risk of having money seized by a pretender to the throne.¹⁸

C.J. Howgego has shown that, despite some movement of coin in either direction, the patterns of circulation established in the third century AD by diffusion of minting were never eliminated and that coins from eastern mints never achieved parity in the west nor vice versa; and that the differences increased as the third century AD progressed.¹⁹ It is of course not to be thought that anyone set out to achieve parity. But it should now be clear that after AD 250 people were moving antoniniani by sea in industrial quantities; and that even so eastern and western circulation became progressively more distinctive.

I should guess that the phenomenon of movement of coin by sea as a visible entity then came to an end with the virtual end of sea-borne trade in the fifth century AD.²⁰

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¹⁸ For Carthaginian avoidance of transport of coin by sea during the Second Punic War, see M.H. Crawford, 'The Tiriolo hoard', pp. 211–6.

¹⁹ C.J. Howgego, 'The circulation of silver coins, models of the Roman economy and crisis in the third century AD: some numismatic evidence' in C.E. King, D.G. Wigg (eds), *Coin Finds and Coin Use*, Mainz 1996, pp. 219–36.

²⁰ I should with the customary disclaimer to thank Julia Strauss for her generous sharing of knowledge and ideas over the long period of my interest in the topic.