

SHIPS AND SEAFARING IN THE MEDITERRANEAN

Seafaring in the Indian Ocean: A new age
of globalisation / “oikoumenisation”



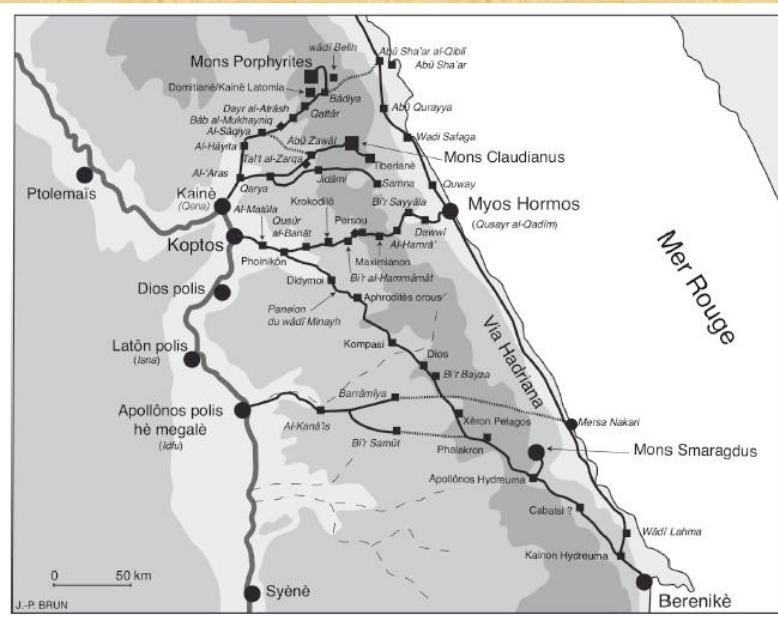
Dr Matthew Adam Cobb

Development of Ptolemaic Activity



Ports

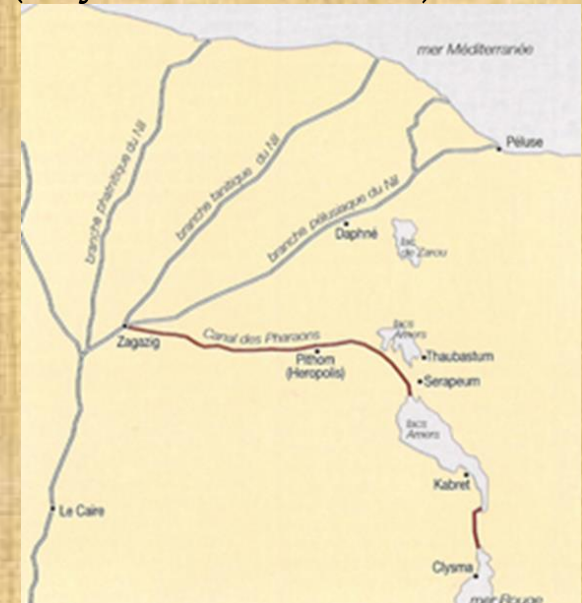
- Arsinoe; Philoterias; Nechesia; Berenike Trogoditika; Myos Hormos.
- Canal to Suez (re)excavated by Ptolemy II Philadelphos.



Tracks leading from Edfu and from Koptos.

• Erythra Thalassa

- Greek - Erythra Thassala – Red Sea - Latin - Mare Rubrum.
- Arrian *Indica* 38.3 (Indian Sea), 43.2 (Great Sea). 43.7 (Erythra Thassala).



Increasing Commercial Exchange

- Evidence from Delos relating to incense and ivory trade.
- Sacred animal necropolis at north Saqqara.
 - *Papio hamadryas anubis* (Olive Baboons)
 - *Cercopithecus* (African green monkeys)
- Loan agreement relating to the Spice-Bearing (Ἀρωματόφορος) land.

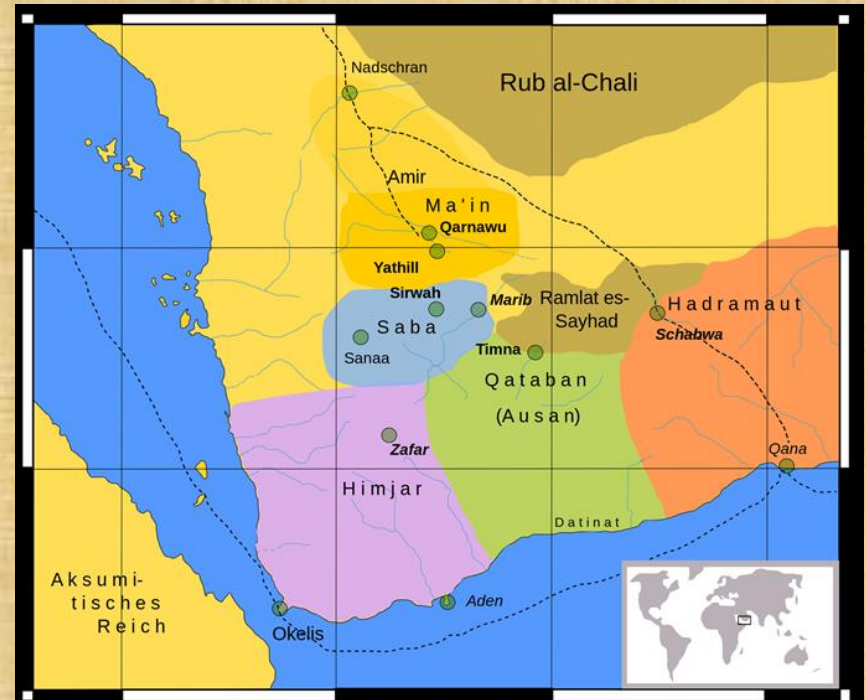
“Sphinxes, dogheads and cepi are sent to Alexandria from the country of the Trogodytes and from Ethiopia. Sphinxes resemble the animals as depicted in pictures... they are mischievous and so receptive of systematic training that their gracefulness in everything causes amazement...” - **Agatharchides 74a = Photius, Cod. 250.73, p.455b.**

- Sphinx [long-tailed monkey?], Kunocephalos [Hamadrayas baboon], and Kepos [Nisnas].



Egypto-Arabian Contact

- ▣ *P. Cairo Zen. 59536* – “Minaean frankincense”.
- ▣ Zayd’il bin Zayd - Memphis - importer of myrrh and calamus.
- ▣ Sabaean merchants – Larimnum - Agatharchides 5.103a + b.



- Qana' (Kane of the *PME*) – Koan amphorae.
- Khor Rori (Moscha Limen of the *PME*) imitations of the Athenian tetradrachmae (head/owl series).
- Bust of Athena found at Jabal al-Lawdh (c.3rd -2nd century BC).

Nodes

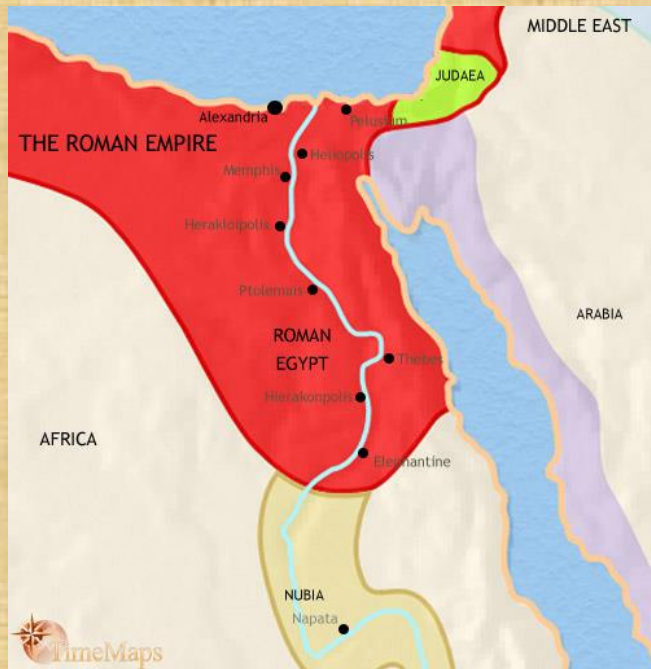
“...Fortune Islands... In these islands one can see riding at anchor merchant vessels from neighbouring countries. Most of those encountered there are from the port Alexander built on the Indus River. Not a few, however, come from Persia and Carmania and the whole nearby region.”

Agatharkhides 5.105a = Photius, *Cod.* 250.103, 459b.

“Eudaimon Arabia [prosperous Arabia], a full-fledged city in earlier days, was called Eudaimon when, since vessels from India did not go on to Egypt and those from Egypt did not dare sail to the places further on but came only this far, it used to receive cargoes from both...” – *PME* 26.



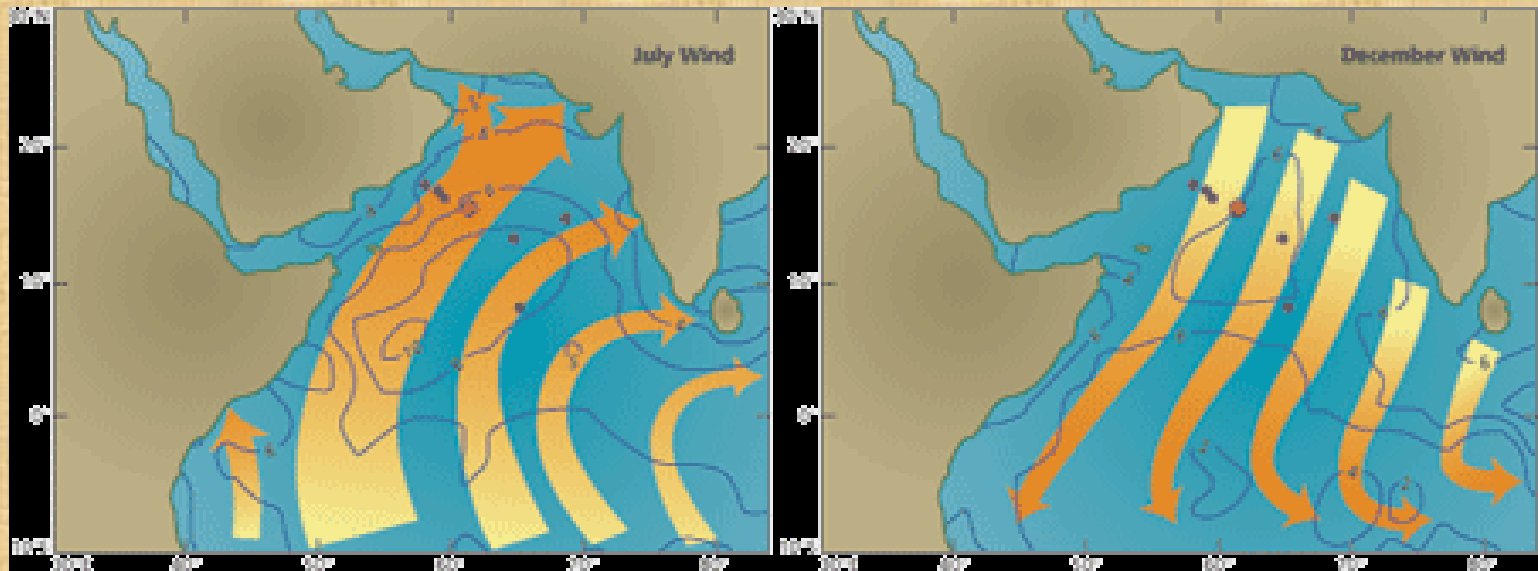
- Annexation of Egypt by Octavian in 30 BC.
- Scale of Mediterranean participation in Indian Ocean trade reaches levels not seen previously:
 - Intensity of occupation at Red Sea ports.
 - Quantity of Roman finds vs. Ptolemaic era finds.
 - Impressionistic evidence of literary sources.
- Seland (2008) characterises this phase as akin to ancient globalisation or “oikoumenisation”.



Discovery of the Monsoon?

- Eudoxus of Cyzicus - **Strabo *Geog.* 2.3.4-5.**
- Hippalos - ***PME* 57; Pliny *NH* 6.26.100, 104-05.**
- Conspiracy of silence by Arab merchants?

“The whole coastal route just described, from Kane and Eudaimon Arabia, men formerly used to sail over in small vessels, following the curves of the bay. The ship captain Hippalos, by plotting the location of the ports of trade and the configuration of the sea, was the first to discover the route over open water.” – ***PME* 57.**



The Annexation of Egypt

A Multi-Ethnic Trade

- Dangers of a Roman-centric view.
- Various ethnic groups with pre-existing trade networks – e.g. Indians, Arabians, Persians etc.
- Alternative routes – Persian Gulf (also overland routes).

“After sailing by the mouth of the gulf, six runs further on you come to another port of trade of Persis called Omana. Customarily the merchants of Barygaza deal with it...” – **PME 36**.

“Muziris, in the same kingdom, owes its prosperity to the shipping from Ariakê that comes there as well as to Greek shipping.” – **(54)**.

“...Kamara, Podukê, and Sôpatma. They are the home ports for local boats that sail along the coast as far as Limyrikê and others, called *sangara*, that are very big dug-out canoes held together by a yoke, as well as for the very big *kolandiophonta* that sail across to Chrysê and the Gangês region.” **(60)**.

Organisation and Finance

“Roman Merchants”

- Nikanor archive - 67 names of which:
 - 32 Graeco-Egyptians/Jewish merchants - 7 individuals granted citizenship - 16 are associated with (possible) imperial freedmen/slaves – 7 potential Italians?
- Berenike customs passes - 81 names (1994-1998 seasons):
 - 34 of them Egyptian - 29 Greek – 10-11 with Latin praenomina (some may be freedmen).
- Scripts found at Berenike:
 - Greek, Demotic, Hebrew, Latin, Aramaic, Palmyrene; as well as some Indian scripts (Tamil-Brahmi, Prakrit, and Sanskrit).

“...the merchants of Alexandria are already sailing with fleets by way of the Nile and of the Arabian Gulf as far as India...” – **Strabo *Geog.* 2.5.12.**

“My father once sailed to the Red Sea of his own free will, since he commanded the ship that the Egyptians send to the land of India.” – **Philostratus *The Life of Apollonius of Tyana* 6.16.3.**

Finance

- **Muziris Papyrus (P. Vindob G 40822)** - Verso mentions a consignment of ivory, cloth(?) and nard weighing 3.5 tons and valued at (after a small tax deduction) 1,154 Egyptian talents and 2,852 drachmae (c. 7,000,000 sesterii).
- Complex organisation – use of agents – merchant diaspora.
- Marcus Julius Alexander – Brother of Tiberius Julius Alexander (Prefect of Egypt between AD 66-69).

“To the great goddess Leto, Aelia Isidora and Aelia Olympias, distinguished matrons, *naukleroi* and merchants of the Red Sea, together with Apollinarios the *eparchos*... of Olympias and (Isidora) both...dedicated (this).” – Inscription from the temple of Medamoud (ancient Madu, 8 km north of Luxor).

- Tchernia (1997) – importance of Italian finance - Anni, Caii Norbanii, the Peticii, and Auli Gabinii.

Involvement of the Imperial Family?

- Sidebotham (1986) – direct commercial involvement of Imperial family through freedmen? – contra Casson (1989); Young (2001) - local administration rather than trade.
- *O. Petr. 290* - *OGIS 678* - *IGRR I.1256* - Tiberius Claudius Epaphroditos?
- Anikētos Kommonos freedman of Tiberius (*O. Petr. 237-39, 242, 247*) - tutor to the young Nero and later commander of the fleet at Misenum?
- Zethos, slave of Tratos, slave of Caesar (*O. Ber. 106; O. Petr. 292*).

Ship Construction

- The square-rigged merchant in the Mediterranean - capacity from 75 to several hundred tons (at extreme end 1000 tons).
- Shell of planks held together by thousands of closely-set mortise-and-tenon joints, and sets of frames that were inserted afterwards
- Dimensions of harbour at Berenike - 19-22 m wide and up to 60-61 m in length.
- Brail-rings, a deadeye, various sheaves from rigging-blocks, and several fragments of sailcloth - S/S (Egyptian) and Z/Z (Indian) material.
- *O. Krok. 41* – wagon with shipbuilding wood.
- Koptos Tariff - tolls paid by shipbuilders' servants and artisans – also on components such as masts and yardarms.



Image from Sidebotham (2011)



Routes and Schedules

- Monsoon winds:
 - Southwest Monsoon – June to September.
 - Transitional period – October to November.
 - Northeast Monsoon – November to March.
 - Transitional period – April to May.



“Travellers normally set sail at midsummer, before the rising of the Dog-star, or else straightaway after [mid-July]... Travellers set sail from India on their return to Egypt, at the beginning of the Egyptian month Tybis, which is our December, or at all events before the sixth day of the Egyptian month Mechir, the same as our ides of January [13th]...” **Pliny NH 6.26.104, 106.**

Range of Potential Sailing Times

Location	Faster Time of Arrival	Slower Time of Arrival
Puteoli/Ostia to Alexandria	Depart: mid-April. Arrive: late-April (eight days).	Depart: mid-March (more risky). Arrive: mid-May (nine weeks).
Alexandria to Koptos	Arrive: early-mid May (10-14 days).	Arrive: early-mid July (a month or two).
Koptos to Red Sea ports	Arrive: mid-late May (5-12 days)	Arrive: mid-late July (5-12 days, but potential delays).
Red Sea to Gulf of Aden	Depart: mid-July. Arrive: mid-August (30 days).	Depart: mid-July (just about). Arrive: mid-August (30 days).
Gulf of Aden to Indian ports	Arrive: late-September (Pliny's 40 days, but Arabic sources say less).	Arrive: late-September (Pliny's 40 days, but Arabic sources say less).
Return from India to Red Sea	Arrive: February (graffito of Gaius Numidius Eros).	Arrive: June (P.CtYBR inv. 624).
Red Sea ports to Koptos	Arrive: mid-February (5-12 days).	Arrive: mid-June (5-12 days, but potential delays).
Koptos to Alexandria	Arrive: early-March (10-14 days).	Arrive: mid-August (50 days).
Alexandria to Puteoli/Ostia	Depart: mid-march (riskier) or mid-April (preferable) Arrive: mid-April (riskier) or mid-May (preferable): (30 days, but in most cases clearly longer).	Depart: mid-Augustus Arrive: mid-November (any later and vessels would be sailing during <i>mare clausum</i>): (two to three months).
Estimate Duration of Voyage/Transit	12-13 months (Within 12 months is possible if one starts the journey in mid-May, though this increases the risk of missing the crucial mid-July departure from the Red Sea ports).	20 months.

Price Fluctuations

- Puteoli/Ostia to Alexandria and Alexandria to India as separate networks connected by Alexandria.
- Fluctuating volume of western Mediterranean goods?
- Fluctuating prices for goods – Pliny *NH* book 12:
 - Stacte myrrh 3 to 50 denarii per libra.
 - Malabathron 1 to 400 denarii per libra.
 - Cassia 5 to 50 denarii per libra.

“The price of it [cinnamon] was previously as much as 1,000 denarii per libra; which was afterwards increased to half as much again, as a result, it is said, of the forests having been set on fire by the barbarians, from motives of resentment; whether this took place through any injustice exercised by those in power, or only by accident, has not been as yet exactly established.” – **Pliny *NH* 12.42.93-94.**

Imports and Exports

The goods traded - Imports

- A variety of different products imported from bulkier goods to low weight high value items.
- Spices and aromatics – pepper (esp. black), cassia, frankincense, nard.
- Textiles – silks, Seric skins, cotton cloth.
- Precious gems – beryl, opal.
- Woods – teak, ebony.
- Animals (exotic pets and food)
- Slaves



Black Pepper –
Piper Nigrum



Cassia –
Cinnamomum cassia



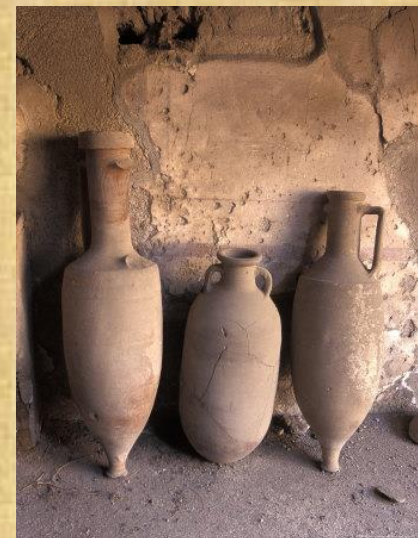
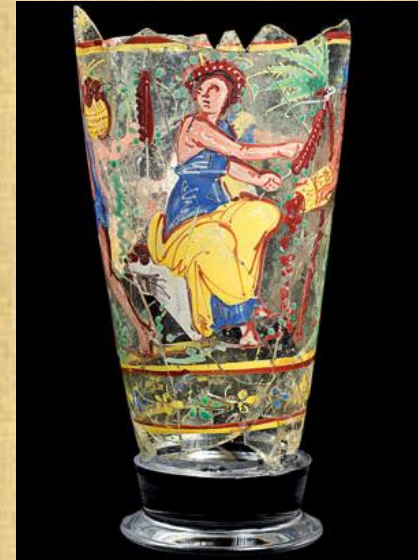
Frankincense -
Boswellia Sacra



Peacock Mosaic – Antioch – Worchester Art Museum

The goods traded - exports

- Mixed types of goods.
- Heavy/bulky items – non-precious metals, e.g. copper.
- Crafted goods – bronze-wares, glass, reworked imports (silk!).
- Foodstuffs and drink – wine, olive oil, maybe garum?
- Mediterranean red coral.
- Gold and silver crafted wares.
- Peridot (*chrysolithon* / *topazos*)



Roman and imitation coins found in India

- Around 6,000 *denarii* (silver coins) and 1,500 *aurei* (gold coins) found in India, including some imitations.
- Possibly an extra 8,000 *aurei* in Kottayam hoard.
- Most of the coins Julio-Claudian (30 BC-AD 68), and mostly found in southern and central India.
- Most aurei probably exported from reigns of Nero to Antoninus Pius.
- One *aureus* equal to 25 *denarii* (in Roman Empire)
- *Aureus* = 8 g./ 7.3 g
- *Denarius* = 3.9 g. / 3.4 g



Indian Ocean Goods and Roman Society

Elite Social Competition

- Goods acquire meaning in the specific social contexts in which they are used – social competition vs. moral outrage.
- Use of Indian Ocean goods:
 - Funerary rituals
 - Religious worship / dedication
 - Medicines
 - Cuisines (spices), but also paraphernalia at banquets (“utensils”, cups, furniture, etc.)
 - Clothing – jewellery – perfume – makeup

It is the luxury which is displayed by man, even in the paraphernalia of death, that has made Arabia thus "happy;" and which prompts him to burn with the dead what was originally known to have been made for the service of the gods... And then let us only take into account the vast number of funerals that are celebrated throughout the whole world each year, and the heaps of odours that are piled up in honour of the bodies of the dead..." - **Pliny NH 12.41.83.**

Prices for Spices

- Pliny *Natural History* book 12 (Flavian period):
 - Long pepper 15 denarii per libra (329g) = 60 HS
 - Black pepper 4 denarii per libra = 16 HS
 - Frankincense 3-5 denarii per libra = 12-20 HS
 - Cassia 5-50 denarii per libra = 20-200 HS
- Cf. Muziris Papyrus (mid-second century AD)
 - ivory valued at 100 Egyptian drachmae (25 denarii) per mina (436g) of weight
- Cf. cost of precious gems and materials
 - 150,000 sesterces (37,500 denarii) on a ladle made of rock-crystal (Pliny *NH* 37.10.29).
- Price of wheat in ancient Rome - 6 to 12 HS per modius (6.8 kg) – feed on man of a week.

Indian Ocean Goods and the Wider Population

- Could a wider segment of the population buy smaller amounts of cheaper goods?:
 - Legionaries - 100 sesterces per month (c. Domitian to the Severans)
 - Libra (329g) of frankincense or pepper represents around 15-25% of that monthly income
 - skilled workers (quarrymen, masons and smiths) at Mons Claudianus earning 47 sesterces a month
- Rural vs. urban; payment vs. barter; subsistence vs. “profession” or “craft”.

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