

Antikythera mechanism and the Ancient World

A.N. Safronov^{1,2}

¹Obukhov Institute of Atmospheric Physics, Moscow, Russia

²The Nuclear Safety Institute of the Russian Academy of Science, Moscow, Russia

Correspondence to: A.N. Safronov (safonov_2003@mail.ru)

Supplementary

The text quoted in this study could be found below.

№	References	Pages
S1	Cicero: Comprising his Treatise on the Commonwealth; and his Treatise on the Laws.	[21],[22]
S2	Plutarch: Alcibiades and Coriolanus, Lysander and Sulla, Plutarch's Lives, Vol. IV	
S3	Iamblich, Iamblichus' Life of Pythagors or Phythagoric Life	[34]
S4	Athenaeus Naucratis. Deipnosophistae, 206d-209b, The description of the 'The Syracusan' cargo ship.	[40]-[44]
S5	Canopus Decree	
S6	Cicero, Against Verres, Second pleading Book 1: Concerning his conduct in the City Praetorship	[46], [51], [52], [61],
S7	Cicero, Against Verres, Second pleading Book 2: Concerning his manner of deciding cases as a judge while in Sicily.	[5]
S8	Cicero, Against Verres, Second pleading Book 3: On the court relating to corn.	[72], [107], [163]
S9	Cicero, Against Verres, Second pleading Book 4: About the statues	[23], [150]
S10	Cicero, Against Verres, Second pleading Book 5: The speech on the punishments	[43], [45], [47], [59]
S11	Lucian of Samosata, The Ship or The Wishes, 149, Dialog between Lycinus. Timolaus. Samippus. Adimantus	[5], [14]
S12	Pliny the Elder, Natural History, XVI, 201	[201]
S13	Homer, The Odyssey, V	[160], [330]
S14	Homer, The Odyssey, XII	[370-380], [420], [450], [460], [510], [530]. [540], [590]
S15	M. Terenti Varronis, De Lingua Latina, 1	[101]
S16	Apollodorus, in Epitome	[7.24]
S17	Flavius Josephus, The antiquities of the Jews. Against Apion, Book 1, 32	[32]

Supplementary S1.

Cicero: Comprising his Treatise on the Commonwealth; and his Treatise on the Laws.

[21]

Philus^{h8}, XIV – I can offer you, I fear, no new light, for I have made no fresh discoveries in the question at issue. But I will tell you what I have heard from Sulpicius Gallus^{h9}, who was a man of profound learning, as you are aware. Listening one day to the recital of a similar prodigy, in the house of Marcellus^{h10}, who had been his colleague in the consulship; he asked to see a celestial globe, which Marcellus's grandfather^{h11} had saved after the capture of Syracuse, from this magnificent and opulent city, without bringing home any other memorial of so great a victory. I had often heard this celestial globe or sphere mentioned on account of the great fame of Archimedes. Its appearance, however, did not seem to me particularly striking. There is another, more elegant in form, and more generally known, moulded by the same Archimedes^{h12}, and deposited by the same Marcellus^{h11}, in the Temple of Virtue at Rome^{h13}.

[22]

But as soon as Gallus had begun to explain, by his sublime science, the composition of this machine, I felt that the Sicilian geometrician must have possessed a genius superior to any thing we usually conceive to belong to our nature. Gallus assured us, that the solid and compact globe, was a very ancient invention, and that the first model of it had been presented by Thales of Miletus^{h1}. That afterwards Eudoxus of Cnidus^{h14}, a disciple of Plato, had traced on its surface the stars that appear in the sky, and that many years subsequent, borrowing from Eudoxus this beautiful design and representation, Aratus^{h15} had illustrated them in his verses, not by any science of astronomy, but the ornament of poetic description. He added that the figure of the sphere, which displayed the motions of the sun and moon, and the five planets, or wandering stars, could not be represented by the primitive solid globe. And that in this, the invention of Archimedes was admirable, because he had calculated how a single revolution should maintain unequal and diversified progressions in dissimilar motions (quod excogitasset quemadmodum in dissimillis motibus, inæquales et varios cursus servaret una conversio.) In fact, when Gallus moved this sphere or planetarium, we observed the moon distanced the sun as many degrees by a turn of the wheel in the machine, as she does in so many days in the heavens. From whence it resulted, that the progress of the sun was marked as in the heavens, and that the moon touched the point where she is obscured by the earth's shadow at the instant the sun appears above the horizon.»

Supplementary S2.

Plutarch: Alcibiades and Coriolanus, Lysander and Sulla, Plutarch's Lives, Vol. IV

XII.

[2]-[6]

«And since he [Sulla] needed much money also for the war, he diverted to his uses the sacred treasures of Hellas, partly from Epidaurus, and partly from Olympia, sending for the most beautiful and most precious of the offerings there. (4) He wrote also to the Amphictyons at Delphi that it was better to have the treasures of the god sent to him; for he would either keep them more safely, or, if he spent them, would restore as much. And he sent Caphis, the Phocian, one of his friends, with the letter, bidding him receive each article by weight. Caphis came to Delphi, but was loth to touch the sacred objects, and shed many tears, in the presence of the Amphictyons, over the necessity of it. (5) And when some of them declared they heard the sound of the god's lyre in the inner sanctuary, Caphis, either because he believed them, or because he wished to strike Sulla with superstitious fear, sent word to him about it. But Sulla wrote back jocosely, expressing his amazement that Caphis did not understand that singing was done in joy,

not anger; his orders were therefore to take boldly, assured that the god was willing and glad to give.»

Supplementary S3.

Iamblich, Iamblichus' Life of Pythagors or Phythagoric Life,

«He also formed a cavern out of the city, adapted to his philosophy, in which he spent the greatest part both of the day and night; employing himself in the investigation of things useful in disciplines, framing intellectual conceptions after the same manner as Minos the son of Jupiter. Indeed, he so much surpassed those who afterwards employed his disciplines, that they conceived magnificently of themselves, from the knowledge of theorems of small importance; but Pythagoras gave completion to the science of the celestial orbs, and unfolded the whole of it by arithmetical and geometrical demonstrations.»

Supplementary S4.

Athenaeus Naucratis. Deipnosophistae

[40.] G

But concerning the ship built by Hieron, the tyrant of Syracuse, which also Archimedes the geometrician superintended, I do not think it right to be silent, since a certain man named Moschion has given a description of it, which I read over with great care very lately. Moschion, then, writes as follows:

"... Hieron, the king of the Syracusans, who was in every respect a friend to the Romans, was very attentive to the furnishing of temples and gymnasia; and was also very earnest in ship-building, having built a great number of vessels to carry corn; the construction of one of which I will describe. For the wood, he caused such a number of trees to be cut down on Mount Aetna as would have been sufficient for sixty triremes, and when this was done he prepared nails, and planks for the sides and for the inside, and wood for every other purpose that could be required, some from Italy and some from Sicily. And for ropes he provided cordage from Spain, and hemp, and pitch from the river Rhine; and he collected great quantities of useful things from all quarters. And he collected also shipwrights and other artisans. And having appointed Archias the Corinthian the superintendent of them all, and the principal architect, he bade them labour at the construction with zeal and earnestness, he himself also devoting his days to watching its progress. And in this way he finished half the ship in six months; and every part of the vessel as soon as it was finished was immediately covered over with plates of teal. And there were three hundred workmen employed in working up the timber, besides the subordinates whom they had to assist them. And it was arranged to draw this portion that was done so far down to the sea, that it might receive the last finishing strokes there. And when there was a great inquiry as to the best method of launching it into the sea, Archimedes the mechanician launched it by himself with the aid of a few persons. For having prepared a windlass (helix) he drew this vessel, enormous as it was, down into the sea. And Archimedes was the first person who ever invented this windlass. But after the remainder of the ship had also been completed in six months more, and it had been surrounded all round with brazen nails, the greater part of which weighed ten minae, and the rest were half as big again - (and they were driven in through holes made beforehand by gimlets, so as to hold the planks firm; and they were fastened to the wood with leaden plugs; pieces of cloth being put under, impregnated with pitch) - after, I say, Hieron had completed the external figure of the vessel, he laboured at the interior.

[41.] G

"And the vessel was constructed with twenty banks of oars, and three entrances, having the lowest entrance leading to the hold, to which the descent was by two ladders of many steps each;

and the next was contrived for those who wished to go down to the eating-rooms: and the third was for the armed men. And on each side of the middle entrance were apartments for the men, each with four couches in them, thirty in number. And the supper-room for the sailors was capable of holding fifteen couches, and it had within it three chambers, each containing three couches; and the kitchen was towards the stern of the ship. And all these rooms had floors composed of mosaic work, of all kinds of stones tessellated. And on this mosaic the whole story of the Iliad was depicted in a marvellous manner. And in all the furniture and the ceilings and the doors everything was executed and finished in the same admirable manner. And along the uppermost passage was a gymnasium and walks, having their appointment in all respects corresponding to the size of the vessel. And in them were gardens of all sorts of most wonderful beauty, enriched with all sorts of plants, and shaded by roofs of lead or tiles. And besides this there were tents roofed with boughs of white ivy and of the vine, the roots of which derived their moisture from casks full of earth, and were watered in the same manner as the gardens. And the tents themselves helped to shadow the walks. And next to those things was a temple devoted to Aphrodite, containing three couches, with a floor of agate and other most beautiful stones, of every sort which the island afforded. And its walls and its roof were made of cypress-wood, and its doors of ivory and fragrant cedar. And it was furnished in the most exquisite manner with pictures and statues, and with goblets and vases of every form and shape imaginable.

[42.] G

"And next to that was a drawing-room capable of containing five couches, with its walls and doors made of boxwood, having a book-case in it, and along the roof a clock, imitated from the sun-dial at Achradina. And there was also a bath-room, capable of containing three couches, having three brazen vessels for holding hot water, and a bath containing five measures of water, beautifully variegated with Tauromenian marble. And many rooms were also prepared for the marines, and for those who looked to the pumps. And besides all this there were ten stalls for horses on each side of the walls; and by them the fodder for the horses was kept, and the arms and furniture of the horsemen and of the boys. There was also a cistern near the head of the ship, carefully shut, and containing two thousand measures of water, made of beams closely compacted with pitch and canvass. And next to the cistern there was a large water-tight well for fish, made so with beams of wood and lead. And it was kept full of sea-water, and great numbers of fish were kept in it. And on each side of the walls there were also projecting beams, placed at well-proportioned intervals; and to these were attached stores of wood, and ovens, and baking places, and mills, and many other useful offices. And all round the outside of the ship ran colossi (atlases) six cubits high, which supported the weight which was placed above them, and the triglyph, all being placed at convenient distances from one another. And the whole ship was adorned with suitable pictures.

[43.] G

"And in the vessel were eight towers of a size proportioned to the burden of the ship, two at the stern, and as many at the head, and the rest in the middle of the ship. And to each of these were fastened two large beams, or yards, from which port-holes were fixed, through which stones were let down upon any enemy who might come against the ship. And on each of the towers stood four young men fully armed, and two archers. And the whole of the interior of the towers was full of stones and missiles. And a wall, having buttresses and decks, ran all through the ship, supported on trestles; and on these decks was placed a catapult, which hurled a stone weighing three talents, and an arrow twelve cubits long. And this engine was devised and made by Archimedes; and it could throw every arrow a stade. And besides all this, there were mats composed of stout ropes suspended by brazen chains; and as there were three masts, from each of them were suspended two large yards bearing stones, from which hooks and leaden weights were let down upon any enemy which might attack the vessel. And there was also a palisade all round the ship, made of iron, as a defence against those who might attempt to board it; and iron

ravens, as they were called, all round the ship, which, being shot forth by engines, seized on the vessels of the enemy, and brought them round so as to expose them to blows. And on each of the sides of the ship stood sixty young men clad in complete armour; and an equal number stood on the masts, and on the yards which carried the stones; and they were also on the masts, up at the mast-head, which was made of brass. On the first there were three men, and on the second two, and on the third one. And they had stones brought up to them in wicker baskets by means of pulleys, and arrows were supplied to them by boys, within the defended parts of the mast-heads. And the vessels had four wooden anchors and eight iron ones. And of the masts, the second and third were easily found; but the first was procured with difficulty among the mountains of the Bruttii, and was discovered by a swineherd. And Phileas, an engineer of Tauromenium, brought it down to the seaside. And the hold, although of a most enormous depth, was pumped out by one man, by means of the screw, an engine which was the contrivance of Archimedes. And the name of the ship was 'The Syracusan'; but when Hieron sent it to sea, he altered its name and called it 'The Alexandrian'.

"And it had some small launches attached to it, the first of which was one of the light galleys called *cercurus*, able to hold a weight of three thousand talents; and it was wholly moved by oars. And after that came many galleys and skiffs of about fifteen hundred talents burthen. And the crew also was proportionately numerous; for besides the men who have been already mentioned, there were six hundred more, whose post was at the head of the ship, always watching for the orders of the captain. And there was a tribunal instituted to judge of all offences which might be committed on board the ship, consisting of the captain and the pilot, and the officer of the watch; and they decided in every case according to the laws of the Syracusans."

[44.] G

"And they put on board the ship sixty thousand medimni of corn, and ten thousand jars of Sicilian salt-fish, and twenty thousand talents weight of wool, and of other cargo twenty thousand talents weight also. And besides all this, there were the provisions necessary for the crew. And Hieron, when he had understood that there was no harbour in Sicily large enough to admit this ship, and, moreover, that some of the harbours were dangerous for any vessel, determined to send it as a present to Alexandria to Ptolemaeus the king of Egypt. For there was a great dearth of corn in Egypt. And he did so; and the ship came to Alexandria, where it was put in port.

... And I intentionally pass over the sacred trireme built by Antigonus, which defeated the commanders of Ptolemaeus off Leucolla, a city under the dominion of Cos; and after that, Antigonus consecrated it to Apollo; but it was not one-third, or perhaps not even one-fourth part of the size of the Syracusan or Alexandrian vessel."

Supplementary S5

Canopus Decree

"When moreover there happened a year of a deficient water of Nile during their reign, and all the inhabitants of Egypt became faint-hearted at this event, for fear, memory made them think of the dearth which once did occur in the time of the former Kings, in consequence of the deficiency of the Nile to the inhabitants of Egypt in their time. They [his Majesty and his sister and wife, i.e. Ptolemy III Euergetes and his wife Berenice of Cyrene] had cared in their hearts, which glowed for the inhabitants of the temples and the natives of Egypt in its entire extent, who were very much distressed and bent down. They remitted considerable taxes [in Egypt a large proportion of the taxes the farmers paid in corn], in order to save men's lives, and took care for importations of corn into Egypt from the Eastern Rutennu [Palestine], from the land Kafatha [Phoenicia], from the island Nabinaitt [Cyprus], which lies in the midst of the Great Sea, and from many other lands, since they expended much white gold for the purchase thereof. They transported the importation of provisions, to save those living in the land of Egypt, that these might know their goodness for ever, and their many virtuous turns whereby both those who are

living, and their posterity and for which the gods grant them maintenance of their dignities and rule over Upper and Lower Egypt in reward thereof and their reward of goods of all kinds for ever: with blessing and weal.”

Supplementary S6

Cicero, Against Verres, Second pleading

Book 1: Concerning his conduct in the City Praetorship

[46]

He [Dolabella and Verres] came to Delos. There from that most holy temple of Apollo he [Verres] privately took away by night the most beautiful and ancient statues, and took care that they were all placed on board his own transport. The next day, when the inhabitants of Delos saw their temple plundered, they were very indignant. For the holiness and antiquity of that temple is so great in their eyes, that they believe that Apollo himself was born in that place. However, they did not dare to say one word about it, lest haply Dolabella himself might be concerned in the business. Then on a sudden a very great tempest arose, O judges; so that Dolabella could not only not depart, when he wished, but could scarcely stand in the city, such vast waves were dashed on shore. Here that ship of that pirate loaded with the consecrated statues, being cast up and driven ashore by the waves, is broken to pieces. Those statues of Apollo were found on the shore; by command of Dolabella they are restored; the tempest is lulled; Dolabella departs from Delos [Chios, Tenedos, Samos and others] .

[51]

“And where are those statues now, O Verres? I mean those which I lately saw in your house against every pillar, and also in every space between two pillars, and actually arranged in the grove in the open air? Why were those things left at your house, as long as you thought that another praetor, with the other judges whom you expected to have substituted in the room of these, was to sit in judgment upon you? But when you saw that we preferred suiting the convenience of our own witnesses rather than your convenience as to time, you left not one statue in your house except two which were in the middle of it, and which were themselves stolen from Samos.”

[52]

“What did you think that these men would think of you then, when they saw that you were no longer contending against your accuser, but against the quaestor and the brokers?[6] On[7] which matter you heard Charidemus of Chios give his evidence at the former pleadings, that he, when he was captain of a trireme, and was attending Verres on his departure from Asia, was with him at Samos, by command of Dolabella and that he then knew that the temple of Juno had been plundered, and the town of Samos; that afterwards he had been put on his trial before the Chians, his fellow citizens, on the accusation of the Samians; and that he had been acquitted because he had made it plain that the allegations of the Samians concerned Verres, and not him.”

[61]

Show in your accounts or in those of your father that any one of them was purchased, and you have gained your cause. There is not even any possibility of your having bought those two most beautiful statues which are now standing in your court, and which stood for many years by the folding doors of the Samian Juno; these two, I say, which are now the only statues left in your house, which are waiting for the broker, left alone and deserted by the other statues.

Supplementary S7

Cicero, Against Verres, Second pleading

Book 2: Concerning his manner of deciding cases as a judge while in Sicily.

[5]

Therefore that illustrious Marcus Cato the wise called Sicily a storehouse of provisions for our republic—the nurse of the Roman people. But we experienced, in that long and difficult Italian war which we encountered, that Sicily was not only a storehouse of provisions to us, but was also an old and well-filled treasury left us by our ancestors; for, supplying us with hides, with tunics, and with corn, it clothed, armed, and fed our most numerous armies, without any expense at all to us.

Supplementary S8

Cicero, Against Verres, Second pleading. Book 3: On the court relating to corn

[72]:

“Well, what comes next? If they were ordered to give some small compliment to Apronius, the delight of the praetor’s life, suppose that it was given to Apronius, if it seems to you the compliment to Apronius, and not the plunder of the praetor. You order them to take the tenths; to give Apronius a compliment,—thirty-three thousand medimni [198,000 modii] of wheat. What is this? One city is compelled by the command of the praetor to give to the Roman people out of one district almost food enough to support it for a month.”

[107]

“Does one district [Aetna and Leontini, fertile plain in the east of the Sicily] in one year years three hundred thousand modii of wheat, and fifty thousand sesterces besides, as a compliment to Apronius?”

[163]

“It was Verres’s duty according to a decree of the senate, and according to the law of Terentius and to the law of Cassius about corn, to purchase corn in Sicily. There were two descriptions of purchase, – the one the purchase of the second tenths, the other the purchase of what was furnished in fair proportions by the different cities. Of corn derived from the second tenths the quantity would be as much as had been derived from the first tenths; of corn levied on the cities in this way there would be eight hundred thousand modii. The price fixed for the corn collected as the second tenths was three sesterces a modius; for that furnished in compliance with the levy, four sesterces. Accordingly, for the corn furnished in compliance with the levy, there was paid to Verres each year three million two hundred thousand sesterces, which he was to pay to the cultivators of the soil; and for the second tenths, about nine millions of sesterces. And so, during the three years, there was nearly thirty-six million six hundred thousand sesterces paid to him for this purchase of corn in Sicily.”

Supplementary S9

Cicero, Against Verres, Second pleading, Book 4: About the statues

[23]

“But this city [Messana] was the Phaselis for that robber and pirate of Sicily. Hither everything was brought from all quarters; with them it was left; whatever required to be concealed, they kept separate and stored away. By their agency he contrived everything which he wished put on board ship privately, and exported secretly; and in their harbour he contrived to have a vessel of the largest size built for him to send to Italy loaded with plunder.”

[150]

“And that they may not be taken by surprise on a sudden, this is what I shall ask them [Mamertines]: – Are they bound to furnish a ship to the Roman people? They will admit it. Have they supplied it while Verres was praetor? They will say, No. Have they built an enormous transport at the public expense which they have given to Verres? They will not be able to deny it.

...

They will not be able to deny that Messana has been the receiver of all his plunder and all his robberies. They will confess that an immense quantity of things were exported from that city; and besides that, that this large vessel given to him by the Mamertines, departed loaded when the praetor left Sicily.”

Supplementary S10

Cicero, Against Verres, Second pleading, Book 5, “The speech on the punishments”

[43]

“But I assert, that a merchant vessel of the largest size, like a trireme, very beautiful, and highly ornamented, was openly built at the public expense, with the knowledge of all Sicily, and given and presented to you by the magistrates and senate of the Mamertines. This ship, laden with Sicilian booty, itself being also a part of that booty, put into Velia, at the same time that he himself left the province, laden with many articles, and especially with such as he did not like to send to Rome along with the rest of the fruits of his robberies before he arrived himself, because they were the most valuable, and those which he was most fond of. I myself have lately seen that vessel at Velia, O judges, and many other men have seen it too; a very beautiful and highly ornamented ship, which, indeed, seemed to all who beheld her, to be now looking for the banishment, and to be waiting for the departure of her owner.”

[45]

“For what did you want of a ship? when, if you were going anywhere on account of the state, ships were provided for you at the public expense, both to convey you, and to guard you? But it is not possible for you to go anywhere on your own private account, nor to send for articles across the sea from those countries in which it is not lawful for you to have any possessions, or any dealings. Then, why have you prepared anything contrary to the laws? This charge would have had weight in the ancient severity and dignity of the republic. Now, I not only do not accuse you on account of this offense, but I do not even reprove you with an ordinary reprimand. Lastly, did you never think that this would be discreditable to you? did you never think it would be ground for an accusation, or cause for unpopularity, to have a transport openly built for you, in a most frequented place in that province in which you had the supreme command? What did you suppose that they said who saw it? What did you suppose that they thought who heard of it? Did they think that you were going to take that vessel to Italy, empty? that you were going to let it out as a sailing boat, when you got to Rome? No one could even believe that you had in Italy any farm on the coast, and that you were preparing a merchant vessel for the purpose of moving your crops.”

[47]

“But, however, I give up and grant the whole of this, if you say that the vessel was built with your money. But, you most demented of men, are you not aware that this ground was cut from under your feet by those very friends of yours, the Mamertines themselves, in the previous pleading? For Heius, the chief man of the city,—the chief man of that deputation which was sent to utter a panegyric on you, said that the ship had been built for you by the public labor of the Mamertines, and that a Mamertine Senator had been appointed by public authority to superintend the building of it. The only thing that remains is the materials. And this you yourself compelled the Rhegians to furnish at the public expense, as they say themselves (not that you can deny it), because the Mamertines have no proper materials.”

[59]

The Mamertines gave you both a city to which you might carry all the plunder you amassed from all quarters, and also a ship, in which you might take it away. That town was a receptacle for your plunder, those men were the witnesses to and guardians of your plunder; they supplied to

you both a repository for your thefts, and a conveyance for them. In consequence, even when you had lost a fleet by your own avarice and worthlessness, you did not venture to require a ship of the Mamertines, at a time when our want of ships was so excessive, and the distress of the province so great, that, even if it had been necessary to beg as supplicants for a ship, they would have granted it. But all your power either of commanding a vessel to be furnished, or of begging for one, was crippled, not by the bireme supplied to the Roman people, but by that splendid merchant vessel given to the praetor. That was the price of your authority, of the reinforcement they were bound to supply, of exemption from the requirements of law, and usage, and of the treaty. You have now the case of the trusty assistance of one city lost to us and sold.”

Supplementary S11

Lucian of Samosata (Greece Λουκιανὸς ὁ Σαμοσατεύς, lat. Lucianus Samosatensis) The Ship or The Wishes (lat. Navigium, Greece Πλοῖον ἢ Εὐχαί), 149
Dialog between Lycinus. Timolaus. Samippus. Adimantus

[5] Sa. Certainly I do. We may find the gymnasium open still say, though, what a size that ship was! 180 feet long, the man said, and something over a quarter of that in width; and from deck to keel, the maximum depth, through the hold, 44 feet. And then the height of the mast, with its huge yard; and what a forestay it takes to hold it! And the lofty stern with its gradual curve, and its gilded beak, balanced at the other end by the long rising sweep of the prow, and the figures of her name-goddess, Isis, on either side. As to the other ornamental details, the paintings and the scarlet topsail, I was more struck by the anchors, and the capstans and windlasses, and the 6stern cabins. The crew was like a small army. And they were saying she carried as much corn as would feed every soul in Attica for a year. And all depends for its safety on one little old atomy of a man, who controls that great rudder with a mere broomstick of a tiller! He was pointed out to me; Heron was his name, I think; a woolly-pated fellow, half-bald.

[14] Ly. Well, you are a man of spirit: lay hands on me, and 14away with me to the governor, for the buccaneer that I am. A flagrant case of piracy; on the high roads, too, between Athens and Piraeus. Stay, though; perhaps we can compound the matter. What do you say to five ships, larger and finer ones than your Egyptian; above all, warranted not to sink?--each to bring you, shall we say, five cargoes of corn per annum? Though I foresee that you will be the most unbearable of shipowners when you have got them. The possession of this one made you deaf to our salutations; give you five more--three-masters all of them, and imperishable--and the result is obvious: you will not know your friends when you see them. And so, good voyage to your worship; we will establish ourselves at Piraeus, and question all who land from Egypt or Italy, as to whether they came across Adimantus's great ship, the Isis, anywhere.

Supplementary S12

Pliny the Elder, Natural History, XVI, 201

[201]

An especially wonderful fir was seen in the ship which brought from Egypt at the order of the emperor Gaius the obelisk erected in the Vatican Circus and four shafts of the same stone to serve as its base. It is certain that nothing more wonderful than this ship has ever been seen on the sea : it carried one hundred and twenty bushels of lentils for ballast, and its length took up a large part of the left side of the harbour of Ostia, for under the emperor Claudius it was sunk there, with three moles as high as towers erected upon it that had been made of Pozzuol cement for the purpose and conveyed to the place. It took four men to span the girth of this tree with their arms ; and we commonly hear that masts for those purposes cost 80,000 sesterces and more, and that to put together the rafts usually runs to 40,000.

Supplementary S13

Homer, *The Odyssey*, Translated by Ian Johnston, Richer Resources Publications, Arlington, Virginia, ISBN 978-0-9776269-9-1

Book Five. Odysseus Leaves Calypso's Island and Reaches Phaeacia

[160] *I saved him when he was all by himself,
riding his ship's keel—his swift ship smashed
by a blow from Zeus' flaming lightning,
while in the middle of the wine-dark sea,
where all his other brave companions died.
Wind and waves brought him here.*

[330] *She sent him
a warm and gentle wind, and lord Odysseus
was happy as he set his sails to catch the breeze.
He sat beside the steering oar and used his skill
to steer the raft. Sleep did not fall upon his eyelids
as he watched the constellations—the Pleiades,
the late-setting Bootes, and the Great Bear,
which men call the Wain, always turning in one place,
keeping watch over Orion—the only star
that never takes a bath in Ocean. Calypso,
the lovely goddess, had told him to keep this star [Wain]
on his left as he moved across the sea.*

Supplementary S14

Homer, *The Odyssey*, Translated by Ian Johnston, Richer Resources Publications, Arlington, Virginia, ISBN 978-0-9776269-9-1

Book Twelve. The Sirens, Scylla and Charybdis, the Cattle of the Sun

[370-380] *But harsh winds which destroy men's ships arise
out of the night. And how could we avoid
total disaster, if we chance to meet
unexpected blasts from stormy South Wind
or from blustering West Wind, the ones
most likely to completely wreck our ship,
no matter what the ruling gods may wish?*

*Surely we should let black night persuade us,
and now prepare a meal, while we stay put
alongside our swift ship. When morning comes,
we'll go on board, set off on the wide sea.'*

[420] *But then, South Wind kept blowing one whole month.
It never stopped. No other wind sprang up,
except those times when East or South Wind blew.*

[450] *So come, let's drive away
the best of Helios' cattle, and then
we'll sacrifice to the immortal gods
who hold wide heaven.*

[460] *I'd rather lose my life once and for all
choking on a wave than starving to death
on an abandoned island.'*

"Eurylochus spoke.

My other comrades agreed with what he'd said.

[510] *With a dazzling thunderbolt I myself
will quickly strike at that swift ship of theirs
and, in the middle of the wine-dark sea,
smash it to tiny pieces.'*

[530] *Once we'd left that island,
no other land appeared, only sky and sea.
The son of Cronos sent us a black cloud,
above our hollow ship, while underneath
the sea grew dark. Our boat sailed on its course,
but not for long. All at once, West Wind whipped up
a frantic storm—the blasts of wind snapped off
both forestays on the mast, which then fell back,
and all our rigging crashed down in the hold.*

[540]

*Then he [Eurylochus] fell,
like a diver, off the ship. His proud spirit
left his bones. Then Zeus roared out his thunder
and with a bolt of lightning struck our ship.
The blow from Zeus' lightning made our boat
shiver from stem to stern and filled it up
with sulphurous smoke. My crew fell overboard
and were carried in the waves, like cormorants,
around our blackened ship, because the god
had robbed them of their chance to get back home.*

[590] *From that place
I drifted for nine days. On the tenth night,
the gods conducted me to Ogygia,
the island where fair-haired Calypso lives,
fearful goddess with the power of song.*

Supplementary S15

M. Terenti Varronis De Lingua Latina 1, 101

[101] *a Roma*

*quod orti Siculi, ut annales veteres nostri dicunt,
fortasse hinc illuc tulerunt et hie reliquerunt id
nomen. Volpes, ut Aelius dicebat, quod volat
pedibus.*

Supplementary S16

Apollodorus. Apollodorus, The Library, with an English Translation by Sir James George Frazer, F.B.A., F.R.S. in 2 Volumes. Cambridge, MA, Harvard University Press; London, William Heinemann Ltd. 1921. Includes Frazer's notes.

Apollodorus, in Epitome 7.24

[24] There Calypso, daughter of Atlas, received him, and bedding with him bore a son Latinus. He stayed with her five years, and then made a raft and sailed away. But on the high sea the raft was broken in pieces by the wrath of Poseidon, and Ulysses was washed up naked on the shore of the Phaeacians.

Supplementary S17

Flavius Josephus, *The Whole Genuine Works of Flavius Josephus: Together with Large Notes, Proper Observations and an Index in Two Volumes, Volume 4*, Khull, Blackie, & Co. and Fullarton & Co. Edinburgh, Glasgow, 1820.

The antiquities of the Jews. Against Apion, Book 1, 32, p.315

[32] That Amenophis accordingly chose out two hundred and fifty thousand of those that were thus diseased, and cast them out of the country: that Moses and Joseph were scribes, and Joseph was a sacred scribe, that their names were Egyptian originally that of Moses had been Tesithen, and that of Joseph Peteseeph: that these two came to Pelusium, and lighted upon three hundred and eighty thousand that had been left there by Amenophis, he not being willing to carry them into Egypt: that these scribes made a league of friendship with them, and- made with them an expedition against Egypt: that Amenophis could not sustain their attacks, but fled into Ethiopia, and left his wife with child behind him, who lay concealed in certain caverns, and there brought forth a son, whose name was Messene, and who, when he was grown up to man's estate, pursued the Jews into Syria, being about two hundred thousand, and then received his father Amenophis out of Ethiopia.