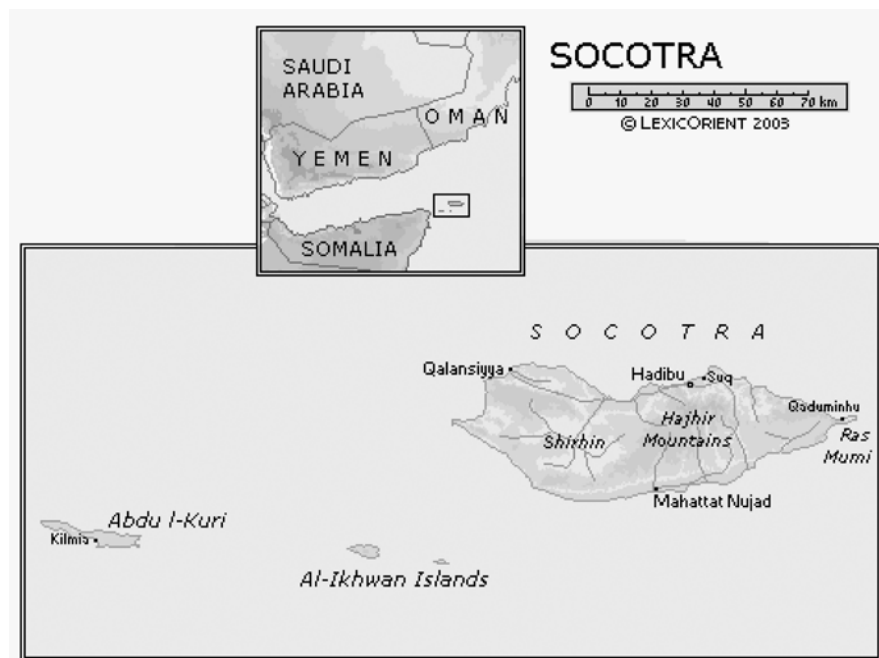


Socotra: Hub of the Frankincense Trade

Grainne Grant



Introduction

The island of Socotra lies in the Indian Ocean, the dominant landmass in a small archipelago of four islands which are slightly closer to the eastern tip of the Horn of Africa than to Southern Arabia. As late as 1907, geologist Franz Kossmat called it one of the “most isolated pieces of land” in the history of the earth, and even today the island is often completely shut off from the mainland due to adverse weather. Monsoons and difficult currents ensured that the island remained an uninhabited legend until the first millennium BCE, but its indigenous incense groves made the island worth settling in spite of the attendant hardships.

Frankincense, the resin produced by a species of *Boswellia*, was one of the most valuable commodities produced in the ancient world. Highly prized as fragrant incense, it was also widely used in medicine, cosmetics, and even cuisine. Socotra is one of only three places on the planet where incense-quality frankincense can be harvested, and the island contributed tremendously to the wealth of ancient Southern Arabia, though Socotra itself remained quite poor. Except for the remnants of stone cultivation terraces around stands of *Boswellia* trees, there is no archaeological evidence of either the ancient inhabitants who lived on the island and tended its incense groves or their relationship to mainland cultures. The disparity between the income the trees would have produced and the apparent lack of civilization on Socotra has confounded archaeologists and botanists alike.

Although always a critical resource of the Southern Arabians whose kingdoms depended on the incense trade, Socotra became important to the outside world in the first century CE, when discovery of the annual monsoon patterns broke Arabian monopolies and the island became an important port of call and trading post in its own right. Its recognition, however, declined and finally came to an end in the fourth century, along with the incense trade that had created it. Currently even most sailors would have difficulty locating Socotra on a map.

In modern times, this fascinating island has been a recent topic of study by geologists, ethnologists, and a wide variety of naturalists. Similarly, its inhabitants are currently the project of multiple charitable missions by non-profit organizations. Both Socotra and those who live there, however, have been overlooked by the historians who might best contribute to ushering it into the twenty-first century by analyzing and publicizing the ancient literary clues to the island's past. Socotra's history is vital to its future, and that history is founded on the *Boswellia* species endemic to the island.

Mythology of Socotra

Socotra is a late name for the island. It is thought to be derived from the Arabic *suq qatir*, or “marketplace of Dragon's Blood,” after the brownish-red resin of the Dragon's Blood trees (*Dracaena cinnabari*), which grow nowhere else.¹ The Sanskrit *Dvipa Sukhadhara*, or “Island of the Blessed,” is a much older name, and the source of the contraction *Diuskadra*, which was reinterpreted by the Greeks as *Dioscorides*. All of these names appear on maps and in extant literature. Socotra is also called the island of “Enchantment,” “Bliss,” “Tranquility,” “Mists,” “the Phoenix,” and “the Jinn” in documents ranging from ancient fables to modern books. To further compound the difficulty of sorting out references, the Egyptian name for Socotra, *Pa'-anch*, seems to have evolved into the *Panchaia* that became an archetypal symbol for an island paradise brimming with spices.

It is impossible to trace the legends referring to Socotra to a single source. An ancient Egyptian tale, “The Shipwrecked Sailor,” is dated by E.M. Tappan to approximately 2200 BCE and certainly seems to refer to Socotra. In this story, a sailor, whose crew has died in a terrible storm, is cast adrift on an island, where he meets a serpent “30 cubits long.” The serpent tells him, “If you have come to me, it is God who has let you live. For it is He who has brought you to this isle of the blest, where nothing is lacking, and which is filled with all good things....”² The reference to the “Isle of the Blessed,” its location several days south of the Red Sea, and the unexpected, terrible storm that kills the crew all fit Socotra. That the sailor is rescued by a ship returning to Egypt from Africa fits the island as well.

In Tappan's version, the shipwrecked sailor offers perfumes and oils to the serpent guardian of the island, who tells him, “You are not rich in perfumes, for all that you have is but common incense. As for me, I am prince of the land of Punt, and I have perfumes.” In Jim Loy's translation, however, the serpent's response is, “I do not need your gifts. I have these in abundance, more than the Lords of Punt.”³ This last makes more sense in terms of distinguishing the island (Socotra, or Pa'-anch) from the nation of Punt (Pu-anet, on the African coast); the ancient Egyptians were well aware of the difference.⁴ However, it is

not difficult to imagine that over the centuries, especially after the Land of Punt disappeared and became legendary itself, the two sources of incense were confused. Regardless, the sailor in the Egyptian story is, of course, rescued and leaves the island with “gifts of precious perfumes,” “an abundance of incense,” and “all kinds of precious things” from the serpent king, including many plants and animals, such as cassia, baboons, and ivory, which do not occur on Socotra. Many later myths also refer to Socotra as the source of any exotic luxury products known at the time.

The “Island of the Jinn” appears in the ancient Arabic story of “Zein Ul Asnam and the King of the Jinn,” in which the main character travels “days and nights in the foulest of deserts” before encountering a monstrous boatman, who brings him to an island that is covered with incense trees and ruled by a magical King of the Jinn. Socotra is again the obvious choice as a factual frame of reference. Similarly, the stories of Sindbad the sailor consistently describe incidents of sailing from Bassora (modern Basra, which provides access to the Persian Gulf), encountering terrible storms, and being washed up on islands. In the story of Sindbad’s “Fifth Voyage,” the crew eats the egg of a rukh (roc), and the giant bird destroys the ship. Sindbad, the lone survivor, is stranded on an island paradise “abounding in trees, laden with ripe fruits, and flowers of all kinds and running streams and birds warbling the praises of Him to whom belong power and eternity.” This magical island naturally happens to be home to an ageless, malevolent creative entity of superhuman strength. For millennia these elements were common in stories of Socotra.⁵

Socotra also played a starring role in the writings of Euhemerus of Messene (roughly 300 BCE), who used the island as a setting for his philosophical interpretation of the relationship between man and the gods. Diodorus Siculus (first century BCE) quoted Euhemerus’ description of Panchaia, where a spectacular temple to Zeus Triphilus built by Zeus himself sat on “an exceedingly high hill” and contained a stele of gold inscribed with the deeds of the gods.⁶ Even modern authors have dismissed Euhemerus’ Panchaia as a figment of his imagination, but his description of its location and the similarity between his name for the island and the Egyptian Pa’-anch are unlikely to be coincidental. The Phoenicians, to whom the Phoenix was sacred, believed that the bird nested on Socotra, and Pliny equates Panchaia with Socotra in his retelling of the Phoenix legend, explaining that the bird carries the nest of its predecessor from Socotra to “the City of the Sun near Panchaia and there deposits it upon the altar of that divinity.”⁷ Diodorus also noted that Panchaia was a source of myrrh and other aromatic plants, which is certainly true of Socotra. Unfortunately, his combination of verifiable details with pure fantasy has done more to disappoint archaeologists than any other author’s description of the island.

The Panchaia of Diodorus and Pliny became a literary archetype in Latin poetry, appearing in Virgil’s *Georgics*, Lygdamus’ contribution to the Tibullan corpus, and Ovid’s *Metamorphoses*. The latter work, like the Egyptian and Arabian stories, attributes several plants to the island that do not grow there. Whether or not these poets believed that Panchaia was a real place or equated it with the Dioscorides that appears in the *Periplus Maris Erythraei* in the late first century, is unknown; descriptions of the Elysian fields also abound in the poetry of the period. What is clear is that, even before the disappearance of Phoenician Punt, the remote, inaccessible island of Socotra, with its mist-covered mountains, was believed to be teeming with luxury goods and mystical creatures, and in literature had become a symbol of an Eden-like garden (serpents and all) of frankincense and other exotic plants long after the island had actually been settled.

Geophysical History of Socotra

While it may never be described as a paradise by anyone who has actually visited it, Socotra is certainly home to a large number of exotic plants. Separated from the continent during the Tertiary period, the island hosts no indigenous mammals whatsoever, but its floral endemism rate is estimated at roughly 30 percent, making it one of the most biodiverse islands in the world. Included among some 815 vascular

plant species recorded on the island are at least seven species of frankincense (*Boswellia*).⁸

Originally part of the coastal shelf of Africa, Socotra was separated from the larger landmass along with other continental fragments when the crust along the Gulf of Aden fractured some 15 million years ago. Following the violent tectonic events that divided Arabia from the Horn of Africa, the geomorphological evolution of the island has been comparatively quite slow, more or less limited to that caused by fluctuating ocean levels, as the tropical climate contributes little to erosive processes. The island lacks evidence of volcanic activity since the Paleozoic era, and geologists believe that there have been no substantial changes in either the form or composition of the Socotran landscape in the last 30,000 years.⁹ Although stable for millennia, Socotra's topography is nevertheless quite dramatic. Only 83 miles long and 26 miles across at its widest point, the surface of the island varies in altitude from the coastal marine terraces at 16-23 feet above sea-level to the Haggier mountain range, the highest peak of which is 5,000 feet. The combination of this varied terrain with the unique local climate allows distinctive flora to flourish on Socotra.

Situated at the convergence of the Northern Tropical and Sub-Equatorial climatic belts, Socotra is subject to annual monsoons from two directions. From late October to April, the winter monsoon blows northeast from the Arabian Sea, and from May to October the summer monsoon blows southwest from the Indian Ocean. Socotran "seasons" seem to be defined by the direction in which the winds are blowing. Average air temperatures vary less than 40° Fahrenheit between winter and summer, and evaporation capacity exceeds 78 inches year round. Tropical cyclones raised by overlapping air currents lash the coast of the island in April and June, and occasionally in November and December as well. Although the island will never be described as wet, these storms ensure that annual precipitation is significantly higher on Socotra than on the continental landmasses that frame it, with rainfall over twelve inches annually in the Haggier range.¹⁰ Layers of porous limestone overlie the plateaus at the base of the mountains, and the tiny pockets in this soft stone collect water beneath the soil rather than shedding it. The island's many rift basins and valleys also contribute to water retention, with the result that there are natural springs near the mountains year round. The mists surrounding the mountain peaks and a curtain of heavy fog at 492 feet above sea level also help to maintain consistent moisture levels. Runoff down the Haggier slopes keeps the mountainsides damp above 650 feet; between 650 and 1640 feet the arid light forests, which contain trees that produce frankincense, are found. In ancient times these small groves alone made Socotra worth settling in spite of the geographical and climatological hardships.

The effect of the incense trade on the ancient Southern Arabian economy is immeasurable. By all accounts, supply did not catch up with demand until well after the third century CE. By virtue of plate tectonics, Socotra, an island relic hosting what had once been part of a single great swath of frankincense trees, had become one of only three areas on the face of the earth where these "true" frankincense trees thrived. It was thus an extremely valuable, albeit inconvenient resource in the ancient world.¹¹

The History of the Frankincense Market

That frankincense became a major economic factor in the history of the western world was due in large part to the demand of the ancient Egyptians, whose territory lacked frankincense trees. References to the use of frankincense, primarily as a sacrificial fumatory but also medicinally as an antiseptic, antibacterial, and mild anesthetic, appear in the earliest Egyptian temple and extant medical documents (Old Kingdom, fifth and sixth dynasties, 2575-2150 BCE). Their use of incense, however, significantly predates writing, and frankincense was certainly employed in religious rituals prior to that time.

Because it can be harvested only on either side of the gulf of Aden, frankincense had to be imported, and as Egypt was separated from the Fertile Crescent by "a series of defensive posts," their sole source of frankincense was the Phoenician traders who traveled either down the Syrian coast from Byblos or

up from Somalia or the Persian Gulf to “the western shores of the Red Sea to Quseir or Myos Hormos and northward along the Nile from Coptos.”¹² Apparently these traders did not arrive often enough, or perhaps they had an inadequate supply of incense, for the Egyptians were motivated on several occasions to try to get it themselves. As early as 2800 BCE, there were expeditions from Egypt to purchase incense, but buyers were limited by their primitive and unwieldy riverboats, which could not manage the ocean and had to hug the coast.

The Egyptian demand for frankincense only increased over time. In the New Kingdom period (beginning 1539 BCE), funerary rites and the god-like afterlife previously reserved for Pharaohs were suddenly the prerogative of anyone who could afford them:

The formerly exclusive privileges of the pharaoh toward the fullest eternal life were now extended toward the nobles, in what has been termed “the democratization of the hereafter”....From now on, pharaoh and people were to enjoy the same unlimited scope after death. Quantitative differences might remain in the elaborateness of the burial of the king or in the insistent emphasis of prayers and magic spells and priestly reciter which the king could afford; but now the same texts, the same ritual, and the same magic made identical promises of beatitude to king and commoner.¹³

In addition to its absolute necessity as a component in funerary incense, the Egyptians also used frankincense in daily worship, burnt it to assist incubation or dream therapies, used it medically, and added it to wine, probably as a calmate. Nevertheless, in spite of the growing number of Egyptian nobles who had the requisite wealth, the available supply was never sufficient to meet demand.

The destruction of major cities and trade routes throughout Asia Minor and the Fertile Crescent at the end of the third millennium had been devastating to intercultural relations, and recovery was slow, a situation that only exacerbated the Egyptians’ supply problem.¹⁴ Finally, in 1490 BCE, the eighth year of her reign, Queen Hatshepsut organized an expedition to Punt to buy frankincense, myrrh, and other religious and cosmetic products. Five ships left from Quseir on the Red Sea and sailed to Africa, returning laden with luxury goods. They also brought saplings, which the queen planted outside the temple at Deir el-Bahri in order to raise her own incense supply. Due to the demanding nature of the trees, these saplings failed, with far-reaching effects. Around 1200 BCE, Douglas Botting reports, “2,189 jars and 304,093 bushels of incense were delivered to the Temple of Amon at Thebes alone, at a price so prodigious that it cannot be estimated in modern terms.”¹⁵ The continuing demand for frankincense in large quantities led directly to the development of South Arabian kingdoms, and with them, the island of Socotra.

Frankincense and Arabia Felix

Before the commencement of formal overland trade, the *Boswellia* trees in the Dhofar region of Southern Arabia were harvested by the inhabitants of the Hadramaut (modern Oman and Yemen), and the frankincense was sold to Phoenician traders out of Gerrha, on the Persian Gulf. At some point, trade through the Gulf became impossible, due to what historian Brian Doe refers to as the “various upheavals and intermittent warfare in Mesopotamia.”¹⁶ In spite of the chaos, however, frankincense was still in demand, and the camel caravan system was invented to replace the Gulf trade. This was the birth of the Incense Road and of “Arabia Felix,” as it came to be known during the Classical period.

Frankincense was not the only incense product that the caravans brought north to trading posts—other regional aromatics and precious stones, spices, and silk from South Arabian ports were carried as well—but frankincense was by far the most important export. James Innes Miller notes that “the Incense Road meant the Frankincense Road.”¹⁷ Brian Doe writes:

The wealth of Southern Arabia depended on trade, largely with countries bordering upon the Mediterranean Sea. The principal export was incense, required above all by Egypt for religious rites. In one way and another, Southern Arabia thus became a “hinge” in the commercial system of the ancient world between east and west.¹⁸

Demand for frankincense and other aromatics seems to have exploded in the Mesopotamian region and beyond sometime around 1000 BCE.¹⁹ This overland trade probably began between 1200 and 1000 BCE, before the formal political organization of Southern Arabia, but the area was by no means “empty” before the development of politically organized kingdoms. The ancient territory of Hadramaut has been inhabited since the Paleolithic period. Neolithic artifacts have been recovered near Dhofar, which is still home to the largest groves of frankincense trees in the world, and it is entirely likely that frankincense resin was recognized, harvested, and put to use for thousands of years prior to the historical period. Agricultural communities and small highland farming villages in the Yemen highlands, where there is natural irrigation, date back to the Bronze Age, and clearly some trade between these “proto-Arabians” and neighboring territories existed before the tenth century BCE. This date seems, however, to have been about the time that Southern Arabia began to form into cohesive political states.

The incense trade appears to be the missing link between the “sedentary culture” that had been established by the first millennium BCE by the peoples of Southern Arabia and the political organization of the territories, which were to be ruled by the *mukarribs* (kings) of Southern Arabia. The first and most powerful of the Southern Arabian kingdoms was Saba, which appears as a political entity in Assyrian texts in the late eighth century.²⁰ The other regions, Ma’in, Qataban, and Hadramaut, seem to have risen as Sabean vassal-states, and did not achieve independence for quite some time. Nevertheless, the most likely source of their resulting unity was the cooperation required to get frankincense from Hadramaut to Petra and other major markets. Traveling as the crow flies from Hadramaut to points west was not possible, due to the immense Ramlat as-Sabatain desert, so caravans had to go around it. The primitive “roads” already in place around the salt mines on the borders of the desert were employed to this purpose, and what had been “salt roads” traversed by donkeys became the road for camel caravans. The Incense Road led west from Hadramaut, through Qataban to Saba, and then north through Ma’in, and was eventually extended all the way north to Petra, the convergence of six major trade routes. There was a fortune to be made, provided that the incense got through.

Overland trade north created easy access not only to Egyptian markets, but to the suppliers of the markets of Asia Minor and the Mediterranean region as well. The Near Eastern monarchs who desired the incense were already quite wealthy, and apparently more than willing to allow their riches to trickle down into Southern Arabia. Trade with the Mediterranean world was more convoluted, but certainly existed. Brian Doe notes that “in early stages” of the development of the Incense Road, caravans were often attacked by “marauding tribes,” but that the incense trade became so valuable to everyone that these tribes soon opted for a toll system instead:

The caravans then passed through their territory safely. As time went by, all along the trade routes towns and cities sprang up fed by the wealth of the commerce that passed through their gates....These cities were often large enough to form a kind of city state and a number of the city states would link themselves together within a protective federation as security against the nomadic hordes which still roamed the desert.²¹

Each city and town on the Incense Road taxed the caravans, taking money or a toll in incense for their temples, and new cities sprang up along the route. It is not difficult to project the progression inspired by the situation—from sedentary tribal groups to cohesive cities, city states, confederations of city

states, and eventually kingdoms. The motivation for political organization and social interaction was the fact that quality of life was significantly improved all around as long as the caravans kept coming.

When definitive references to Socotra finally appear after the second century CE, they are always associated with “the king of the Frankincense country.” The “Frankincense country” is assumed to refer to Hadramaut, where the *Boswellia* trees grow, rather than to Saba, even in the earliest Southern Arabian period. Due to the location of Qana, a key port in the Hadramaut territory, it is also reasonable to assume that it was the Hadramaut kingdom that originally populated Socotra, most likely between the seventh and fifth centuries BCE. That it was worth it to the Hadramaut monarch, whose territory already contained the only frankincense groves in Arabia, to populate an island that, even under the most favorable of circumstances, lay several days away from the mainland is testimony to the demand for and tremendous income derived from frankincense.

Frankincense Farming on Socotra

The details of Socotra’s “discovery” and colonization remain a mystery. Certainly the island would have been spotted in the third millennium BCE, when ancient sailors explored the Indian Ocean, but there is no documentation of any visitation at all before the Southern Arabian incense trade was already firmly established. Because fact and fiction were for thousands of years so hopelessly intertwined where Socotra is concerned, virtually nothing about the actual incorporation of the island into the spice trade is known. Archaeologist and historian Brian Doe notes that no prehistoric archaeological evidence has been discovered on Socotra, “nor was any direct archaeological evidence found connecting the island with the Hadramaut.”²² However, the lack of documentation is not terribly surprising, as details of the sources of Southern Arabian luxury goods were closely guarded. Doe believes this to be a very deliberate strategy:

According to Herodotus, Arabia was the only country which produced frankincense, myrrh, cassia, cinnamon, and gum mastic, and the trees bearing the frankincense were guarded by winged serpents or snakes.... This illustrates the aura of mystery which surrounded the production of the incense and helped to keep the secrets of this valuable trade.²³

The cassia and cinnamon to which Herodotus referred had to have come from India, and *Boswellia* trees are not traditionally associated with snakes, but this sort of campaign of secrecy and misinformation was maintained until the first century CE. Jean-Francois Breton notes that “even as the geography of South Arabia came to be defined with increasing precision, the land of aromatic spices remained beyond the reach of the Roman armies which had penetrated to the very heart of the realm.”²⁴ Vitaly Naumkin writes:

No researcher has so far ventured to suggest that Socotra might have been settled before the rise of the ancient states of South Arabia, and eminent scholars of the history of the region (e.g. the British archaeologists Doe and Shinnie) maintain that the island was settled for purposes of incense collection since incense had become “the gold of the East.”²⁵

Naumkin agrees with the consensus that Socotra was originally settled solely for the purposes of resin cultivation and had become “of major importance as a staging-post in the incense trade” by the middle of the first millennium BCE. This date is conservative, as dolmen-type burials excavated in 1984 yielded bone samples from people who, according to estimates, died sometime between 1110 and 710 BCE, and signs of habitation at Reibun apparently also indicate occupation in the seventh century BCE.²⁶ Sadly, in spite of Diodorus Siculus’ flowery descriptions of sacred architecture, no marble temples have been recovered. Archaeological evidence from this period is limited thus far to the burial sites and to

“traces of plantations” (stone terraces and walls). These cultivation terraces, “one on low ground at the western side and the other on high ground on the northeastern side of the island,” contained different species of frankincense, simply because these species grew separately on the island. *Boswellia socotrana* is the species “on the wadi slopes extending from Qalansiyyah,” and *Boswellia elongata* is found on the Hammaderoh. Both species are taller, straighter trees than the scrubby bush-like *B. sacra* of Dhofar, with *B. elongata* in particular growing branchless for up to ten feet. The Socotran *B. ameero*, although very fragrant and a good source of incense-grade resin, has not been found in terraces.²⁷

Why, if trees were cultivated and incense harvested on the island, is there nothing grander than ancient stone walls? Are the traces of fabulous riches buried deep in the earth? Probably not. Although ancient reports of Socotra are few and far between, all of them describe incense and none of them describes opulence.

The apparent incongruity of a lucrative industry paired with an impoverished population has frustrated researchers. Naumkin asks, “Were the aboriginal Socotrans merely the workforce that was used by the traders from the Hadramaut or had this island developed its own production system?” The evidence seems to indicate that both of these things were true: the aboriginal workforce was responsible for a closed production system separate from, but subject to, the mainland Hadramaut. Though Socotra must have produced a significant percentage of the frankincense exported by South Arabian kingdoms, it seems most likely that the first-millennium Socotrans who harvested the resin were no richer than the Egyptians of that era who worked in the gold mines, and for the same reason: they were slaves.

The money derived from incense sales would never have reached Socotra. The *Periplus*, written by a merchant sea-captain in the first century BCE, reports that the island was “subject to the King of the frankincense-bearing land” and states that it was “leased out and under guard.”²⁸ The garrison was apparently installed on the island centuries after incense production was well underway, probably when foreign ships began to call. The incense gathered on Socotra, however, seems to have been shipped to the Hadramaut port of Qana and sold from the mainland, where signs of profit from this trade are clearly visible. This harvesting and shipping process had to be seasonal, as Doe points out, “because of the rough seas and the need for the use of the monsoon winds long before they were used by the Roman traders,” but his suggestion that the workers were seasonal as well is unlikely.²⁹ In all probability the original inhabitants of Socotra were left there by the *mukarrib* to fend for themselves and simply replaced when necessary, which undoubtedly was fairly often.

This probability is supported by a description by the author of the *Periplus*, who reports on the working conditions among the harvesters in the Dhofar groves of the Hadramaut: “The frankincense is handled by royal slaves and convicts. For the districts are terribly unhealthy, harmful to those sailing by and absolutely fatal to those working there -- who, moreover, die off easily because of the lack of nourishment.”³⁰ It is reasonable to assume that this policy of the *mukarrib* of Hadramaut to use slaves and prisoners to harvest frankincense was applied to Socotra as well, where conditions were probably even worse than those in the Dhofar region. This would be consistent with the treatment of the Egyptian slaves who prepared raw frankincense in Alexandria, a group who, according to Pliny, were closely watched over during their work shifts and were “stripped naked before they [were] allowed to leave work.”³¹

The environment suitable to *Boswellia* trees is not particularly suitable to humans. To this day, inhabitants of Socotra suffer extremely high rates of malaria and tuberculosis, and cholera, typhus, dysentery, and malnutrition are still rampant.³² Socotra was the property of the *mukarrib* of the Hadramaut (whether or not that territory was itself subject to the *mukarrib* of Saba), and it is unlikely that its earliest inhabitants were given any choice regarding relocation to the island, or that they benefited personally from their residence there. It is difficult to imagine that anyone volunteered for such an assignment or failed to leave the island quickly if given the opportunity. The fact that the ancient terraces of Socotra

still remain while traces of ancient homes and other buildings are virtually absent is evidence not only of the care these trees received as a result of their importance to the incense trade, but also of the relative unimportance and poor living conditions of those who tended them.

The modern “Socotri,” an ethnic group quite distinct from any others on the island, are thought to be both the descendants of that first population arriving from the Hadrami mainland and the “aborigines” described in the *Periplus*. Many of them still live in the frankincense-growing region of Socotra, dwelling in caves or in nearby valleys in small, thatched huts made of mud brick and coral lime. They have very little material culture and live at subsistence level, primarily relying on date-palms as a food source. Much of the population is still illiterate, and many of them do not speak Arabic in spite of a relatively large Arabic-speaking population in Hadibo and along the coastal areas. These twenty-first century Socotrans will leave behind little evidence of civilization themselves, and their present lifestyle most clearly suggests the reasons that ancient ruins may never be found.

The Benefits of Frankincense

Certainly the primary use of frankincense throughout the Middle East, Asia Minor and the Mediterranean was religious. The Assyrian king Ashurbanipal was infamous for his prodigious use of aromatics. The Babylonians burnt great quantities of frankincense to their moon goddess, Syn. Herodotus reports that the Scythians used it to prepare their dead kings for burial, enclosing a king’s body “in wax, his belly cut open and cleaned and filled with cut marsh-plants and frankincense,” and that the Chaldeans “offer a thousand talents’ weight of frankincense yearly, when they keep the festival of [Baal].”³³ The Hebrews to whom Baal was such a threat destroyed statues of the god as well as his Midianite temple, but continued to make the same offerings of frankincense to their new god, Yahweh.. This pattern continued throughout history.³⁴

While many other aromatic resins and spices were burnt to the gods, frankincense was always one of the most important. Myrrh, which grows in similar climates, is twice as costly, and nard from India was apparently prohibitively expensive. Like nard, cassia and cinnamon had to come to Southern Arabian brokers from India and Africa, and their respective prices in ancient times reflected the length of their journey. Frankincense, however, was more easily obtained, comparatively affordable, and a little went a long way.

The resin became a major component of religious ritual in Greek temples shortly after it spread through the East. Exactly when this happened is not known, but use of frankincense certainly precedes Herodotus; it is first immortalized by the poet Sappho in the seventh century BCE. She calls it *λιβανος*, which is quite similar to the Sabaeen word for it, *libnay*, and it continues to be called by that term throughout later Greek literature.³⁵ The modern Arabic *luban* is close, and is also translated as “white” or “cream.” There are records in ancient Greece of as little as two grains being added to sacrificial fires; the signature aroma of the resin is so powerful that even tiny amounts release the scent when heated. Plutarch relates a story of Alexander of Macedon (356-323 BCE), which illustrates use of frankincense at that time:

From [Tyre] he sent great part of the spoils to Olympias, Cleopatra, and the rest of his friends, not omitting his preceptor Leonidas, on whom he bestowed five hundred talents’ weight of frankincense and a hundred of myrrh, in remembrance of the hopes he had once expressed of him when he was but a child. For Leonidas, it seems, standing by him one day while he was sacrificing, and seeing him take both his hands full of incense to throw into the fire, told him it became him to be more sparing in his offerings, and not to be so profuse till he was master of the

countries which those sweet gums come from. So Alexander now wrote to him, saying, "We have sent you an abundance of myrrh and frankincense, that in future you may not be stingy to the gods."³⁶

By way of Greece, this religious use of frankincense (known as *libanus* in Latin) gained status and popularity in Rome. It was still used in religious settings by many converts following the advent of Christianity in the Roman Empire, and is employed today in that capacity by Christians and Muslims alike. When the old gods and temples were reinvented or replaced, the burning of frankincense was simply incorporated into a new series of ritual activities. In spite of the religious importance of frankincense throughout the ancient world, however, the resin was far more than simply a sacred fumatory.

Medical uses for frankincense are documented in the earliest recovered Egyptian papyri and were only elaborated upon by physicians as time went on. Some scholars have suggested that the medicinal effects of frankincense may have actually contributed to its religious use. Burning frankincense, for example, has been proven to produce phenol, or carbolic acid, and Frederic Rosengarten suggests that this production of phenol may have inspired the use of frankincense as a purifying agent by Egyptians, who "also fumigated their homes with incense to ward off the foul odors of the crowded lower classes."³⁷ It is true that frankincense has always been associated with purification and the dissipation of evil spirits. The resin serves as a natural bug repellent as well, a property vital to the health of the *Boswellia* trees that produce it, and one convenient to the ancient Egyptians who used it to fumigate their wheat silos and to kill parasites in food. However, although these antiseptic and fumigant properties were certainly noticed and exploited by ancient physicians, in all likelihood the resin would have been burnt in sacred rituals regardless, simply for the fragrant smoke it produced.

Probably the most important medical property of frankincense is its anti-inflammatory quality. *Boswellia* bark, in addition to the raw frankincense exudate, was traditionally used in the ancient and classical periods to reduce inflammation, usually in the form of a poultice applied directly to the affected area. The resin was also used to treat painful, swollen gums, and dissolved into an eyewash used to treat swelling and irritation. In Roman times, it was a component of nearly every treatment for wound care. These ancient applications may sound like magical mumbo-jumbo, but modern clinical studies have shown frankincense to be singularly effective in reducing swelling due to high concentrations in the resin of what have been named "Boswellic acids."³⁸ Pharmacologists now hope to use these acids, found only in species of *Boswellia*, to treat rheumatoid arthritis and possibly even leukemia.

Frankincense was also widely used as an inhalant to cure headache and cough, to reduce and purge phlegm, and as a painkiller so powerful that it was used in childbirth and given to condemned prisoners prior to execution.³⁹ Pharmacologists have since identified the presence of chemicals in frankincense known to be decongestants, expectorants, and nervines, and it is also being used to develop treatments for asthma. The ancients, it seems, knew what they were doing.

In addition to spiritual and medical applications, frankincense had many social uses in the ancient world. Although the ancients lacked sophisticated distillation technology, 90% of some 200 chemical constituents of frankincense are soluble in alcohol, and frankincense was enjoyed as a relaxing additive to wine.⁴⁰ Additionally, the solvent extracts of frankincense are remarkably fixative, taking roughly six hours to evaporate. This made the resin particularly suited to perfumes and unguents, the former made with alcohol and the latter with animal fat or other viscous bases. Frankincense was even chewed as a breath-freshener, and used to make hair oil and "rejuvenating" facial creams. No external part of the human body was exempt from beauty treatments made with frankincense, just as no internal part was spared medically. Fourth-century Athens, a rather wealthy society, was home to professional perfumers and unguent boilers with their own specialized stalls in the agora, and apparently business was brisk.

There can be no doubt that frankincense also helped make living in close quarters more bearable for

overcrowded populations bereft of modern deodorants and cures for halitosis, and it is no surprise that its popularity quickly spread among those able to afford it. Demand continued to escalate as merchants traveled further from the Middle East, but the greatest consumers of frankincense by far were the aristocrats of the Roman Empire, “the most extravagant users of aromatics in history.”⁴¹ Naturally this consumption had immediate consequences for the industry, and eventually on international relations as well.

The Repercussions of a Seller’s Market

Boswellia, a genus of the family *Burseraceae*, includes some twenty-five species ranging from shrubs to trees. All of these species exude from the bark an oleo-gum resin containing Boswellic acids, but few produce resin suited for incense and perfume. Miller reports that “of the five Arabian species of frankincense stated by Strabo to be ‘a most perfect incense’, one is native to the mainland in the Hadramaut, and four to Socotra. The latter are *B. ameero*, *B. elongata*, *B. javanica*, and *B. socotrana*.”⁴² This list comprises only half of the eight species of *Boswellia* found on the island, all of which are believed to be indigenous, but half of which are relatively rare and “probably of little value for the incense trade,” according to botanist A. Radcliffe-Smith. *B. elongata*, a species with large leaves and greenish flowers, and *B. socotrana*, a small-leaved species with greenish flowers, are the species associated with ancient stone terraces on the island. It is possible that the pink-flowered *B. ameero* trees were also harvested, as their resin is known to be even more fragrant than that produced by *B. socotrana*, but these trees are less common and more difficult to reach, being confined to the Haggier range.⁴³ In spite of the painstaking efforts made by modern botanists to distinguish these species from each other, however, it must be noted that in ancient times the resin collected from these trees was valued according to color and scent, and this is how the harvested lumps would have been sorted for sale. A bag of high-grade incense might well have contained resin from several species of trees by the time it was purchased.

Boswellia species exude resin for the same reasons that many other dicots do. They grow in very dry soil in a rather hot climate, and injury to the tree by phloem-eating insects or other environmental factors could result in fatal loss of sugars. The exudate combats both problems, repelling insects and providing a sealing mechanism for cuts. In the case of *Boswellia* in particular, this exudate also smells very good to humans, and the pungency of the resin seems to be directly correlated to the aridity of a given species’ environment. For this reason, the very best fumatory frankincense is the *B. sacra* of Dhofar, but the Socotran species, exposed to only slightly greater rainfall, is nearly as pungent, especially when harvested during the hottest months in summer. Pliny described the harvesting process in antiquity:

They make an incision where the bark appears fullest of juice and distended to its thinnest; and the bark is loosened with a blow, but not removed. From this incision a greasy foam spurts out, which coagulates and thickens, being received on a mat of palm-leaves where the nature of the ground requires this, but in other places on a space round the tree that has been rammed hard. The frankincense collected in the latter way is in a purer state, but the former method produces a heavier weight, while the residue adhering to the tree is scraped off with an iron tool, and consequently contains fragments of bark.⁴⁴

Incising the bark of the tree causes a thick and sticky, milky-white liquid to flow from the resin ducts underneath in order to seal the wound. The bark is stripped from the area just below the incision “so as to make a receptacle in which the milky juice, the *spuma pinguis* of Pliny, can lodge and harden.”⁴⁵ The frankincense “tears” harden over time, forming soft clumps in about a week and solidifying completely within another ten days. Pliny lists several names for various forms of the collected resin:

The incense, however, that is the most esteemed of all is that which

is mammosse, or breast-shaped, and is produced when one drop has stopped short, and another, following close upon it, has adhered, and united with it. I find it stated that one of these lumps used to make quite a handful, at a time when men displayed less eagerness to gather it, and it was allowed more time to accumulate. The Greeks call such lumps as these by the name of *stagonia* and *atomus* while the smaller pieces are called *orobia*. The fragments which are broken off by shaking the tree are known to us as *manna*. Even at the present day, however, there are drops found which weigh one-third of a mina, or, in other words, twenty-eight denarii.⁴⁶

Theodore Bent observed that incisions made in *Boswellia sacra* trees in modern Dhofar are usually left alone for seven to ten days, and the result is “quite big tears of frankincense, larger than an egg.” Shaking the tree, as Pliny has it, would have caused small droplets of resin to spatter on the palm mats, and these droplets would harden quickly. The larger *atomus*, or “undivided,” masses collected by allowing the viscous resin to slowly overflow itself would have required a far longer period in order to dry and solidify. Pliny’s suggestion that the prevalence of the smaller lumps over larger is an issue of “eagerness to gather it” is no doubt entirely accurate; by the second century BCE, there was no financial incentive to wait for the larger lumps to form. The demand for even inferior grades of frankincense was so great that harvesting techniques were skewed toward supply, to the detriment of the product.

Although it was well known even in ancient times that frankincense was best collected once annually during the hottest period of the year, this fact came to be ignored in order to harvest the resin more often. Pliny reports on this fact as well, and its repercussions:

It used to be the custom, when there were fewer opportunities of selling frankincense, to gather it only once a year, but at the present day trade introduces a second harvesting. . . . The incense which has accumulated during the summer is gathered in the autumn: it is the purest of all, and is of a white color. The second gathering takes place in spring, incisions being made in the bark for that purpose during the winter: this, however, is of a red color, and not to be compared with the other incense.⁴⁷

Frankincense has always been sorted by color, then sold by weight. The frankincense of the highest quality has a very pale yellowish hue, described by the ancient Egyptians as “the color of the moon,” and a strong citrus-like scent. This high grade frankincense is best obtained by tapping mature trees at least five to seven years old in high summer. Once tapped, the trees should rest for several weeks before being tapped again to allow for resin production, and the entire tapping period is best restricted to a couple of months. Older trees produce an inferior, translucent resin with less scent, and trees which are overtapped and have not been allowed to recover fully will produce an amber-colored resin or, at worst, the reddish hues of which Pliny complains. The strength and endurance of the scent of this darker incense is noticeably inferior to the lighter product, and it does not burn as long or as cleanly. Exposure of the trees to water also compromises the quality of the resin, which is why frankincense harvested close to the rainy season is so much less desirable than that harvested in the driest period.

According to Pliny, the prices of these different grades of frankincense varied significantly in the ancient world, just as they do today. He also cautions his readers that some incense merchants used fillers to cheat their customers.⁴⁸ Clearly there was a market for even the poorest quality of frankincense, and the resin was valuable enough to inflate the quantity with contaminants.

Outrageous cost and sporadic supply of incense of any quality took their toll on Roman patience, and Caesar Augustus (63 BCE – 14 CE) took measures to lower prices. He broke the Arab monopoly by

conquering Aden, an important port whose Roman occupation allowed direct trade with India, and this offered new access, and at lower prices, to many luxury goods such as silk, pepper, gems, and cinnamon.⁴⁹ However, the trip to Malabar and back took Mediterranean merchant vessels two years, and shipwrecks were such common problems for captains who did not understand the local weather patterns that the trip was not always cost efficient. Removing the Sabaeans from Aden thus improved the Roman import situation to a degree, but does not seem to have had much effect on the incense trade under Augustus. Frankincense was still carried overland from Dhofar to Petra without Roman interference, and could be shipped out of Qana rather than Aden. The Romans had not managed to penetrate the Hadramaut, and may not have known about Socotra at all. Like Alexander of Macedon, Augustus finally decided that the solution to the problem of absurdly high incense prices was simply to conquer the entire area and incorporate into the Roman Empire the source of the desired commodities. In 24 BCE, Aelius Gallus, prefect of Egypt, was sent to annex Arabia Felix.

The expedition was an unmitigated catastrophe. Gallus' friend, the historian Strabo, documented the catalogue of disasters, stressing repeatedly that Gallus' failure was not due to defeat in battle, but rather to "disease, fatigue, famine, and marches through bad roads." Gallus set off south to win the *Boswellia* groves of the Hadramaut with no idea where they were, and this off-road march took six months. Eventually, the Romans ran out of water, and Gallus had to lift his siege of Marsiaba and limp back to Egypt with what was left of his army.⁵⁰ The failure of the expedition was attributed to the treachery of Syllaues, the Nabataean minister assigned to the army as a guide, who first directed Gallus' "vessels of burden" over rocky shallows along the coast of the Red Sea and then told the army that the Incense Road didn't exist, leading them on an alternate route through nearly impassable desert until they had to turn back. Syllaues was convicted of perfidy in Rome and beheaded. Augustus did not get Arabia, or his discount.

Ironically for Gallus, the final war on the South Arabian monopoly of luxury goods was won at sea, less than a century later and not by a general but by a sailor. The mystery of the monsoons was finally unlocked by the Greeks.

Monsoons and Markets

The *Periplus* credits a Greek captain named Hypallos with the discovery that the Eastern monsoons reversed directions twice a year.⁵¹ Hypallos learned that if these monsoon patterns were properly exploited, a ship could make a round-trip voyage from the Egyptian city of Berenice, on the coast of the Red Sea, to the Malabar Coast in India in less than a year. The voyage was accomplished by sailing directly across the Arabian Sea and then back in concert with the winds, thus without risking the severe storms which had plagued previous efforts. The southwest monsoon allowed passage from Arabia to India between October and April, and the northeast a safe return between April and October.

Unlike Augustus' occupation of Sabaeian Aden, this discovery had an immediate and significant effect both on the incense trade and on the status of Socotra. Sea traffic increased dramatically, and this heavily impacted overland trade.⁵² War broke out among the South Arabian regions as the cities along the Incense Road began to feel the bite in their income. Oblivious, the Romans stepped up their ship-building, and apparently the Greeks did as well. Trade routes were established in both directions, the Indian route across the Arabian sea and the African route, which went around Cape Guardafui and down the east coast of Africa as far as Dar-es-Salaam. Entrepôt ports catering to international trade sprang up along every coastline, even on Socotra.

The mysterious, inaccessible island had joined the rest of the world, and was visited by merchants and navigators from India to Africa. Lying directly west from Limyrrike, Socotra was a sensible stopping place whether the intended destination was Arabia or Africa. Although Qana might have been more convenient to merchants traveling from Muza or Barygaza, they stopped at Socotra, too, perhaps drawn

by the tortoise shell obtained from sea turtles that still nest on the north coast.⁵³ Apparently, however, the visitors did not travel inland far enough to see the *Boswellia* groves or the people who tended them. Naumkin suggests that:

It is probable that two thousand years ago, as today, the aboriginal inhabitants—a predominantly pastoralist autochthonous population—lived in caves and stone-built houses in the mountains, and that the Greek and Indian merchants, the colonists, were simply not aware of their existence.⁵⁴

The author of the *Periplus* does not mention that frankincense can be purchased on Socotra, but he does specify that “All the frankincense grown in the land is brought into [Qana], as if to a warehouse.” The meaning behind his “leased out” (εκμεμισθωται) is unclear, but obviously the Socotrans were under mainland supervision. It seems most likely that the frankincense harvested on the island was still harvested by “royal slaves and convicts” and simply sent to Qana.

Access to regular trade with Africa provided Roman and Greek merchant ships with an alternative, direct source of frankincense and other aromatics from what the *Periplus* names “the Promontory of Spices,” or Cape Guardafui, on the modern Somalian coast. Between the secondary source and the sheer volume of the new sea traffic, a steady supply of frankincense to Rome was assured, which caused prices to drop all along the supply chain. The immediate result seems to have been more a question of a greater volume of incense leaving South Arabia than one of less money coming in, although the collapse of overland trade meant that the income was far less widely distributed, resulting in a great deal of political upheaval.

In addition to the increased supply of luxury goods from the East, there was an increased supply of discretionary income among the new Roman merchant class, some of whose assets were beginning to eclipse those of patricians. While limited supply might at one time have kept foreign products like frankincense out of any but aristocratic hands, now there was plenty to go around, and more Romans had money to buy it. Consumption and extravagance increased at an alarming rate.

Luxuria atque Avaritia

The transition between the use of frankincense and other aromatics exclusively for the gods and personal use by commoners in Rome closely mirrors what took place in Ancient Egypt, but happened even more abruptly. Pliny grouses mightily about this, complaining that the gods themselves were no less propitious when they received sacrifices of salted cakes instead of incense. That incense was being burnt for human corpses bothered him, and the worst perpetrator in this regard was the emperor. “[Arabia] does not produce, in a whole year, so large a quantity of perfumes as was burnt by the Emperor Nero at the funeral obsequies of his wife Poppaea,” he wrote. Of Arabia Felix itself, he seethed:

...[T]his is the country styled “Happy” Arabia! False and ungrateful does she prove herself in the adoption of this surname, which she would imply to have been received from the gods above, whereas, in reality, she is indebted for it far more to the gods below. It is the luxury which is displayed by man, even in the paraphernalia of death, that has rendered Arabia thus “happy,” and which prompts him to burn with the dead what was originally understood to have been produced for the service of the gods.⁵⁵

From the gods to the dead to the living was a short journey, especially after the sea trade flourished. The second century CE marked the height of the frankincense trade, and personal scents seem to have become a veritable necessity for proving that one was “civilized.” Frankincense, being an oleo-gum resin,

made an excellent base and was, as noted, a remarkable fixative. It continued to be a component in many if not most perfumes even after the Romans learned advanced distillation techniques from the Arabs.

Not everyone approved the consumption of foreign luxury goods, including perfumes. Just as hard-liners like Cato the Elder and Cicero had done in their respective days, second century historians bemoaned “*luxuria atque avaritia*,” extravagance and greed, railing against what they perceived as a decline in moral standards and a trend toward soft living unbecoming to Romans. Polybius wrote:

...[I]t is evident that, by the lengthened continuance of great wealth within [the Republic], the manner of life of its citizens will become more extravagant....And as this state of things goes on more and more, the desire of office and the shame of losing reputation, as well as the ostentation and extravagance of living, will prove the beginning of a deterioration.⁵⁶

Plutarch chose to relate a cautionary tale rather than to write a diatribe. In his biography of Caesar Augustus, he discusses how one man’s extravagance led to difficulty during the proscriptions: “C. Plotius...being a man given to perfume and rubbing himself with odoriferous ointments, the scent and smell of them revealed him to the soldiers that were ferreting up and down in his house...”⁵⁷ The poet Martial simply made fun of those who doused themselves. “*Postume*,” he quipped, “*non bene olet qui bene semper olet*” (“Postumus, he who always smells doesn’t smell good.”). In another epigram, he pleads, “*nolo peregrinis placeas tibi, Gellia, nugis. scis, puto, posse meum sic bene olere canem*” (“I don’t want foreign trifles to please you, Gellia. You know, I think I could make my dog smell just as good.”).⁵⁸

These gentlemen, however, were in the minority. ArabNet reports that during this period, “3000 tons of frankincense were shipped each year from South Arabia to Greece, Rome, and the Mediterranean world.”⁵⁹ Rosengarten adds, “It was quite customary for men to be heavily perfumed and even the legionaries reeked of the fragrances of the East.”⁶⁰ It was a new age indeed, if one could smell the Roman army coming for reasons that had nothing to do with forced marches.

The End of an Era

Roman consumption of spices in general began to decline in the third century, and importation of frankincense dropped with it. Among the primary reasons suggested by historians is the severe drain on Roman assets overall as gold was bled away to the East. Roman trade goods were worth a fraction of imported goods, and the Empire was hemorrhaging money. Pliny estimated that 1,000,000 sesterces a year were being spent on imports, money that was not being replaced by income. The Empire faced financial difficulties, and these difficulties trickled down to the population.

Christianity is also implicated in the decline in trade. Monotheism meant fewer temples and home altars, which meant that less frankincense was necessary for spiritual practice, in spite of the efforts of the emperor Diocletian to the contrary.⁶¹ Additionally, some Christians preached vehemently against luxury goods such as spiced wine, perfumed unguents and even the religious offering of incense. “For truly it is an execrable thing,” Basil of Caesarea wrote around 350 CE, “to think that God values the pleasures of the sense of smell...Corporeal incense...is by a necessary consequence regarded as an abomination to a Being that is incorporeal.”⁶² Not everyone practiced what Basil preached, however. After his conversion the emperor Constantine is said to have given 150 pounds of aromatics and a golden censer annually to the church he built.⁶³ Constantine was not known for depriving himself of luxuries, but his consumption was apparently insufficient to forestall an overall decline in general use.

And perhaps there was less to buy. Southern Arabia had been dying internally by degrees since the collapse of overland trade. “The local caravan traders never recovered from the development of sea routes,” Breton writes. “Deprived of all sources of wealth, the Arabian desert tribes slowly but surely

settled into the vast territory of the Highlands, which eventually became the independent principality of Himyar.⁶⁴ War over the Hadramaut was almost constant after the beginning of the second century CE, and by the end of the third century, the Himyar had conquered the region.⁶⁵ It was no doubt difficult for anyone, Hadrami or Himyar, to keep up with the resin harvest under such conditions. Finally, the sack of Rome by the Goths in 410 CE destroyed the economy of Rome for quite some time. The fifth century would bring with it the advent of Islam, and greater changes in Arabia still, but the heyday of the frankincense trade was already over. In the absence of the demand for its frankincense, the island of Socotra faded into relative obscurity once more, serving as little but a rest stop on transoceanic voyages and a political poker chip as various nations came to power, and then folded.

The Future of Socotran Frankincense

Socotra currently belongs to Yemen. It has been separated for the first time in history from the Hadramaut, whose *Boswellia* groves are now the property of Oman. The residents of Socotra, an accumulation over millennia of descendants of “aborigines” from the bygone days of resin production, remnants of Greek colonies, and Arabs from the mainland, live as poorly as they ever did. Several organizations, both charitable and ecological, are working to change this situation, but sadly, none of the groups working for change has taken into account Socotra’s greatest resource: frankincense.

Resin is still harvested from *B. sacra*, the species that grows in Dhofar. It continues to be employed as a fumatory in religious rituals, among Christians primarily by the Catholic Church, but is far more commonly used in secular settings. Although extracts are obtained with much more sophisticated solvents, the final product is still used much as it was in the ancient world, in luxury products like soap and candles, medicinally as an anti-inflammatory, and as a food additive to flavor candy, ice cream, and even soft drinks. This species of *Boswellia* and others, most notably *serrata* and *freereana*, have also been phytochemically analyzed for pharmaceutical applications, and appear very promising for developing medications targeting major illnesses such as asthma, arthritis, and perhaps even lupus and leukemia. Yet just as the Socotran trees are currently ignored by suppliers of churches and contemporary perfumers, so they are ignored by the pharmaceutical industry. No one has bothered to analyze the exudates of the Socotran *B. elongata*, *B. socotrana*, or *B. ameero*, all of which obviously contain Boswellic acids and other beneficial phytochemical components.

Perhaps history will repeat itself, and the properties of frankincense resin will again become so valuable that an additional source on a remote island is worth the trouble to obtain it, but it seems more sensible to exercise initiative in this area than to wait for that to happen. Rather than allowing the apathy and the goats of an impoverished pastoral population to threaten the Socotran groves, these trees could be cultivated and harvested once more. Reviving the frankincense trade and re-establishing a resin-based economy on the island would benefit not only the medical community and consumers of bath products and ice cream, but also, at long last, those who care for the trees.

Before the island’s natural resources benefit anyone, however, the history of Socotra and the ancient frankincense trade must be shared. Phytochemical analysis of the Socotran species will prove that resin from these trees is as valuable to pharmacologists and perfumers as the resin of any other *Boswellia*, but such studies will never take place unless Socotra’s neglected groves are brought to the attention of the modern world. Historians, rather than missionaries or ecologists, are in the best position to prove that frankincense, the key to Socotra’s history, can also be its future.

Notes

1. *Al-qatir* is apparently the name for the actual tree, *Dracaena cinnabari*. The word for the resin itself (“Dragon’s Blood”) was *al-akhawain*, according to Al-Mas’udi, a geographer of the tenth century CE.
2. W. K. Flinders Petrie, trans., “The Shipwrecked Sailor,” in *The World’s Story: A History of the World in Story, Song and Art*, Vol. III, *Egypt, Africa and Arabia*, ed. E.M. Tappan (Boston: Houghton-Mifflin, 1914), <http://www.editoreric.com/greatlit/samples/Shipwrecked.html>, 41-46.
3. Jim Loy, trans., “The Shipwrecked Sailor,” <http://www.jimloy.com/egypt/sailor.htm>. Loy notes that the original papyrus is in the Hermitage in St. Petersburg, Russia. His reference to Punt is more in keeping with its geographical separation from Pa’anch.
4. Most modern scholars agree that Punt must have been in modern Somalia or Eritrea.
5. Daniel Beaumont notes in his introduction to *Slave of Desire: Sex, Love, and Death in the 1001 Nights* (Madison, New Jersey: Fairleigh Dickinson UP, 2002) that modern collections of the *1001 Nights* can be dated back only to the tenth century CE. “Zein Ul Asnam and the King of the Jinn” was included in the first European translation (French) of the *1001 Arabian Nights* by Antione Galland, but almost immediately declared to be interpolated. It was published separately by John Payne in the first English edition.
6. *Euhemerus* was translated into Latin by Quintus Ennius in the second century BCE, and whether Diodorus Siculus used Ennius’ translation or a copy of the original in Greek is unknown, as both are lost. This material apparently appeared in Diodorus’ sixth book, which is only available as quoted in the works of Eusebius (A.D. 260-339).
7. Pliny (10.2) refers to Heliopolis in Egypt (10 km north of modern Cairo), though he mentions in regard to the Phoenix that he is “not quite sure that its existence is not all a fable.” Pliny the Elder, *Historia Naturalis*, ed. John Bostock and H. T. Riley (London: Taylor and Francis, 1855).
8. Radcliffe-Smith, 189 in Brian Doe, *Socotra: Island of Tranquility* (London: Immel Publishing, 1992). At least three of the species of *Boswellia* on Socotra are not necessarily suitable for the incense trade. They had not all been classified by 1992, when this report was published.
9. Vitaly Naumkin cites geological surveys by A.A. Svitoch published in *Nikiforova*, “The Islands of the Western Indian Ocean,” 1982. Vitaly Naumkin, *Island of the Phoenix* (Reading: Ithaca/Garnet, 1993).
10. Naumkin, *Island*, 11. Average rainfall on the Socotran coast averages 7.5 inches per year, still almost twice as much as the 3.9 inches typical of the current Somalian coastline along the Horn of Africa (somaluiuk.com).
11. One species of *Boswellia*, *B. serrata*, is found in India as well as in Africa, and its resin, commonly called “Indian frankincense”, is still used in medicinal preparations today. However, this species produces an inferior grade of incense or perfume oil. Reputable wholesalers distinguish between the two “types” of frankincense by referring to *B. serrata* as “olibanum” rather than “frankincense”, but the terms are often used interchangeably by retailers.
12. Doe also notes, “Egypt had at this time little contact with the peoples east of Sinai and it seems that a series of defensive posts, probably constructed before 2500 BC as a barrier along the line of the present Suez Canal, kept out the nomad Bedouin or Semites. This restriction, however, also cut off direct contact with the rest of the Fertile Crescent except through the Phoenician traders.” Brian Doe, *Southern Arabia* (Zurich: Thames and Hudson, 1971), 31.
13. John A. Wilson, *The Culture of Ancient Egypt* (Chicago: Chicago UP, 1956), 116-117.
14. Michael Grant notes that the Egyptian Old Kingdom fell at approximately the same time as the city of Ur, which had ruled Phoenician Byblos, a trade link vital to Egypt and the Mediterranean. He writes that in 2300 BCE a wave of invaders “seems to have swept over Asia Minor from the direction of the Bosphorous....The same phase of disturbance destroyed more westerly cultures which had been in close touch with Mesopotamia....[B]y the termination of the third millennium all these linked cultures, from Mesopotamia to the Mediterranean, had been violently destroyed.” Michael Grant, *The Ancient Mediterranean* (New York: Plume, 1988), 37.
15. Douglas Botting, *Island of the Dragon’s Blood* (New York: Funk, Inc., 1958), 161.
16. Doe, *Southern Arabia*, 50. As noted above by Grant, the social and political structures of Asia Minor and Mesopotamia virtually collapsed at the end of the 3rd millennium. The entire region was subject to nearly constant clashes between conquerors and empires for centuries afterwards, and culminated in the battles between the Egyptians and the Hittites which eradicated centralised authority in Asia Minor (Grant, *Ancient Mediterranean*, 79). Invasions by the “Sea Peoples” followed shortly thereafter. Trade was, to put it mildly, disrupted for quite some time.
17. James Innes Miller, *The Spice Trade of the Roman Empire: 29 B.C. to A.D. 64* (Oxford: Clarendon Press, 1969), 104.
18. Doe, *Southern Arabia*, 30.
19. This probably has a great deal to do with the legend of the visit to Solomon by Bilqis, the legendary Queen of Saba, which supposedly occurred around this time. Although no one has ever managed to document the queen’s actual existence, archaeologist Rabbi Nelson Glueck suggests that the queen made the 1300 mile trip because “Solomon’s shipping line

- evidently made such inroads in the lucrative caravan trade controlled by the Queen of [Saba], that she hastened to Jerusalem with all manner of presents in order to conclude an amicable trade agreement with him.” Qtd. in Harry Orlinsky, *Ancient Israel*, 2nd ed. (Ithaca: Cornell UP, 1960), 71.
20. Debate still rages regarding dates for the “Mukarrib Period.” The earliest date accepted by scholars seems to be 714 BCE; however, kings did not appear in Saba overnight and it is quite clear that some sort of political structure existed in the area prior to the Mukarrib Period. A detailed discussion of the rival chronologies can be found in Klaus Schippman, *Ancient South Arabia: From the Queen of Sheba to the Advent of Islam* (Princeton: Markus Weiner, 2001), 36-48.
 21. Doe, *Southern Arabia*, 51.
 22. Doe, *Socotra*, 41.
 23. Doe, *Southern Arabia*, 55-56.
 24. Jean-François Breton, *Arabia Felix From the Time of the Queen of Sheba: Eighth Century B.C. to First Century A.D.*, English Language ed. (Notre Dame, IN: Notre Dame UP, 1999), 2.
 25. Naumkin, *Island*, 22.
 26. *Ibid.*, 363, 367.
 27. Doe, *Socotra*, 39.
 28. Lionel Casson, ed., *The Periplus Maris Erythraei* (Princeton, NJ: Princeton UP, 1989), §31.
 29. Doe, *Socotra*, 41.
 30. Casson, *Periplus*, §29. Miller has the original publication date of the *Periplus* narrowed down to the period between the end of the reign of Claudius in 54 CE and the annexation of Nabataea by Rome under Trajan in 105 CE (*Spice Trade*, 16). Casson feels strongly that “the Malichus mentioned in the *Periplus* can only be Malichus II, and the work must be dated to his reign, that is, between A.D. 40 and 70” (7).
 31. Pliny, *Historia Naturalis*, 12.30. H. Rackham’s translation is quoted in Doe’s *Southern Arabia*, 52.
 32. Wolfgang Wranik, “Naturalist in Socotra,” *Yemen Update* 36 (1995): 8. The infant mortality rate in 1995 was 50%, but he is hopeful that conditions will continue to improve.
 33. Herodotus, *The Histories*, trans. A. D. Godley (Cambridge: Harvard UP, 1920), 71:1, 183:2. A talent weighed approximately 26.2 kg.
 34. Orlinsky notes, “[T]he worship of Baal was the most divisive and destructive force that Israel had to face. It threatened to destroy the Covenant between God and His chosen people” (*Ancient Israel*, 49). The story of Gideon’s deity-sanctioned midnight vandalism is found in Judges 6:25-28. See Exodus 30:34 for the specific demand for frankincense by Moses’ god (but note that he had changed his mind by Isaiah 1:13).
 35. Breton, *Arabia Felix*, 57.
 36. John Dryden, trans. I have modernized his English. The same story is told by Pliny, and no doubt many others.
 37. Frederic Rosengarten, *The Book of Spices* (New York: Jove Books, 1981), 24.
 38. One recent study explains exactly how frankincense affects both internal and external swelling: “Boswellic acids were found to inhibit two pro-inflammatory enzymes, 5-lipoxygenase (which generates inflammatory leukotrienes) and Human Leukocyte Elastase (HLE). HLE is a serine protease which initiates injury to the tissues, which in turn triggers the inflammatory process. This dual inhibitory action on the inflammatory process is unique to boswellic acids....[R]ecent studies on isolated boswellic acid components show that only the four β -boswellic acids are effective anti-inflammatory components” (Majeed and others, “Boswellin: Boswellic Acids Content in *Boswellia serrata* extract,” http://www.sabinsa.com/boswell_new_std.htm, 2). Boswellic acids are included here as a group, but the study cited differentiates clearly between the four major pentacyclic triterpenic acids found in *Boswellia serrata*: β -Boswellic Acid, Acetyl- β -Boswellic Acid, 11-keto- β -Boswellic acid, and Acetyl-11-keto- β -Boswellic acid. All of these acids are also found in *Boswellia sacra* (ChromaDex: *Boswellia sacra* Flueck). Unfortunately, there seems to be no available phytochemical research whatsoever on *B. elongata*, *B. socotrana*, or *B. ameero*.
 39. Pliny (*Historia Naturalis*) writes that frankincense is also an antidote for hemlock poisoning. Since hemlock works by paralyzing the respiratory nerves, and frankincense stimulates the respiratory system, this is not implausible.
 40. The ancient Egyptian physicians cautioned that in excess, frankincense-enhanced wine caused insanity. Technically, they were right. Frankincense has several terpene components, which are “local irritants. Ingestion produces GI signs and symptoms, aspiration, and pulmonary toxicity; absorption is associated with alteration in mental status, ranging from coma to seizures. Renal toxicity has been reported” (Steven Marcus, “Terpene Toxicity,” <http://www.emedicine.com/emerg/topic572.htm>, 2). However, the amount of frankincense which would have to be ingested in wine to cause these symptoms would be staggering. Frankincense was routinely ingested throughout the ancient world without harmful effect.
 41. Rosengarten, *Book of Spices*, 49.

42. Miller, *Spice Trade*, 103. Unfortunately Miller makes a common mistake in identifying the *Boswellia sacra* of the Hadramaut as the *Boswellia carterii* actually native to Somalia, and I have omitted this reference. The citation from Strabo (cited by Miller) is from *Geog.* xvi: 4.19.
43. Doe, *Socotra*, 39-40. Radcliffe-Smith is a botanist at the Royal Botanical Gardens at Kew, home of the “Kew Index” of plant species, and was a member of the 1967 expedition by a team of British scientists to Socotra.
44. Pliny, *Historia Naturalis*, 12.32.
45. Mrs. Theodore (Mabel) Bent, *Southern Arabia* (London: Smith, Elder & Co., 1900), 252.
46. Pliny, *Historia Naturalis*, 12.32.
47. *Ibid.*, 12.32.
48. *Ibid.*, 12.32., 12.19. It is difficult to frame the difference in ancient prices in modern currency. Pliny (*Historia Naturalis*) reports that 12 oz. of high quality frankincense sold for 6 denarii and lower quality frankincense for half that. In A.D. 100, a “rank and file” soldier was paid 300 denarii a year (Shelton, 452), so 12 oz. of “high quality” frankincense would have cost 2% of his annual income. 12 oz. of high quality (Hougari grade) frankincense from Dhofar purchased from a reputable international supplier is currently going for \$62.40 (without shipping), or .039% of the annual base salary of a U.S. army private with six years in. But it goes without saying that rank and file soldiers were not the primary consumers of incense imported into Rome. Shelton reports that the income from only one of Pliny the Younger’s properties in that same year was 4000 denarii, of which 6 denarii is .015%.
49. Miller, *Spice Trade*, viii.
50. Strabo writes that Gallus “was two days’ march from the aromatic region, as he was informed by his prisoners,” but he also says that Gallus “proceeded to a city, Marsiaba” and “assaulted and besieged it for six days, but raised the siege in consequence of a scarcity of water” (qtd. in Miller, *Spice Trade*). Marsiaba, modern Ma’rib (in Yemen), is on the opposite edge of the Ramlat as-Sabatayn Desert from the Hadramaut, far more than two days away even by the Incense Road. Roman understanding of South Arabian geography was not improved by this expedition, and the location of the source of frankincense remained a mystery.
51. Strabo relates the claim of Posidonius that Eudoxus of Cyzicus made this voyage twice around 116 B.C. (in Miller, *Spice Trade*, 2.3.4). It is clear that Strabo does not believe the story. Regardless, the journey seems not to have been undertaken on any regular basis until after the Roman occupation of Egypt under Augustus, and then only slowly and with great trepidation. This gives credence to Hypallos’ claim to being the first to deliberately use the monsoons.
52. Strabo reports that before the monsoon patterns were understood, fewer than 20 Mediterranean vessels sailed to India annually, but that afterward, 120 made the voyage (Strabo, *Geographies* 2.118, 17.798, cited in Casson, 12).
53. Casson, *Periplus*, §31. Casson’s comment is on 292. Pliny reports in 33.52 of his *Historia Naturalis* that “Fenestella, who died at the end of the reign of Tiberius Cæsar, informs us that at that period sideboards, inlaid even with tortoiseshell, had come into fashion.” Perhaps some of these sideboard decorations were of Socotran origin.
54. Naumkin, *Island*, 28.
55. Pliny, *Historia Naturalis*, 12.41.
56. Polybius, *Histories*, trans. Evelyn S. Shuckburgh (Bloomington: Macmillan, 1962), 6.57.
57. Plutarch, *Lives*, 4.
58. Martial, II.12; III.55.
59. ArabNet, “Oman: Early Times,” http://arab.net/oman/on_earlytimes.htm.
60. Rosengarten, *Book of Spices*, 49.
61. A soldier named Barlaam, who became St. Barlaam, was “arrested and imprisoned for being a Christian, and commanded to sacrifice to the pagan deities. He lost his hand to hot coals of incense before being slain because he would not save himself pain by allowing the coals to be sprinkled on an idol” (Catholic Saints Online, “St. Barlaam,” http://www.catholic.org/saints/saint.php?saint_id=1675). This event is said to have occurred during the reign of Diocletian, who routinely persecuted Christians.
62. Quoted in Turner, *Spice: The History of a Temptation* (New York: Knopf, 2004), 248.
63. The record of this gift appears in the *Liber pontificalis*, some of which is known to be forged, but Turner (*Spice*) feels that this particular entry is nevertheless quite plausible.
64. Breton, *Arabia Felix*, 6.
65. Klaus Schippmann, *Ancient South Arabia: From the Queen of Sheba to the Advent of Islam* (Princeton: Markus Weiner, 2001), 163. Although Hadramaut briefly regained its independence, it was definitively conquered by the Himyar in the fourth century. Schippmann reports that the “Himyar ruler convert[ed] to Christianity” in the mid-fourth century. Naumkin states that “Tradition suggests that Christianity was brought to Socotra in the fourth century A.D. by the Greek colonists, though it may well have reached the island earlier” (*Island*, 29).

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