

READING 26-1

Source: F. Rosengarten, Jr. 1969. *The Book Of Spices*, p. 23–96, Jove Publ., Inc., New York.

A Brief History of Spices

Ancient Egyptian and Arabian beginnings (from about 2600 BC)

The first authentic, if fragmentary, records of the use of spices and herbs may date from the Pyramid Age in Egypt, approximately 2600 to 2100 BC. Onions and garlic were fed to the one hundred thousand laborers who toiled in the construction of the Great Pyramid of Cheops, as medicinal herbs to preserve their health.

A monument dedicated to the Egyptian pharaoh Sahure, dating from the 25th century BC, records the receipt of a great quantity of ebony, gold, and silver and eighty thousand measures of myrrh from the “land of Punt.”

Later, when they became essential ingredients in the embalming process, cassia and cinnamon were imported to Egypt from China and Southeast Asia. To appease the gods of death, the bodies of important personages were preserved against decay by embalming, which involved cleansing the interior of the abdomen and rinsing it with fragrant spices, including cumin, anise, marjoram, cassia, and cinnamon.

The origin of perfumery is shrouded in obscurity, but the word perfume (*per*, through, and *fumum*, smoke) suggests that it was first obtained by burning aromatic gums and hardened oozings from resinous woods such as bdellium, balsam, myrrh, and frankincense. These shrublike, thorny perennial desert trees and bushes grew for the most part in hot dry regions stretching from western India to central Africa. As unpleasant odors were associated with evil, so were sweet clean scents linked with purity and goodness. Thus a demand was created for the fragrant gums collected from these shrubs for use in embalming, perfumes, medicine, and anointing oils and as incense offerings in fumigation, to please the ancient gods, and to banish evil spirits, insects, pests, and serpents.

The upper classes in Egypt also fumigated their homes with incense to ward off the foul odors of the crowded lower classes. Since it has been proved in recent years that the burning of incense produces phenol, or carbolic acid, an antiseptic widely used during the nineteenth century, this custom may have had some merit.

In ancient civilizations no sharp distinction was made between food plants used for flavoring, spice plants, medicinal plants, and sacrificial plants. If certain leaves, seeds, roots, and gums had a pleasant, pungent taste and an agreeable odor, an extensive demand gradually developed for them, culminating in their use as condiments.

The earliest mention in the Bible of an aromatic substance occurs in Genesis 2:12 in reference to the



Spices were used in early Egypt as aromatic body ointments and pomades.



Perfuming the embalmed body with fragrant spices in early Egypt.

land of Havilah: “And the gold of that land is good: there is bdellium, and the onyx stone.” Bdellium was a fragrant gum resin obtained from a shrublike tree, *Commiphora mukul*, growing in arid regions of western India. From incisions made in the bark oozed an odoriferous gum that hardened into small, transparent, wax-like pellets resembling fragrant pearls, which early Egyptian women carried about in pouches as perfume. Bdellium was often sold as a cheap aromatic substitute for myrrh.

Pleasant odors were highly valued in biblical days, as noted in II Chronicles 16:14, in the burial arrangements, including the burning of spices, made for King Asa.

A wealth of information concerning ancient herbs and spices was discovered by the German Egyptologist Georg Ebers in a remarkable medical document dated about 1550 BC. This comprehensive roll, reported by him in 1874 and now known as the Ebers Papyrus, is some 65 feet in length and contains extensive information about surgery and internal medicine, as well as listing some 800 medicinal drugs. These include many of the herbs and spices we use today as condiments: anise, caraway, cassia, coriander, fennel, cardamom, onions, garlic, thyme, mustard, sesame, fenugreek, saffron, and poppy seed. The Egyptians employed these aromatic spices in medicine, cosmetic ointments, perfumes, aromatic oils, cooking, fumigation, and notably embalming.

During the 2nd and 1st millennia BC Arabia Felix, “Fortunate Arabia,” prospered almost beyond belief as the great monopolistic carrier of goods between East and West. Profits from incense production were added to revenues from other merchandise. Frankincense, a resin derived from several species of stout-trunked, shrubby trees of the genus *Boswellia*, was Arabia’s most valuable natural product and was produced extensively in the valleys of Hadramut and Dhofar. This translucent amber-colored gum, which ignites easily, yields a pleasant odor when burned and was in great demand as an incense. It was carried northward along the “Incense Route” to the markets of Egypt and Syria.

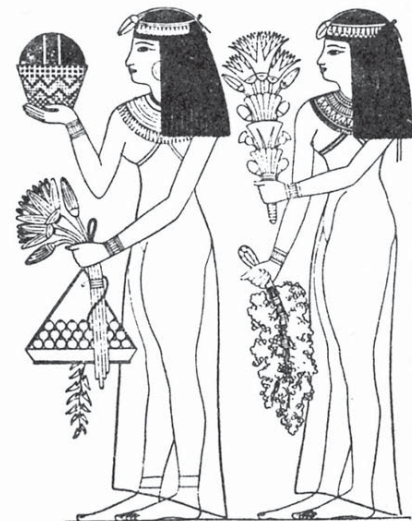
At 1st primitive donkey caravans transported the merchandise, which included not only locally produced balm and frankincense, but also goods en route from other lands: pearls and precious stones from India, cinnamon from the Far East, and ivory and myrrh from the nearby East African coast. Then about 1000 BC a significant revolution took place in Arabian trade, when the undemanding single-humped Arabian dromedary camel, *Camelus dromedarius*, was first used for local and long-distance land transportation. This long-suffering, patient beast, plodding along at 2 miles an hour and carrying burdens up to 500 pounds, could cover 25 miles a day, required very little food and water, and thus (since larger loads were possible) cut down the costs of the caravan.

Myrrh was another aromatic substance scripturally famous. It is still used today, to a limited extent, as a basic ingredient of incense in Catholic churches, and as the basis of some mouthwashes—it is reputed to have styptic properties useful in checking bleeding of the gums. In Matthew 2:11 it is related that myrrh was one of the precious gifts offered to the infant Jesus by the Magi. Consisting of rounded brownish aromatic lumps or fused tears of dull-surfaced gum resin, myrrh was obtained for the most part from *Commiphora myrrha*, a small, scrubby, thorny tree indigenous to southern Arabia, Abyssinia, and the land of Punt (a region in East Africa at the south end of the Red Sea, opposite the modern Arabian port of Aden and extending southward along the Somali coast). It was especially coveted by ancient Egyptian rulers for fumigation in their temples and for embalming purposes.

As the myrrh tree itself was not grown in Egypt, the pharaoh, Queen Hatshepsut, decided in 1485 BC that several should be obtained

Egyptian bearers with fruits, flowers, and herbs.

Onions (in the triangular rack) were an important health food, fed to the workers during the construction of the Great Pyramid of Cheops, about 2590–2568 BC.



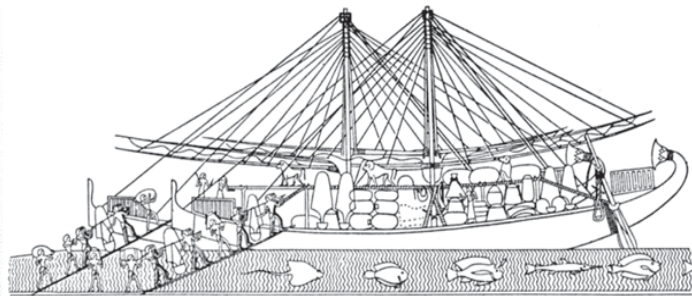
and planted in front of a steep rock wall west of Thebes, near the temple of Deir-el-Bahri, to establish a splendid terraced myrrh in homage to the god Amon.

An expedition consisting of 5 sailing vessels departed from Thebes and traveled down the Nile to the delta, through a channel into the Red Sea, then south along the East African coast until it reached Punt. When the ships returned with, “thirty-one cherished myrrh trees, they are reported to have been heavily laden also with such precious commodities as ivory, ebony, gold, silver, cinnamon, eye cosmetic, panther skins, monkeys, baboons, dogs, and great quantities of myrrh resin. In return for these trees and goods, the Egyptians had traded the natives of Punt an abundance of cheap, flashy beads, necklaces, and other bagatelles. Queen Hatshepsut’s commercial venture was a great success, for the court reporters boasted that no king had ever been presented with such opulent possessions.

It should be noted that Queen Hatshepsut’s fleet had brought back cinnamon, among other valuable commodities. The exact origin of this ancient spice is uncertain, since cinnamon trees are not indigenous to Somaliland or indeed to any part of Africa. According to the historian J.I. Miller there are indications that as early as the 2nd millennium BC cassia and cinnamon from China and Southeast Asia may have been brought from Indonesia to Madagascar in primitive outrigger canoes, along an archaic connection by water known as the “Cinnamon Route.” These aromatic barks were then transported northward along the East African coast to the Nile Valley and the land of Punt.

The Arabian traders who supplied cassia and cinnamon protected their business interests by deliberately shrouding the sources of their products in mystery. Consequently, the ancient Greeks and Romans held the most preposterous ideas concerning the origin of these Eastern spices. Herodotus, the noted Greek historian of the 5th century BC, passing on information he had presumably received from the Arabs, stated that cassia grew in shallow swamps, the borders of which were protected by ferocious winged animals resembling powerful bats, which uttered piercing cries.

Herodotus gave an even more extraordinary account of the harvest of cinnamon on the mountain peaks somewhere in the neighborhood of Arabia. Large birds were said to carry the cinnamon twigs to their nests which were attached with mud to steep cliffs, inaccessible to man. To harvest the cinnamon, the legend continued, large pieces of fresh donkey meat were placed near the precipitous haunts of these huge creatures, which seized the heavy chunks of carcass with avidity and carried them up to their nests. These lofty perches, not having been built to support such a weight, would collapse to the ground. The natives would then hurriedly collect the cinnamon and take it to the trading centers where, due to its scarcity and alleged dangers of harvest, it was sold at a very high price.



Egyptian ships

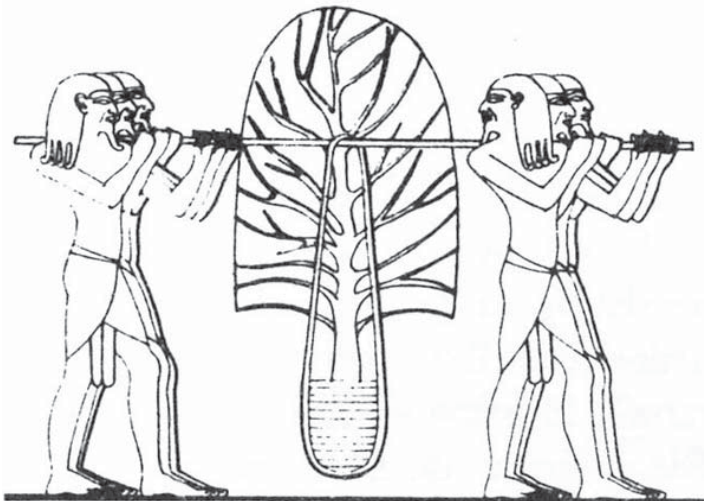
Ships of this type were dispatched from Egypt about 1485 BC by Queen Hatshepsut to the land of Punt to bring back frankincense, cinnamon, baboons, dogs, and myrrh trees.

Collection of frankincense

This 16th-century illustration portrays the collection of the amber-colored gum as it oozed from the bark of the frankincense trees in southern Arabia.

For many centuries the deceitful Arab merchants maintained a strict monopoly in Oriental spices by pretending that cassia and cinnamon came from Africa and deliberately discouraging the Mediterranean importers from making direct contact with the lands that really produced these lucrative commodities—China, India, and Southeast Asia. By reporting harrowing tales to demoralize competition and keeping consumers and producers apart, they were able to perpetuate probably the best-kept trade secret of all time. The geographical location of the Arabs made them natural middlemen, and it is understandable that they were reluctant to see the profitable spice trade slip from their grasp. It was not until the 1st century AD that the great Roman scholar Pliny pointed out that the Arabian yarns had been fabricated to inflate the prices of these exotic Eastern commodities.

In ancient times spices were very valuable articles of exchange and trade, like precious metals, pearls, and jewels, as confirmed by a number of passages in the Bible. For example, consider the story of Joseph and his brothers in Genesis 37:25. The young Joseph was his father's favorite. Jealousy turned into hate, and the brothers decided to kill him, but: "they sat down to eat bread: and they lifted up their eyes and looked, and, behold, a company of Ishmeelites came from Gilead with their camels bearing spicery and balm and myrrh, going to carry it down to Egypt." Joseph was sold for 20 pieces of silver to these spice traders from Gilead, beyond Jordan, who were traveling to the court of the pharaoh to sell their wares.



Transporting a myrrh tree (Queen Hatshepsut's Punt expedition).



A primitive incense offering.



Camel, 1477

Measuring heaps of incense.

In the 12th century BC King Rameses III had a special building constructed near Thebes to store incense for the worship of Amon.

Another important reference to the use of spices in the Bible is found in II Chronicles 9:1 in a mention of a journey the Queen of Sheba made to King Solomon in Jerusalem (about 950 BC) to develop and maintain trade relations. She was concerned with the menacing competition of a joint trade alliance between King Solomon of Israel and Hiram of Tyre that permitted Phoenician ships built of cedar from Lebanon to trade along the Red Sea shores and in the Indian Ocean, a development that threatened the queen's maritime and entrepôt trade.

Early Chinese influence (from about 2700 BC?)

Turning to another part of the world, we find that spices and herbs were used at a very early date in China, although ancient reports in available records are shrouded in mythology and superstition.

According to time-honored legends Shen Nung, the "Divine Cultivator," 1st tiller of the soil, and founder of Chinese medicine, is said to have discovered the curative virtues of herbs and established the practice of holding markets for the exchange of various commodities. About 2700 BC (?), according to ancient myths, he is alleged to have written the *Pen Ts'ao Ching*, or *The Classic Herbal*, the earliest treatise, on medicine, which mentioned more than a hundred medicinal plants, among them the spice cassia under the name of *kwei*. It is related in Chinese folk tradition that Shen Nung used to pound plants, grasses, and barks with a red stick, then test their properties on himself, sometimes taking as many as 12 poisons a day during this experimentation. It should be noted, however, that modern scholars, such as F.N.L. Poynter and H.L. Li, tell us there is no evidence whatsoever to justify the old-fashioned ideas concerning the tremendous antiquity of Chinese medicine; they hold the opinion that the *Pen Ts'ao Ching*, although containing much herbal lore going back several centuries BC, was compiled by some unknown authors in the late Han dynasty, about the 1st century AD; furthermore, that the legendary figure Shen Nung could not have written anything, as there was no written language in his day. The most comprehensive and celebrated Chinese herbal, entitled *Pen Ts'ao Kang Mu*, was compiled by Li Shih Chen and first published in AD 1596.

The first authentic record of the use of cassia (*kwei*) in China may be found in the *Ch'u Ssu (Elegies of Ch'u)*, written in the 4th century BC. *Ginger (chiang)* was mentioned even earlier by the philosopher Confucius (551–479 BC) in his *Analects*.

Despite the lack of clearness concerning the ancient use of spices in China, it is known that cassia was utilized at a very early date in Egyptian embalming. Since it did not grow in Egypt or Arabia, it seems logical that this aromatic bark must have been used earlier in China, where it was native and was cultivated probably centuries before it ever found its way to the land of the pharaohs.

There is historical evidence that cassia must have been an important spice in south China as early as 216 BC, when the province "Kweilin," meaning "Cassia Forest," was founded. The name Kwei River, in this same province of south China, becomes Cassia River when translated.

Seasonings from India and nutmeg and cloves native, to the Moluccas (Spice Islands) were introduced into China at a very early date. A reliable tradition holds that Chinese courtiers in the third century BC were required to carry cloves in their mouths to sweeten their breath when addressing the emperor.

During the 5th century AD ginger plants were grown in pots and carried aboard Oriental vessels on long sea voyages between China and Southeast Asia to provide fresh food and prevent scurvy.

Mesopotamian contributions (during the 1st millennium BC)

Ancient cuneiform records concerning spices have been found in Mesopotamia in the fertile Tigris and Euphrates valleys, where many aromatic plants were known. Sumerian clay tablets of medical literature dating from the third millennium BC mention various odoriferous plants, including thyme.

The increased use in medicine of drugs of vegetable origin (from herbs) instead of surgery may have been encouraged in ancient Mesopotamia by the very drastic decrees threatening unsuccessful surgeons if an operation failed. The Code of Hammurabi, of about 1700 BC, stipulated that if a surgeon should be found responsible for a patient's death, the surgeon's hands were to be amputated.

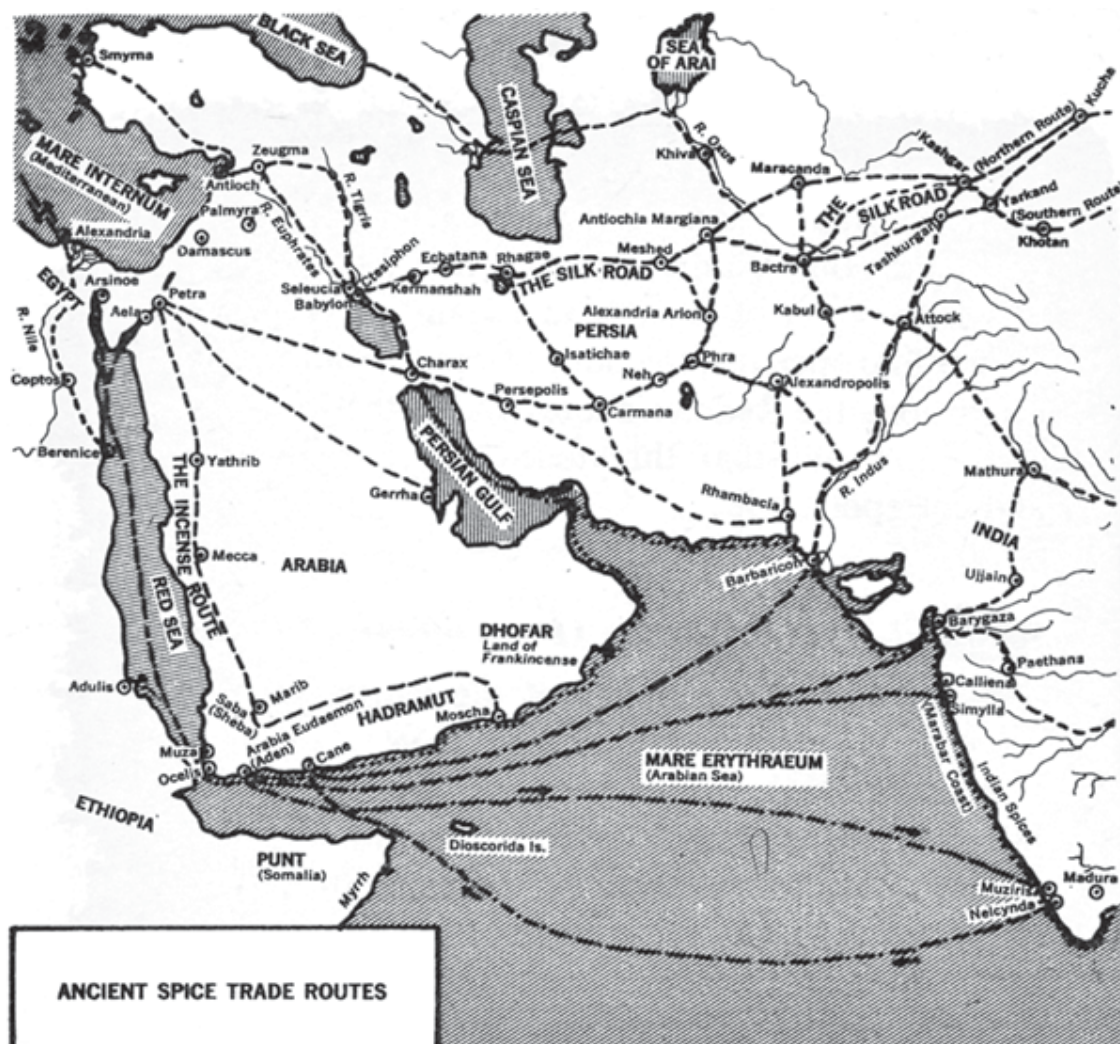
A scroll of cuneiform writing from the great library in Nineveh, established by King Ashurbanipal

of Assyria (668–633 BC), records a long list of aromatic plants, among them thyme, sesame, cardamom, turmeric, saffron, poppy, garlic, cumin, anise, coriander, silphium, dill, and myrrh. The Assyrians utilized sesame at a very early date as a vegetable oil.

The luxurious and refined habits of royalty in Assyria traditionally involved the use of large quantities of perfume and aromatics. The immoral and effeminate monarch Sardanapalus (identified by some as Ashur-banipal) is reputed to have allowed his passion for cosmetics free rein, thereby emphasizing his penchant to dress and paint himself like a woman; when threatened by the rapid advance of a ruthless enemy, he is said to have ordered a pile of aromatic woods to be lighted and to have placed himself upon it with his concubines and treasures, to be suffocated by the fragrant smoke.

Neighboring Babylonia was ruled by King Merodach-baladan II (721–710 BC). The peaceful hobby of this fierce soldier was horticulture, and in his royal gardens he cultivated 64 different species of plants. He wrote what may have been the world's 1st treatise on vegetable gardens, with precise instructions concerning the cultivation of a long list of including such spices and herbs as cardamom, coriander, garlic, thyme, saffron, and turmeric.

Babylonia had become the center of a religious cult of systematized sorcery, based on cosmic magic, revering the deity Sin, the ancient medical god of the moon, who was believed to control the growth of medicinal plants. The alleged medically potent parts of such herbs, therefore, were never allowed to be exposed to the rays of the sun but were harvested instead by moonlight, when magic healing potions were prepared.



By the 6th century BC onions, garlic, and shallots had become popular condiments in Persia, even among the poorer classes. During the early part of the reign of King Cyrus (559–529 BC) there is a record of a wholesale purchase by a grocer of 395,000 bunches of garlic.

As a consequence of their conquest and occupation of Egypt, the Persians became familiar with onions and garlic, long prized by the Egyptians, and had learned to produce essential oils from roses, lilies, coriander, and saffron.

Sesame seed, however, was too expensive for the average Persian laborer, since 2 months of his pay were required to purchase 1 bushel of the seed. Oil of sesame was used by the rich as a food, ointment, and medicine and in the ceremonial lamps in the temples. Because most regions of Persia were too hot for the cultivation of olive trees, sesame seed oil was the only available substitute for animal fats.

During the 5th century BC King Darius I of Persia received an annual tribute of over 60 thousand pounds of frankincense from the Arabs.

India, a center of spice origins (during the 1st millennium BC)

Some of the spices grown in India today—long pepper, black pepper, cinnamon, tumeric, and cardamom—have been known there for thousands of years. Excavations in the Indus Valley reveal that herbs and spices had been used even before about 1000 BC, when the sacred Ayurvedic texts, or lore of prayer and sacrificial formulas of the Brahmanical system of religious belief, were formulated. The medical writings of both Charaka (1st century AD) and Susruta II (2nd century AD) make frequent references to uses of herbs and spices covering the period back to about 500 BC. Susruta II enumerated over seven hundred drugs of plant origin, including cinnamon, cardamom, ginger, turmeric, and various kinds of pepper.

Susruta the older (4th century BC?) was famous primarily as a surgeon. He recommended that the bed sheets of a patient, as well as the sickroom where an operation was to be performed, be fumigated with the pungent vapors of white mustard, bdellium, and other aromatic plants to ward off malignant spirits; after the operation he recommended that a sesame poultice be applied to the wound—recommendations that may have foreshadowed the antiseptic theories of modern times.

Various spices such as cardamom, ginger, black pepper, cumin, and mustard seed were included in the ancient Susruta *mushkakadigana*, or herbal medicines, prescribed to remove fat and to cure urinary complaints, piles, and jaundice.

In the Ayurvedic system of medicine, based on the earliest Brahmanic texts, certain spices such as cloves and cardamom were to be wrapped in betel-nut leaves and chewed after meals to increase the flow of saliva and aid digestion. All fetid odors were then supposed to disappear as the breath became fragrant. It was suggested that one lie down for a while on the left side after chewing the spices.

Since the spices cardamom and turmeric, indigenous to India, were cultivated as early as the 18th century BC in the gardens of Babylon, the propagating material or seeds of these spices must have been introduced to Babylonia from India far back in time.

Increased use of spices in Greece and Rome (331 BC to AD 641)

Alexander extended Greek influence throughout the lands that had been the Persian Empire, including Egypt. Starting in 331 BC, his conquests extended through Turkistan, Afghanistan, Pakistan, and northwestern India, including the valley of the Indus. Greek settlements and commercial posts were founded between the Mediterranean and India along the western section of the trade route which was to become known during the 1st century AD as the “Silk Road.”

With his conquest of Egypt Alexander the Great



Hindu perfumer mixing spices.

founded the port of Alexandria, destined to become the most important trading center between the Mediterranean and the Indian Ocean, the gateway to the East, and a meeting place for commercial travelers of three continents.

The ancient Greeks imported Eastern spices like pepper, cassia, cinnamon, and ginger to the Mediterranean area, but they also consumed many herbs produced in neighboring countries. Anise, for example, was used in the kitchen, caraway and poppy seeds in the preparation of bread, fennel for seasoning vinegar sauces, coriander as a condiment in food and wine, mint as a flavoring in meat sauces, and inexpensive garlic was widely used by the rustic country people in much of their cooking. Because parsley and marjoram could prevent drunkenness, according to the Greeks, they were woven into the wreaths that decorated the drinkers' heads at their feasts.

Spices and herbs played an important role in ancient Greek medical science. Hippocrates (460–377 BC), known as the “Father of Medicine” and the framer of a code of medical ethics that he imposed on his followers (the Hippocratic oath), wrote many treatises on medicinal plants, including saffron, cinnamon, thyme, coriander, mint, and marjoram. He stressed that great care should be given to the preparation of herbs for medical use. Some should be gathered early, some late; some should be dried; some should be crushed. Of the 400 simples, or herbal remedies, utilized by Hippocrates, at least half are in use today.

The noted Greek philosopher and scientist Theophrastus (372–287 BC), sometimes called the “Father of Botany,” had been a fellow pupil with Alexander the Great under Aristotle, and later utilized botanical information that was gathered during Alexander’s India campaign. He wrote two books, *On Odors* and *An Enquiry into Plants*, that summarized the knowledge of his time concerning spices and herbs. In the latter Theophrastus made the important fundamental observation that the flower must always precede the fruit, that is, that a fruit is the product of a flower. He also wrote treatises dealing with aromas, weariness, swooning, paralysis, weather, and theriaca. (these were antidotes to the bites of poisonous animals and were composed of numerous peculiar ingredients such as opium, the flesh of vipers, aromatic gums, and spices). He pointed out that most fragrant spice plants came from those hot regions in Asia that were abundantly



The campaign of Alexander the Great in northern India in 326 BC led to increased botanical knowledge concerning spices and herbs.



Grecian priestess making aromatic offerings.

exposed to the sun.

The outstanding Greek author on botany and medicine of the period, however, was Dioscorides, the leading Greek Physician of the 1st century AD and author of *De Materia Medica*, which for 1500 years was to be the standard work on botany and medicine in both the East and the West. The original manuscript of this herbal was not illustrated. A magnificent transcription of it, the “Vienna Dioscorides” or Codex dedicated to the Princess Anicia Juliana at Byzantium about AD 512—now preserved in the Austrian National Library in Vienna—contains numerous illuminated illustrations, mainly of medicinal plants though also of animals, copied from Arabic; Turkish, and Hebrew sources dating back as far as the 1st century BC.

Dioscorides’ careful and sober judgments concerning medicinal remedies, in which he mentioned all the herbs and spices known at the time of Christ, were based more on systematic analysis than were the works of his predecessors, whose writings were founded largely on magic and superstition.

Silphium was the most famous drug of the ancient Mediterranean world. The plant of the same name, from which the drug was obtained, grew chiefly in the hills near Cyrene (Libya), in North Africa, where it flourished between the 7th and 2nd centuries BC. Large quantities were exported from Cyrene to Greece, and often it was sold by weight at the same rate as silver. By the 1st century AD, however, the plant had virtually become extinct, possibly due to overgrazing, since it was important as cattle fodder.

The botanical identification of ancient silphium is not clear. It is generally believed to have been *Ferula tingitana*, a sweet-smelling umbelliferous plant with thick stalks and roots that grows today as a rarity in Cyrenaica. The juice of this plant was known as “laserwort juice.”

The name silphium has also been applied, perhaps erroneously, to a foul-smelling Persian plant of the carrot family (genus *Ferula*), whose roots and rhizomes are the source of the medicinal gum resin asafetida. It was carried westward by Alexander the Great during the 4th century BC and is known as “stink-finger” in Afghanistan. As the silphium of Cyrene became extinct, asafetida may have gradually replaced it as a drug.

The genus *Silphium*, a name given by Linnaeus in 1737 to a group of hardy North American herbs of the family *Compositae*, occurs today in the Mississippi Valley and eastward, but these plants are not related to the silphium of the Greeks.

An extremely versatile herb, silphium was in great demand by the Greeks for use as a condiment, food preservative, gum resin, edible vegetable, and in medicine. As a condiment silphium was grated over meats and cabbage, as cheese is today. The stalk was considered an appetizing vegetable delicacy. As a drug the plant was an all-inclusive therapeutic agent, prescribed for fevers, coughs, lumbago, mange, and diseases of the eye; it was applied to remove corns and ingested to cure toothache, promote menstruation, dissolve blood clots, and eliminate worms. It was also employed as an antidote for scorpion bites.

The residents of Cyrene advertised and promoted silphium to such an extent that visitors occasionally tired of hearing about it. Antiphanes, an Athenian poet who visited Cyrene during the 4th century BC, wrote: “I will not sail back to the place [Cyrene] from which we were carried away, for I want to say goodbye to all horses, silphium, chariots, silphium stalks, steeplechasers, silphium leaves, fevers, and silphium juice.”

The economic importance of silphium in ancient Cyrene, a Spartan colony, is recorded on the inside of a



The export of Silphium in the 6th century BC. Silphium was the most famous medicinal plant (now extinct) of the ancient Mediterranean world. This illustration, from a Cyrenaic drinking cup (6th century BC) shows the weighing and loading of silphium at Cyrene, North Africa, where it was chiefly grown.

Laconian *kylix* (cup), probably made by Cyrenaic potters, in the 6th century BC, now in the Biblio-thèque Nationale in Paris. It is believed to show King Arcesilas II of Cyrene himself supervising the weighing and loading of a ship with this renowned bygone herb.

Several ancient trade routes were used to transport spices and other luxury goods from India to the Western world, some by land, some by sea, some by a combination of the two. Among the oldest was the south-north sea route from the main ports on the west coast of India, including Muziris Barygaza, and Barbaricon, through the Persian Gulf to Charax; then along the Arabian coast to Arabia Eudaemon (Aden) and up through the Red Sea to Egypt. From Charax alternate routes ran up the Euphrates and Tigris valleys to Seleucia, and from there to Antioch on the Mediterranean.

From Barbaricon a land route led northward through the Indus Valley to Attock, thence up the Kabul River and over the Hindu Kush Mountains to Bactra. At this junction with the “Silk Road,” the goods were transported westward through the city of Rhagae (Ray, near modern Teheran) to Seleucia, thence north by the Euphrates River to Antioch, or south to the Persian Gulf and then on Arab ships around Arabia up the Red Sea to Petra. A similar land route to the Indus Valley ran from Barygaza, north through Mathura to the Kabul River, and so to Bactra.

The “Silk Road,” initially used during the 1st century AD, began in China and passed westward either through Khotan on the southern route or Kucha on the northern route, both joining at Kashgar to proceed over the Pamir Mountains to Bactra and thence to Seleucia and the Mediterranean. From Bactra another important route ran northwest, by the Oxus River, through Khiva, just south of the Sea of Aral; thence westward by land to the Caspian Sea, across that sea, and then by land to the Black Sea and eventually to Byzantium. The object of this northern route was to avoid passage through Persia during periods of war with Rome.

The “Incense Route” used at an earlier period, ran from Hadramut in South Arabia northward to Petra, thence to the markets of Syria and Egypt.

Finally, as a result of the discovery in the 1st century AD of the monsoons and their importance to ships under sail, there followed establishment of the direct sea route from ports in Roman Egypt-Berenice was one-to the pepper markets of the Malabar Coast of India.

Some early written reports about pepper appear in Pliny (1st century AD), who thought that prices were much too high for this spice. For example, long pepper cost 15 denarii, white pepper, 7 denarii, and black pepper, 4 denarii a pound. One denarius was worth approximately sixteen U.S. cents.

During Pliny’s time Rome developed an active spice trade with South Arabia and Somaliland and, by direct route, with India. In the Roman Empire the consumption of spices as food condiments soared. Critical observers blamed the constant drain of gold to the East on the high prices paid for silk, gems and pearls, ebony and sandalwood, balms and spices, and especially on the exorbitant cost of pepper. Pliny complained that by the time they reached Rome, spices were sold at 100 times their original cost. Small in bulk, high in price, and in a steady demand, spices were especially desirable articles of commerce.

The balance of trade with India became very unfavorable to Rome, amounting to some 20 million denarii a year (roughly \$3,200,000 U.S.), since large amounts of gold and silver were shipped to the East to pay for the costly imported commodities. This exchange situation has been confirmed by the numerous ancient gold and silver



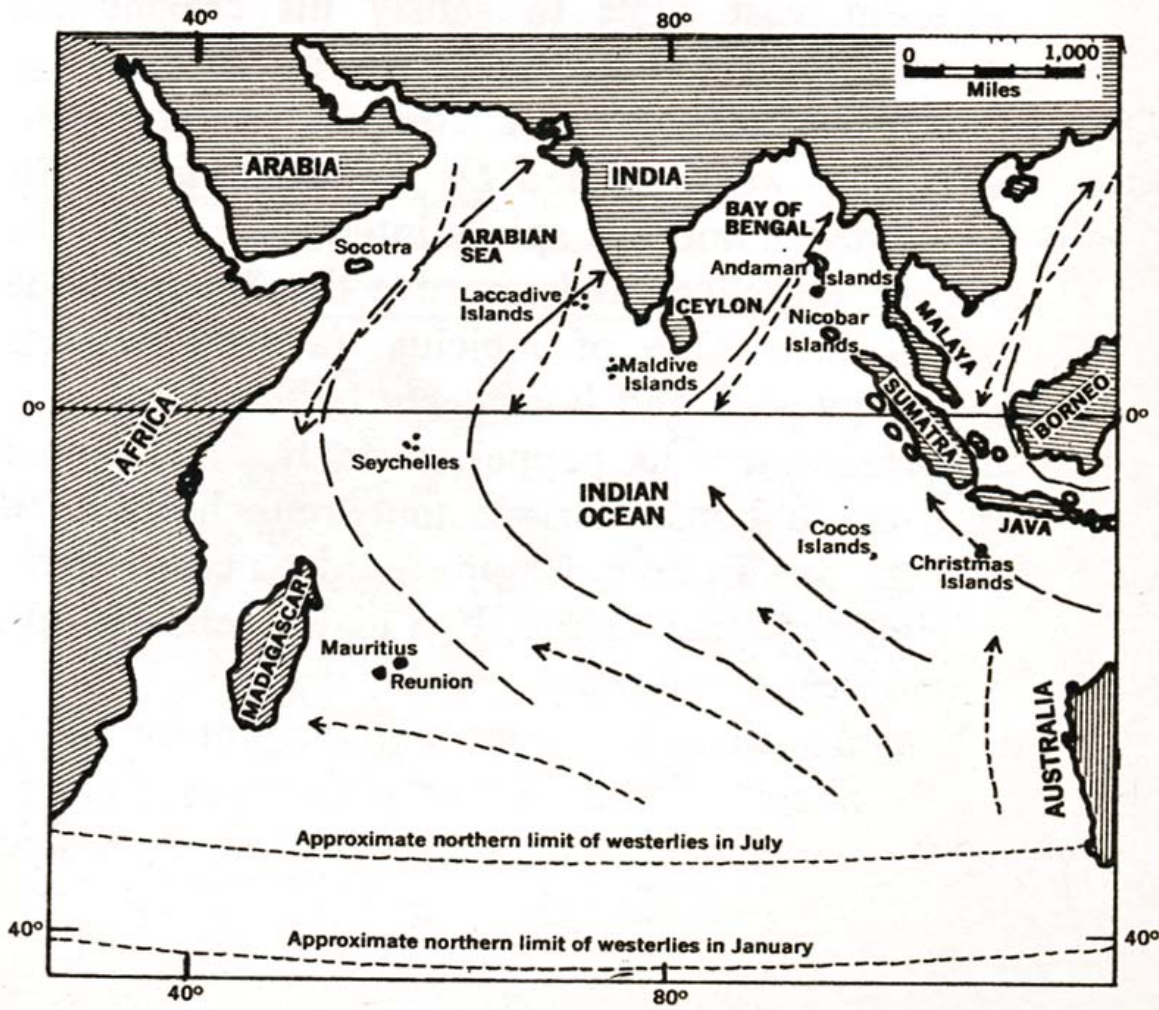
Cassia in China.

From an illustration of 1671. The bark of this tree, *Cinnamomum cassia*, is one of the oldest known spices.

Roman coins of the 1st century AD that have recently been unearthed on the west coast of India. Red coral from the western Mediterranean, valued in India as a charm against disease and danger, was one of the few costly commodities exchanged by Rome for Oriental goods.

The prices of these imported luxuries had gradually become exorbitant owing to losses by shipwrecks, storms, robberies, and the insatiable greed of the Arabian middlemen. In 24 BC an effort was made to incorporate the South Arabian spice kingdoms into the Roman Empire of Augustus, and Aelius Gallus, prefect of Egypt, was appointed to lead an Arabian campaign. It was a disaster. From the beginning, everything went wrong. While crossing the Red Sea, many ships ran aground and sank. The fleet landed too far north, and long distances had to be covered by foot. Then instead of following the well-established "Incense Route," about 120 miles inland, the Roman troops confined their trek to the coastal area. Six months later they had not yet reached the region of present-day Aden, heat stroke was prevalent, and a retreat was ordered. The geographer and historian Strabo pointed out that this defeat was due not to the enemy but to sickness, fatigue, hunger, and bad roads. Thus for the time being South Arabia remained undefeated.

At one time, several centuries BC, spices were actually grown in the kingdom of Sheba in South-western Arabia Felix, including some exotics imported from the Orient. This was made possible through irrigation from the dam at Marib that burst (or was destroyed as a result of wars) during the 6th century AD, following



Monsoon winds promoted the spice trade.

Seasonal monsoon winds, which affected historic sailing routes in the Indian Ocean, were discovered by Hippalus about AD 40. The prevailing winds blow from the southwest from April to October and from the northeast from October to April.

which event the surrounding area now known as the Yemen became the desert it is today.

During the age of the Roman emperor Claudius in about AD 40, a Greek merchant named Hippalus discovered the full power of the vast wind systems of the Indian Ocean, the monsoons, observing that they reversed their direction twice a year. The southwest monsoon prevailed between April and October, favorable for the trip from Egypt to India, and the northeast monsoon, between October and April, favoring the return voyage from the Orient. The word monsoon is derived from the Arabic *mawsim*, meaning season. It may be that for many centuries the variations of the monsoons had been both capitalized on by the Arabs and carefully concealed by them from other nations. By taking advantage of these winds, Hippalus showed that it was possible to make the round trip between Berenice, on the Egyptian coast of the Red Sea, and the pepper-producing Malabar Coast of India in less than a year, a voyage that had previously taken at least 2 years. The discovery of the monsoons was destined to reduce the importance of Arabia's overland spice routes and contribute to the financial ruin of her once-opulent cities. Until the era of steamships, the monsoons were to dominate European trade with the Orient.

Having learned the fundamental secrets of the monsoons, the Romans built ships on a vastly increased scale and eventually broke the Arab monopoly of the Indian trade. Toward the end of the 1st century, their increased commerce with India resulted in an even greater indulgence in spices and further culinary excesses on the part of the Romans. Apicius, a well-known gourmet and epicure of the time who is reported to have spent vast sums to satisfy his craving for exotic foods, wrote 10 books on the art of cooking. His culinary experiences were compiled several centuries later in a work entitled *De Re Coquinaria*. His recipes included numerous spices intended to preserve food, aid the digestion, and improve the flavor of the dull Roman fare. One of Apicius' favorite desserts included poppy seed and honey. He featured not only such imported spices as pepper, turmeric and ginger in his recipes, but also various temperate herbs then cultivated in the Roman Empire: anise, basil, caraway, coriander, fennel, garlic, bay leaves, cumin, dill, parsley, marjoram, and poppy seed.

The Romans were the most extravagant users of aromatics in history. Lavish use of spices was not confined to the kitchen but extended to fumigation and cosmetics. Huge supplies of aromatic spices, for example, were strewn along the path behind the funeral urn bearing the ashes of the commander Germanicus during the 1st century AD. It was quite customary for men to be heavily perfumed and even the legionaries reeked of the fragrances of the East.

Spice-flavored wines were in demand, for spices were supposed to add "heat" to the bouquet. Spice-scented balms and oils were popular for use after the bath. The addition of spices to these unguents thickened them and rendered them more fragrant. Even lamp oil was enhanced by pungent aromatics, apparently to keep harmful vapors away. After a feast many Romans would sleep on costly saffron-filled pillows in the belief that they would avoid a hangover. Since spices were considered to have medicinal properties, they were utilized also in poultices and healing plasters.

During the rule of Domitian, an emperor whose torment of the Christians culminated in a reign of terror and horror, John, a prophet of Ephesus, mentioned spices in his prediction of the downfall of Rome (Revelations 18:11–13, written about AD 90). For reasons of security, knowing that only thus could he avoid persecution for his references to the Romans' luxuries and ungodliness, he deliberately wrote obscurely and metaphorically, pretending that he was describing ancient Babylon instead of Rome.

The discovery of the monsoons had led to a sharp decline in the prices of aromatics, owing to the increased supplies of these products. Mark 14:3–6 tells of a woman's anointing Jesus with spikenard, a fragrant ointment extracted from the stems and roots of a small herbaceous plant, *Nardostachys jatamansi*, from northern India. Some of those present were indignant at this waste—the spikenard could have been sold for more than three hundred pence (about \$48 U.S.) to be given to the poor. Pliny's remark, some 60 years later, that the cost of spikenard had decreased from 300 denarii to about 100 denarii a pound gives a good indication of how the value of this exquisite perfume was affected by the Greek discovery of the monsoons.

The increase in direct commerce between Rome and India brought a halt to the long-standing subterfuge of Arab traders. In the past no accurate information concerning the sources of cloth, precious stones, tim-

bers, and spices had been allowed to reach the merchants in Egypt, but now the veil of secrecy was lifted. A fascinating description of trade and travel in the Indian Ocean and Arabian Sea was written about AD 90 by an unknown Greek sea captain, who recorded objectively and vividly (in a treatise known as *The Periplus of the Erythraean Sea* [*Sailing around the Indian Ocean*]) the local conditions, imports, and exports of the East African, Arabian, and Indian ports. The safest harbors were described in detail, full instructions were given as to where to anchor, how to avoid storms, and how the monsoons could be used advantageously. This vital information, which guided the traveler down the Red Sea, along the southern coasts of Arabia to northern India, and south to the pepper ports of the Malabar coast, served to stimulate trade between the Mediterranean region and the East.

The extension of the Roman Empire to the northern side of the Alps brought the Goths, Vandals, and Huns of those regions into contact for the first time with pepper and other spices from the East. Many barbarians, Goths in particular, served in the Roman armies or sought asylum in the empire. These barbarians already were familiar with a few temperate herbs like caraway, onions, rosemary, and thyme. They gradually were attracted by the luxuries of higher standard of living and learned to appreciate such sophisticated material refinements as oriental spices. When Alaric, the Gothic king and conqueror, appeared with his uncivilized hordes before the walls of Rome in September 408, he was well aware of the value of pepper, then worth its weight in silver. As tribute to prevent the sacking of the City, he demanded 5,000 pounds of gold, 30,000 pounds of silver, 4,000 silk tunics, 3,000 valuable skins, and 3,000 pounds of pepper. During this first siege, the beleaguered Roman citizens managed to meet Alaric's exorbitant demands, thus temporarily postponing the inevitable; but Rome fell to the invading Goths during Alaric's third siege, on August 24, 410, an event that initiated the collapse of the Western Roman Empire.

In 330 the emperor Constantine founded the city of Constantinople, built on the site of ancient Byzantium, which was destined to become the new capital of the Eastern Roman or Byzantine Empire. Caravan and sea routes began to develop around this rising metropolis. During this period 2 spices, cloves and nutmegs, grown on the distant Moluccas became known for the first time in the West. Indonesian sailors had



Much cinnamon and frankincense lost in the fall of Babylon

In Revelations 18:11–13, written about AD 90, the prophet John symbolically predicted the coming downfall of sinful Rome. To avoid persecution by the emperor Domitian, he substituted the name of ancient Babylon for that of Rome, as he obscurely described how the merchants of the earth would mourn over their losses of merchandise, including cinnamon and frankincense, upon the destruction of the city.

brought these precious condiments to eastern India, China, and Ceylon, whence they found their way into Arabian and Roman trade routes.

One of the first westerners to visit the East was the 6th-century merchant and traveler Cosmas Indicopleustes from Alexandria, who visited India and Ceylon. He later became a monk and in about 548 wrote a book entitled *Topographia Christiana*, in which he described the importance of the spice trade in Ceylon, a prominent trading center for the silk, cloves, sweet aloes, and many valuable commodities imported from China and other Far Eastern regions. He also stopped at Malabar in India and in his book described accurately how pepper was harvested in the hill country, including the manner in which this pungent spice was dried and prepared for the market.

Arab domination: The Muslim Curtain (AD 641 to 1096)

The Roman spice trade was vitally affected by the fall of the empire, which may be said to have culminated in the occupation of Alexandria by the Arabs in 641. The well-organized trading in commodities between India and Rome, which had been skillfully initiated by the emperor Augustus during the end of the 1st century BC, was brought to an end by the irresistible onslaught of Islam,

Time-honored trade routes were interrupted as the swiftness of the Arab conquest shattered Mediterranean unity and brought confusion, despair, and stagnation to its commerce. Gold, now controlled by the Arabs, became extremely scarce. Not until the 12th century did it resume its important role in the European monetary system, and then only after the Mediterranean was reopened to commerce and spices again became available.

Mohammed (AD 570–632), who established the principles of Islam in the Koran, was not only a great prophet, legislator, and founder of the religion that bears his name, but was also an experienced spice merchant. As a youth he worked with Meccan tradesmen who dealt in spices with Syria and South Arabia.



Constantinople

Official capital of the Eastern Roman, or Byzantine, Empire from AD 395 to 1453, Constantinople was for many centuries a focal point of spice trade routes between East and West.

Subsequently he became a camel driver and caravan leader for a widow of means named Khadija, 15 years his senior, whom he married in 595. For several years, before he claimed direct divine revelation and began his prophetic career, he was a partner in a shop in Mecca that traded in such agricultural commodities as myrrh, frankincense, and Oriental spices.

By the middle of the 8th century the great empire founded by Mohammed extended some 7000 miles from Spain in the west to the borders of China in the east. Muslim influence was spread to Ceylon and Java, for the most part by a roving Arab trading population. Having won religious victories in India by the sword, Mohammedan missionaries settled on the Malabar Coast and became spice traders.

The important city of Basra was founded at the head of the Persian Gulf in 635, at the point where the Tigris and Euphrates rivers meet. This thriving port, celebrated in *The Arabian Nights*, was destined to serve as a trading center for commodities from India, Arabia, Turkey, and Persia.

During the 4 centuries following the death of Mohammed, his worshipers developed a flourishing civilization. The Mohammedans were not only skillful in trade and commerce, but were also outstanding scientists for their time; they perfected, for example, the ancient method of extraction of flower scents from blossoms and herbs by means of cold fat (enfleurage), as well as several techniques of distillation of essential oils from aromatic plants. The English word alembic is derived from the Arabic *al-anbiq*, meaning "a still."

Avicenna (980–1037), the Arab physician and philosopher who wrote *The Canon*, a system of medicine long regarded in the Orient and Occident as a medical textbook of the highest authority, is also said to have founded the Graeco-Arabic school of medicine. Avicenna's medical writings were considered authoritative and were used in European universities up to the seventeenth century.

Rhazes (850–925), who became chief of the great hospital in Baghdad, was another famous Mohammedan physician and the prolific author of a voluminous encyclopedia of medicine and therapeutic knowledge. The Latin translations of the works of both Rhazes and Avicenna exerted a profound influence on European medicine long after Mohammedan military power had waned. Rhazes was also noted for his resourcefulness. Tradition has it that he selected the site for the hospital in Baghdad by hanging pieces of peat in the 4 corners of the city to find where putrefaction was the slowest—thereby recognizing a connection between putrefaction and disease.

By the 9th century sugar was being produced in Persia and utilized by Arab physicians to formulate aromatic syrups, flavoring extracts, and other palatable elixirs, many of which included spices (our English word julep comes from the Arabic *julāb*). Perfume-saturated waters such as rose water were produced on a commercial scale at Shiraz in Persia as crude distillation methods were improved. The nocturnal journey to the celestial spheres ascribed to the Prophet Mohammed gave rise to a cycle of fanciful anecdotes that became highly popular. According to one of these epic legends, emphasizing the significance attached to fragrant odors, the Prophet is supposed to have stated: "When I was taken up to heaven some of my sweat fell to earth and from it sprang the rose; who smells the scent of the rose smells Mohammed."

Following the example of the Arabs, especially after the period of the Crusades, the European spicers apothecaries of the Middle Ages prepared their drinks and other semipharmaceutical preparations by mixing sweet syrups of violets and roses with spices such as ginger, pepper, nutmegs, cinnamon, saffron, cardamom, and herbs from monastic gardens.

The increasing invasions from the north by the Lombards and Goths and the resulting disruption of the Roman economy in Italy caused Constantinople, or "the new Rome," to become the eastern capital of the Roman world from the time of its foundation, about 330, until 1453, when it was captured by the Turks. From the 7th to the 11th centuries a new trade route was developed northward from Constantinople, for the former channels had been cut off by



the Moslems and barbarians. Following the development of commerce with the Hanseatic League in northern and central Europe, goods were transported on the Russian rivers Don, Dnieper, and Volga, by way of Kiev and Nizhni Novgorod, to the Baltic Sea. Some early but limited Baltic trade in such spices as pepper, cinnamon, and ginger was carried on with England in exchange for wool. By the end of the 7th century, an English pepper tax had been imposed.

Herb plantings fostered by Charlemagne (AD 812) and sustained by medieval monasteries

Although small physic (medicinal-plant) gardens had been known in Europe for several centuries before his time, Charlemagne (742–814), king of the Franks and emperor of the West, was an important figure in the development of herbs. A patron of literature, art, and science, he organized for the first time in his realm larger systematic plantings of temperate condimental plants. In 812 Charlemagne ordered a number of useful plants, among them anise, fennel, fenugreek, and flax, to be grown on the imperial farms in Germany.

Information concerning spices, in Europe during the so-called Dark Ages (from 641, the fall of Alexandria, to 1096, the First Crusade) is rather scarce. The use of Oriental spices was drastically curtailed in the normal diet of Europeans north of the Alps. Only small lots could be obtained by ecclesiastical groups and a few merchants; for example, in 716 Chilperic II, king of the Franks, authorized the delivery to the monastery of Corbie, in Normandy, of merchandise from Fos that included one pound of cinnamon, two pounds of cloves, and 30 pounds of pepper. In 745 Gemmulus, a Roman deacon, sent a gift of pepper and cinnamon to Boniface, the Archbishop of Mainz. During the 9th century aromatic condiments, including pepper and cloves, were used to season fish in the Benedictine monastery at St. Gall in Switzerland.

In England the Statutes of Ethelred, at the end of the 10th century, required Easterlings (East Germans from the Baltic and Hanseatic towns) to pay tribute that included ten pounds of pepper for the privilege of trading with London merchants. Some authorities suggest that the word sterling (English currency) is derived from “Easterlings,” the early German spice traders in England who sold goods from the East. The sterling silver penny of medieval England is thought to have been coined by these Hanse merchants.

Even apart from their use by church officials, there must have been a limited consumption of Oriental spices in Europe during the 10th century, for the Moorish physician and merchant Ibrahim Ibn Yaacub, following his visit to Mainz in 973, reported that such Eastern condiments as pepper, ginger, and cloves could be purchased in this remote corner of the Western world. These costly Eastern commodities may have been brought to Mainz by Jewish traveling merchants known as “Radanites,” who, to a limited extent, kept international trade channels open between East and West during the 8th, 9th, and 10th centuries. Although ordinary trade between the Islamic world and Christian Europe was blocked, the Radanite traders, tolerated by both Mohammedans and Christians, enjoyed freedom of movement. These Jewish intermediaries transported woolen cloth, furs, Frankish swords, eunuchs, and white female slaves from Europe to the Orient; on the return trip they took back to Spain and France such Oriental luxuries as musk, aloes, pearls, precious stones, and various spices, including cinnamon, cloves, and pepper.

Throughout the Dark Ages the cultivation of herbs and spices in Europe was taken care of by the Church, for the most part in Benedictine monastery gardens. Early medieval botanical knowledge was recorded by St. Hildegard (1098–1179), a German nun famed for her visions and prophecies, who founded the convent of Rupertsberg and wrote the Latin treatise *Physica*. Herbs—sage and thyme, for instance—were locally grown in western Europe, as were such aromatic and medicinal plants as anise,



An early European herb garden.

fennel, parsley, and coriander, introduced from the Italian Benedictine garden at Monte Cassino. Spiced drinks formed an important part of monastic medicine.

Religious herb and spice feasts formerly celebrated by the Goths were later modified by the Christian Church. Many of the primitive superstitions stemming from early Teutonic times were thus continued, like tying bundles of herbs to stable doors to keep the witches out and wearing amulets of wolf dung to ward off disease.

During the Middle Ages the ancient lore of herbal remedies was perpetuated by sorcery-practicing herb women, whose pagan techniques displeased the Church. The mixtures prepared by these witchlike quacks, mingling hocus-pocus with scraps of common sense, ranged from harmless folk remedies to venomous abortives, injurious love potions, disgusting elixirs, and outright poisons.

With the advent of Arabian travelers and geographers more information became available concerning the areas where spices were produced. Ali al-Masudi, a tenth-century historian, described in his *Meadows of Gold* the vast cultivated plantings of the *maharaj*, or king of the East Indian Archipelago, whose produce included cloves, nutmegs, mace, cardamom, sweet aloe, and camphor.

Eastern trade reopened by the Crusades (11th, 12th, and 13th centuries)

The First Crusade took place in 1096 and in 1099 Jerusalem was conquered. Until then the West had relied on scattered reports from occasional travelers for information concerning the Near East. Now thousands of pilgrims described the mode of living in Syria and Palestine. Many Westerners developed taste for Eastern luxuries.

Apart from the religious aspects of the Crusades, interest was stimulated in their economic benefits. Shippers in Venice and Genoa in Italy were promised landing facilities to establish trading centers on the shores of the Holy Land, provided these landing points could be captured and secured. This was the beginning of a trade through which food, clothing, wool, and metal for the crusading soldiers were exchanged for such goods as fruit, jewelry, and spices, which were brought back to Italy.

The high point of Venice's enrichment came during the 4th Crusade, in 1204, when having transported Crusaders and pilgrims to Constantinople, Venetian shippers participated in the barbaric plundering of that city. Priceless booty of the dismembered Greek Empire contributed to the wealth and commercial importance of Venice.

The efficiency of the trading merchants led to basic changes in European eating and cooking habits. These were not restricted to the upper classes but slowly made their way down through the middle class, owing the unprecedented availability of imports from the Holy Land—dates, figs, raisins, almonds, lemons, oranges, sugar, rice, and various Oriental spices including pepper, nutmeg, cloves, and cardamom. The great economic growth and wealth in such Italian ports as Genoa, Pisa, and Venice were largely due to changes in commerce brought about by the Crusades

Spices played an important role in this



Witches, herbs, and magic potions.

In the Middle Ages, European superstition linked witches and herb women with magic potions, which allegedly included snakes, chickens, and herbs such as anise.

commercial prosperity that not only brought East and West together, but culminated eventually in the Renaissance. Thus pepper, cloves, cinnamon, and cardamom can be said to have contributed indirectly to the works of Titian, Raphael, and Leonardo da Vinci.

By the time the stream of pilgrims waned, the standard of living in Europe had improved immensely and what had previously been considered luxuries from the East were regarded as necessities. The economic gains of the Italian ship owners soon developed into a European trade monopoly that included merchants of Nuremberg, Augsburg, Bordeaux, and Toulouse, as well as of cities farther to the north, such as Antwerp and Bruges, which for a time became the most important commercial center for northwestern Europe.

During the reign of Henry II (in 1180) a pepperers' guild of wholesale merchants was established in London; it was subsequently incorporated into a spicers guild, succeeded in 1429 by the present Grocers' Company. This guild was granted a charter by Henry VI to sell wholesale—*vendre en gros* (hence our word grocer)—and to manage the trade in spices, drugs, and dyestuffs. This organization was given the exclusive power to “garble,” that is, to cleanse, separate, and select spices and medicinal products. St. Anthony was the patron saint of the spicers, pepperers, and grocers.

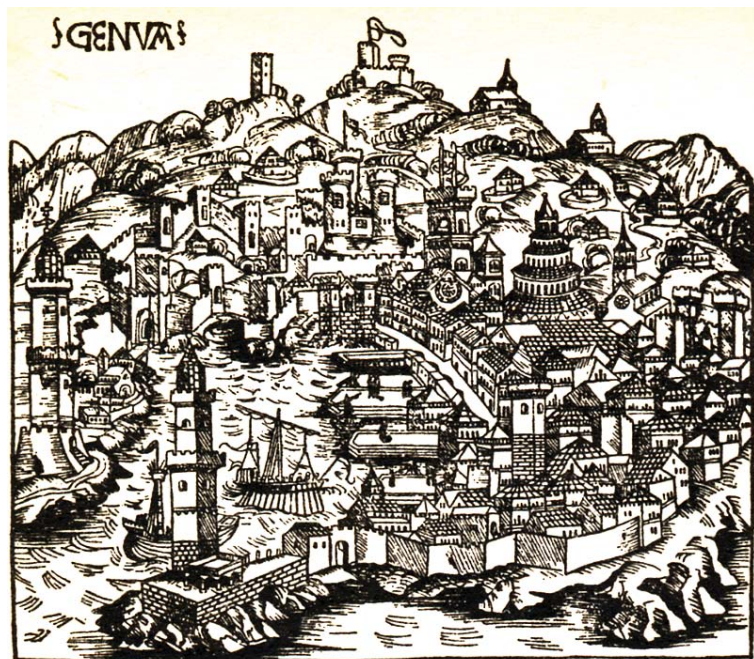
The original spicers and pepperers were the forerunners of the apothecaries, who in turn were destined to become general medical practitioners. This sequence emphasizes the vital role that spices formerly played in Occidental medicine. For many centuries (from the 4th century BC to at least the 17th century AD) spices were among the most important ingredients of the *materia medica*, used as correctives of hot or cold “humors,” at a time when an imbalance of these “humors” was thought to be the cause of all disease.

In the 13th century a pound of pepper cost the equivalent of 60 U.S. cents in Marseilles but over \$1 in England. Peppercorns, counted out one by one, were accepted as currency to pay taxes, tolls, and rents, partly because of a shortage of gold and silver coins. Many European towns kept their accounts in pepper. Fortunate brides received pepper as a dowry.

By the late Middle Ages Oriental spices were valued roughly as follows: A pound of saffron cost the same as a horse; a pound of ginger, as much as a sheep; 2 pounds of mace would buy a cow. A German price table of 1393 lists a pound of nutmeg as worth 7 fat oxen.

Despite the world inflation of recent years, spices 500 years ago were relatively more expensive than today. However, when one considers the wretched victuals of 15th century Europe,

it is easy to understand the extraordinary value placed on spices. Food was neither wholesome nor palatable. Cattle, slaughtered in October, were salted and kept until the following spring. Spices were believed to have a beneficial preservative action in meat. Potatoes were unknown and very few other vegetables could be obtained, either in or out of season. There were few lemons to flavor beverages, no sugar to sweeten them. Neither tea nor coffee nor chocolate was available. Spices, however, such as pepper, cinnamon, ginger, and cardamom, when mixed with the coarsest, dullest, even the most repulsive fare, could make it more palatable. Spices were used to camouflage bad flavors and odors, and it was also believed that their consumption would prevent illness. Spiced wines were popular; in fact,



Genoa

Toward the end of the 13th century Genoa enjoyed a great boom in trade, of which spices formed an important part.

the more spices in the wine, the more delectable it was thought to be. But as sugar, coffee, tea, cocoa, and tobacco became available in the succeeding centuries, the demand for spices gradually decreased.

By the end of the 13th century unparalleled wealth had accumulated in Genoa and Venice. Merchandise arrived from northern Europe, the Mediterranean area, the Far East, and Africa, and these Italian ports made a profit on every transaction. Thanks partly to their favorable geographical location, partly to their increasing wealth and willingness to undertake great risks, the Venetians in particular enjoyed an unprecedented boom in trade, as an inexhaustible stream of merchandise—sacks of spices, pearls, precious stones, carpets, and other valuable goods passed through their canals and customs houses en route from Asia to central Europe.

In the declining years of the Roman Empire, epidemics had been spreading, culminating in the dreadful plague during Justinian's reign (541), when it is said that from 5000 to 10,000 deaths occurred daily over a period of several weeks in Constantinople alone. Although Europe had been in close contact with the Holy Land during the Crusades, no further serious outbreak of the plague took place until the 14th century, when the Black Death appeared in Italy, having already devastated Asia and northern Africa. This ravaging disease killed approximately 25 million Europeans between 1347 and 1350, roughly one fourth of the continent's entire population. Ships bringing precious luxuries such as spices from the East also introduced the dread bacillus of the plague, spread by inconspicuous but deadly rat fleas.

During the next 400 years physicians treating the plague tried every imaginable means of self-protection against infection. Among the popular devices was an extraordinary, allegedly prophylactic costume consisting of a long, black leather gown, leather gloves, leather mask with glass-covered eyeholes, and long beak filled with spices or other aromatic materials to mask the odors and filter the malignant vapors. The pest-doctor carried a wand to feel the victim's pulse. Sponges were soaked with extracts of cinnamon and cloves and placed beneath the noses of the sick or dying. Rooms were fumigated with sage smoke. Saffron, garlic soup, and juniper wine were prescribed as medicines.

The search for spice routes and the age of discovery (15th and 16th centuries)

About 1260 the brothers Nicolo and Maffeo Polo left Venice to visit business connections in the Crimea and to learn more of the sources of the precious stones and spices then arriving by caravan from the Far East. Their travels eventually took them to the court of Kublai Khan of Mongolia. The great khan gave them golden tablets and his complete protection and informed them magnanimously that he wished to enter into trade relations with Venice on terms very favorable to the Italians. In 1269 the Polos returned to Venice and 2 years later set out again for Asia, taking with them Nicolo's young son, Marco (1254–1324). 26 years later, in 1297, 3 ragged figures turned up at the Polos' residence in Venice bringing with them, in the seams of their tattered clothing, pearls, diamonds, sapphires, rubies, and emeralds. They related many fantastic,



Spices were in demand in medieval Europe to mask the unpleasant odor and taste of decomposing food.



Gardener harvesting herbs, 1477

unbelievable tales of the fabulous wealth of China and of the magnificence of Zaytun (Tsinkiang or Chuanchow in south-east China), an immense port that exported damask silk, satin fabrics, and many spices.

In 1298, during a war between Genoa and Venice, Marco Polo was captured in battle and imprisoned in Genoa for about a year. While in confinement he dictated the story of his travels to a fellow prisoner. In those memoirs Polo made frequent mention of spices. He reported that for every shipload of pepper that went to Alexandria, a hundred arrived in Zaytun. He described the pleasing flavor of the sesame oil of Afghanistan and the plants of ginger and cassia of Kain-du (the city of Peking), capital of Kublai Khan, where people drank a flavorful wine of rice and spices. He reported that the rich in Karazan ate meat pickled in salt and flavored with spices, while the poor had to be content with hash steeped in garlic; that in Hangchow an officer of the great khan had informed him that 10,000 pounds of pepper were brought into that heavily populated city every day. Remarkably observant, Polo described in realistic detail vast plantings of pepper, nutmegs, cloves, and other, valuable spices he had seen growing in Java and in the islands of the China Sea, and the abundance of cinnamon, pepper, and ginger on the Malabar Coast of India. He mentioned many unusual Chinese achievements-elaborate buildings, huge cities, marble palaces, block printing, paper money, the mining of pit coal; told of fountains of liquid (petroleum) that burned miraculously; and described 4-masted sailing vessels each carrying up to 6,000 baskets of pepper.

After Marco Polo's release from captivity and return to Venice, he was, frequently called on to repeat



Marco Polo dictating his memoirs from a prison cell in Genoa, 1298. His accounts of the spices and riches of the Orient stimulated the great age of exploration.

Plague-doctor's costume with spice-filled beak.

Med-17th century European costume worn by physicians attending plague patients. The gown, shirt, breeches, boots, and gloves were all made of leather. The long beaklike nose piece was filled with aromatic spices and the eyeholes were covered with glass.

his accounts of the magnificence of the great khan, whose revenues consistently amounted to many millions in gold; in fact, Polo used the term millions so much in speaking of great wealth that he was given the nickname of “Marco Millions.”

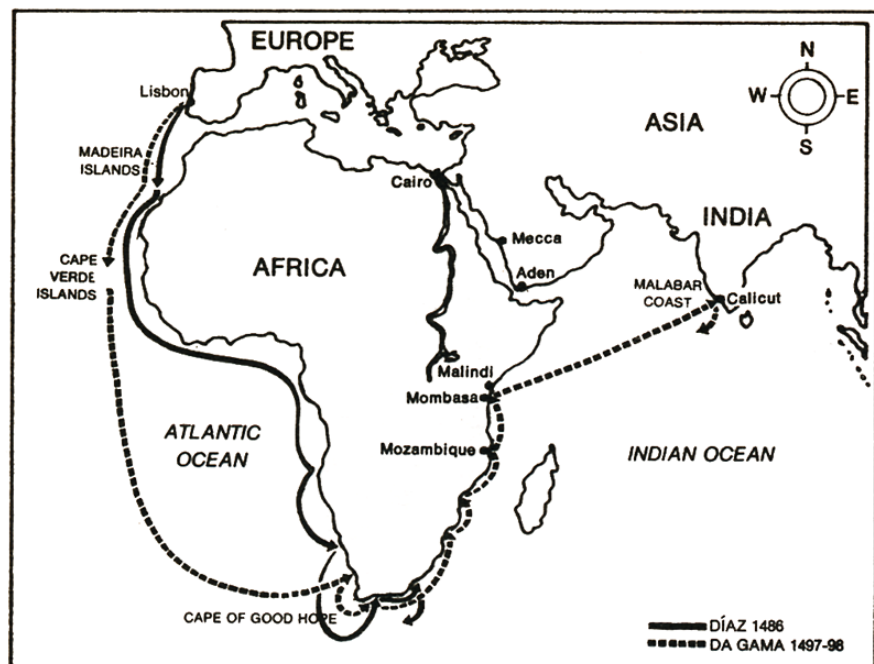
At first only a few people believed his stories, but gradually European merchants realized that these far away exotic and productive regions could be reached by ship. Marco Polo’s vivid description of his extensive wanderings in effect raised the “Muslim Curtain” that had fallen between Asia and Europe for 6 centuries. He bridged the gap between East and West and stimulated the great Age of Exploration. While later explorers such as Columbus and Cook merely touched the coastal regions of the lands they discovered, Polo accurately described the inland continent of Asia and its people.

After the fall of Constantinople to the Turks in 1453, the need for a sea route to the Orient became more urgent than ever. The spread of the Ottoman Empire made old land routes to the sources of silk and spices unsafe; transiting caravans were paralyzed. The most punitive of all duties imposed by the Muslim rulers were reserved for the flourishing spice trade—the sultan of Egypt, for example, took as tariff one third of the value of every cargo that entered his domain. European traders were bled white.

Prince Henry of Portugal, who in 1418 had established a naval college at Sagres, gave the greatest impetus to exploration for new routes to new lands. Believing that the economic future of his country depended on expansion of commerce, he called to his service the leading navigators, geographers, and astronomers of the day and inspired and equipped expeditions to find the Orient by sea. As all available knowledge of geography and navigation was accumulated and compiled, a vast improvement took place in their charts. With the aid of the mariner’s compass, then coming into general use, the Portuguese mariners worked their way down the western coast of Africa, sailing farther and farther south in hopes of finding an all-sea route to India. The Madeira Islands were reached in 1420 and the Cape Verde group in 1445.

In 1460 the year of Prince Henry’s death, a Portuguese squadron returned from the west coast of tropical Africa with a rich cargo of slaves and “grains of paradise,” aromatic seeds also known as “Melegueta peppers” (*Amomum melegueta*). Although related to ginger and not pepper, the sudden abundance of this competitive flavoring caused an abrupt decline in the Lisbon price of black pepper and led to the financial ruin of many spice merchants. The “Pepper Coast” of Guinea is said to owe its name to these “grains of paradise.”

By 1471 Portuguese ships had dared to cross the Equator, thereby confounding geographers who had claimed that the area was a flamingly hot and uninhabitable zone. Bartholomew Díaz discovered and doubled the Cape of Good Hope in 1486, confirming Prince Henry’s belief that the Indian Ocean could be reached by sea. On June 7, 1494, the 2 major colonial powers, Spain and Portugal, signed the Treaty of Tordesillas, under which the line of demarcation, or raya between their discoveries in the New World was established on the meridian 370 leagues west of the Cape Verde Islands (approximately 46 degrees west). It provided that all land discovered on the western side of this line belonged to



Voyages of Diaz and Da Gama.

Spain and all land discovered on the eastern side belonged to Portugal, thus giving Portugal title to Brazil.

Although he was called “the Navigator,” Prince Henry never navigated, but in his quest for geographical knowledge he designed, prepared, and financed many exploratory voyages out of Lisbon. Through his conscientious efforts he planted the seeds of the fruitful harvests to be gathered by Díaz, Columbus, da Gama, Cabral, and Magellan.

Christopher Columbus (1451–1506), son of a Genoese weaver, acquired much seafaring knowledge and experience in the service of the Portuguese. From these he concluded that there was undiscovered fertile, inhabited land in the western part of the ocean. However, he was rebuffed as a poor geographer and a vain boaster when he approached the *Junta dos Mathematicos* in 1485 and asked the Portuguese crown for a fleet to reach India in the east by sailing west. His project was flatly rejected. Columbus then went to Spain, where after many refusals King Ferdinand and Queen Isabella finally agreed to his requests. By May 1492 the Spanish monarchs confirmed the fateful contracts by which Columbus was appointed “Admiral of the Ocean Sea” and viceroy and governor-general of the lands and islands he should discover; he was given as well a tax-free share of 10% of all pearls, precious stones, gold, silver, and spices that he might bring back to Spain. The Spanish sovereigns gave him a letter of introduction to the “great khan,” the supposed title of the emperor of China.

The admiral set out from Palos in August 1492 with his three tiny but seaworthy ships, the *Santa Maria*, the *Pinta* and the *Niña*, and a crew of 90 men and boys. Despite bad food, maggoty water, near-mutiny for 2 months, the great objective of land in the west was reached on October 12, 1492; the coral reefs of San Salvador (one of the, Bahama Islands) were sighted, tallying exactly with the way Columbus had envisaged the approaches to the shores of India. He discovered Cuba, which he thought was part of the territory of the great khan, and then Santo Domingo.

One day in early November 1492, following a reconnaissance of the northern coast of Cuba, Martin Pinzón, the captain of the *Pinta*, brought Columbus 2 pieces of bark, claiming he had found cinnamon plantings. But upon inspection of the trees the admiral found that they were not cinnamon. Pinzón also reported that an Indian had been seen carrying some bright red objects that looked like nuts; these probably native chili peppers, a species of *Capsicum*.

Two envoys sent inland on a journey of several days were unsuccessful in their effort to find the great khan, but upon returning they reported that they had observed cultivated fields planted with creole peppers, known as *ají* to the natives. In his own reports Columbus frequently mentioned spices, and in 1493 he took



Columbus landing at Hispaniola (Haiti) in December, 1492



The departure of Columbus' caravels from Palos, Spain, on August 3, 1492

back to Spain samples of leaves, fruits, and branches, of various trees and plants to prove his findings. Unfortunately, most of these botanical samples decomposed on the return voyage and were thrown overboard.

Amazingly competent as a dead-reckoning navigator, Columbus managed to return to Spain in March 1493, after weathering 2 rough winter storms. He was given a magnificent reception, followed by many feasts and banquets. The nagging thought remained, however, that he had not found Zipangu (Japan) or any valuable Oriental spices, such as cinnamon or cloves; nor had he been able to deliver his letter of introduction to the great khan. On the other hand, he had found yams, kidney beans, maize, the fleshy edible cassava roots, tobacco, many new kinds of fruits and nuts, rare birds of gorgeous plumage, and native cotton; moreover he had “discovered” the hammock used by the island natives and soon to be imitated and adopted by European seamen.

Instead of the magnificent Chinese Empire, however, with its marble bridges and mighty palaces, roofed with the finest gold, with floors paved with golden plates 2 fingers thick, as had been described by Marco Polo, the admiral had encountered a few miserable villages with palm-thatched huts, inhabited by naked savages he called “Indians,” who possessed only limited amounts of gold.

In September 1493 Columbus started out on his 2nd voyage with a fleet of 17 caravels and 1,500 men to establish Spanish power in the New world and continue the search for gold and spices. On this trip the admiral took with him the Spanish physician Diego Chanca, who described in vivid detail the flora and fauna of the New World. Thanks to Dr. Chanca, we are reliably informed concerning the pungent ají fruits utilized by the natives in Hispaniola to season their yams, meat, and fish. Because of its great “heat” this new spice, called “red pepper” by the Spaniards, caused blisters on the tongue. Presumably it was of the same species of *Capsicum* as the red pepper fruits reported from northern Cuba during the first voyage. Later this condiment became popular in Hungary as “paprika pepper,” even though it was in no way related to the *Piper nigrum*, or black pepper, of antiquity.

Dr. Chanca reported examining a medium-sized evergreen tree, with a smooth gray trunk, whose aromatic fruits were characterized by a flavor resembling a combination of cinnamon, nutmeg, and cloves—the allspice or pimento tree, indigenous to the West Indies and Latin America. Columbus and his men were not aware of the importance of these pungent allspice berries, and it was not until many years after the death of the admiral that this new spice became popular in Europe. Since the allspice berries resemble peppercorns in shape they were called *pimienta*, the Spanish word for pepper. The high value placed on the true black pepper of India undoubtedly explains why various aromatic and pungent plants found by the early explorers of the Western Hemisphere were called “peppers.”

A number of minor spices locally used in the New World were never adopted outside their immediate native locale. One of the most interesting and unusual of these is *Quararibea funebris* (Llave) Vischer, a small tree (silk-cotton family) indigenous to the warm, regions of southern Mexico, the dried flowers of which provide a highly pungent spice rather suggestive of fenugreek in odor. Since they used them to flavor their chocolate drinks, the Aztecs called these peppery, sticky flowers *cacaxochitl*. Today the flowers, known in modern Mexico as *flor de cacao*, are still in demand in the market place of Oaxaca for flavoring *pozouque*, a thick, frothy, aromatic



Indians flee in fear of Columbus.

beverage made with chocolate, finely ground com meal, and water. Although allspice and eventually vanilla were accepted in Europe in the 16th and 17th centuries as desirable and appetizing spices from the New World, the even more piquant *cacaoxochitl*, rivaling the biting chili peppers in pungency, never became a popular spice outside of Mexico. Yet, according to R. E. Schultes, the odor of this little known spice is so persistent that botanical specimens of *Quararibea funebris* collected in Mexico in 1841 were still highly aromatic over a century later.

On his 4th and last voyage westward, in 1502, Columbus sought a water passage to the opulent and more civilized parts of the Indies, where spices and other resources were abundant, but he was blocked by the Isthmus of Panama. No longer a hero, he died in relative obscurity in 1506, convinced to the end that he had reached the fringes of the fabulous East.

In 1497 and 1498 England took up the search for a direct sea route to Asia. By order of Henry VII the Italian navigator Giovanni Caboto (John Cabot) undertook 2 voyages for the purpose of discovery. Although he failed to find spices, his explorations of Newfoundland, the Gulf of St. Lawrence, and the coastal regions of Greenland and Labrador enlarged the sphere of influence of the British crown.

Henry the Navigator had searched in vain for the source of the “Western Nile” in an effort to locate the legendary and supposedly powerful Christian emperor named Presbyter Johannes, or Prester John, who was reported to have broken the power of the Muslims in bloody fighting. Rumors circulated throughout much of Europe of the existence of this magnificent ruler and his vast domain on the far side of the great desert that formed the boundary of the Old World known to civilization. Prince Henry hoped that the combined forces of Portugal and Prester John could outflank Islam, destroy Mohammedanism, and achieve for Portugal the greatest possible commercial advantages. Even though they never found the realm of Prester John—the myth was eventually exploded through the increase of geographical knowledge—the fifteenth-century Portuguese navigators, in part because of their efforts to open communications with this monarch, had discovered the Cape of Good Hope and gradually prepared the way for the exploratory achievements of Vasco da Gama.

In 1497 King Manuel I of Portugal ordered da Gama to search for a sea route to India. On July 8 of that year a flotilla of four ships, under the command of da Gama in the flagship *Saõ Raphael*, sailed from Lisbon taking with them stores for three years and the best nautical equipment available at the time—charts, astrolabes, compasses, hourglasses, quadrants, and sounding leads. After passing the Cape of Good Hope, discovered by Díaz eleven years earlier, da Gama charted and explored some one thousand miles of undiscovered coast before reaching Mozambique, the southernmost of the East African ports under Arab control. The flotilla continued up the coast to Mombasa and Malindi, and on April 24, 1498, set sail from the latter port on an east-northeast course across the Arabian Sea. Taking advantage of the monsoon winds, da Gama arrived at Calicut on the west coast of India on May 20, 1498, thus completing the first voyage from western Europe around Africa to the East—the most significant feat in the history of the spice trade.

After a stay of nearly 6 months in Calicut, at that time the greatest commercial port on the Malabar Coast, da Gama started on his homeward voyage. Despite appalling hardships and the loss of two thirds of his crew because of scurvy, he finally reached Lisbon in August of 1499 with a valuable cargo of



Quararibea funebris, AN OBSCURE SPICE

Long before the arrival of the Spanish in Mexico, the Aztecs used these highly pungent flowers, known as *cacaoxochitl*, to flavor their chocolate drinks.

precious stones and spices and the glad tidings that the Hindu king, the zamorin of Calicut, and various Indian merchants were willing to enter into direct trade with King Manuel I of Portugal. A logbook kept by an unidentified sailor with da Gama's fleet records that the zamorin sent a message to King Manuel, written with an iron pen on a palm leaf, the tenor of which was: "Vasco da Gama, a gentleman of your household, came to my country, whereat I was much pleased. My country is rich in cinnamon, cloves, ginger, pepper, and precious stones. That which I ask of you in exchange is gold, silver, corals, and scarlet cloth."

King Manuel, seeing at once the opportunity to add new colonies to his kingdom and to make Lisbon the Venice and the Genoa of the West, was understandably eager to develop trade relations with the zamorin. Hurriedly he fitted out a fleet of 13 caravels and on March 9, 1500, sent it on Portugal's first merchant voyage to India, under the command of Pedro Alvarez Cabral (1460–1526). For some unknown reason, Cabral sailed westward, out across the South Atlantic, and upon landing in South America, took official possession of Brazil in the name of Portugal. Resuming his voyage to the Orient, he lost 4 ships in a storm off the Cape of Good Hope but the remainder of his fleet reached Calicut, India, in September 1500.

Cabral managed to establish 2 Portuguese trading posts on the Malabar Coast, in Calicut and Cochin. He did so despite an attack by irate Mohammedan merchants, who massacred over 50 of his garrison. Returning to Portugal in 1501 he brought to his king full evidence that a new trade route had been opened; the docks of Lisbon he displayed his rich cargo of spices, with sack after sack of cinnamon, cassia, ginger, pepper, nutmegs, mace, and cloves. His valuable shipload also contained some small, carefully guarded chests of diamonds and pearls.

News of the triumphant voyages of da Gama and Cabral reached Venice, shocking to numbness its bankers and merchants, who realized at once that their spice trade monopoly was broken. Pepper in Venice was now 5 times as expensive as in Lisbon. The sultan of Egypt was equally disturbed, for no longer could he count on the exorbitant revenues received through taxes on spices passing through his realm. The centers of commerce suddenly shifted from the Italian and Egyptian ports to the harbors of Portugal and Spain. The duty-free sea route to India, despite the cost in money and human lives, was far cheaper than the harassing overland route with its middlemen and their outrageous taxes, tariffs, and duties. The Venetian spice trade, which had been supplying Europe with about 1½ million pounds of pepper annually in addition to other spices, was temporarily disrupted.

For the Portuguese, however, this encouraging new trade advantage was not an unmixed blessing. Portugal at the time had only a million inhabitants and was a country of limited resources. The sudden abundance of spices triggered a temporary decline in the price of these commodities, and a number of Lisbon's merchants went bankrupt in those early years of the 16th century.

King Manuel sent trade missions to develop new markets for his spices, particularly to the leading German trading firms, among them the affluent Fuggers and Welsers in Augsburg. From the Augsburg financiers he obtained much needed capital to finance future exploration, including Magellan's circumnavigation of the globe (1519–1522). As the wealth of the Orient poured into Europe through Lisbon, the Portuguese crown monopolized the lucrative but risky pepper trade. Cargoes of East Indian vessels still at sea were sold at high prices by the king of Portugal to the large European syndicates, many of which were located



16th century caravels.

Ships such as these played an important role in the spice trade.

at Antwerp. To meet these inflated prices and still make a profit, the syndicates charged even higher prices to the wholesalers and retailers, who in turn raised the costs to the European public. From time to time, the smaller participating firms would be wiped out when something went wrong in their speculations. On the other hand, when the pepper speculations were successful, immense profits resulted. The price of pepper in Antwerp by the mid-16th century served as a barometer for European business in general.

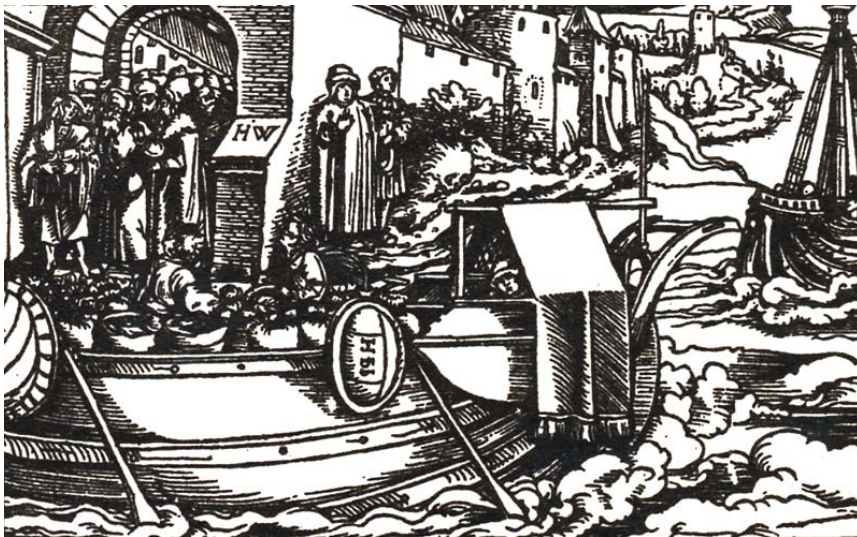
By 1560 overland trade to the Orient was reestablished. Substantial quantities of spices, including as much as a million pounds of pepper, were being shipped again through the traditional Levantine trade routes via Alexandria, but even so this was perhaps no more than one-fifth of the volume of spices that reached Europe through Portuguese and Spanish ports. The discovery of the direct sea passage to India led to a marked increase in the consumption of spices throughout Europe.

On September 20, 1519, the Portuguese navigator Ferdinand Magellan, with the approval of King Charles V, left Spain with a fleet of 5 vessels to visit the Spice Islands by following the western route. In 1520 he sailed through the straits of Patagonia that were later named for him, and discovered the Philippines a year later after a long, tedious, difficult voyage. Dismaying losses from scurvy, hunger and thirst led to outbreaks of mutiny. Magellan himself was killed in April 1521 on the island of Mactan, in the Philippines, as the result of the treachery of a native sovereign.

Survivors of the expedition eventually managed to reach the Spice Islands, but only 1 ship, the *Victoria*, returned home to Sanlúcar (September 1522). Eighteen men of an original crew of 230 had survived the first westward circumnavigation of the globe. In spite of the overwhelming human losses, the expedition was a financial success—the 26 tons of cloves, scores of sacks of nutmegs, mace, and cinnamon, and deck load of fragrant sandalwood brought back to Spain more than covered the cost of the entire expedition. The captain of the *Victoria*, Sebastián del Cano, was rewarded with a substantial pension and a coat of arms that included 2 cinnamon sticks, 3 nutmegs, and 12 cloves.

In 1519 the Spanish conquistador Hernán Cortés was given command of an expedition that culminated in the conquest of Mexico. His soldiers also made a great contribution to the history of spices while on military reconnaissance in the moist, shady coastal rain forests of southeastern Mexico. They found vanilla. This youngest and newest of the tropical spices was being used by the Aztecs as a delicate, flavoring to season their chocolate beverages.

During the 16th and 17th centuries ginger plantings were successfully established in the West Indies with propagating material brought from the East Indies. Since ginger was probably the easiest of the Oriental tropical spices to grow, its simple cultivation requirements soon led to its being produced on a large scale in Santo Domingo, Jamaica, and Barbados. Early Jamaican records report that in 1547 one thousand tons



16th century European cargo boats transporting spices and produce.



Vasco Da Gama (1469–1524)

of ginger were exported from the West Indies to Spain.

Portugal, Holland, and England struggle for control of the Far Eastern spice-producing regions (16th, 17th, and 18th centuries); the United States enters the pepper trade (1795)

The Portuguese under Albuquerque had won several decisive naval battles over the Muslims by 1511, thereby gaining control of many ancient Oriental spice producing areas—the Malabar Coast of India, Ceylon, Java, Sumatra, and the great Malayan spice trading center of Malacca. By 1514 they dominated Ternate and the other Spice Islands.

The Portuguese imperial taxes in Ceylon (1612) included a land tax, based on 12% of gross produce, to be paid one-third in pepper and two-thirds in currency. Thus the custom of paying taxes in pepper was not limited to the West.

As Portugal grew rich directly from the spice trade, the Dutch prospered indirectly, for they provided ships and crews to carry goods northward from Lisbon to Antwerp and Amsterdam. Profiting also from commerce in grain, herring, and salt, the Hollanders gradually acquired sufficient capital to expand their trade to the Far East. Drake's successful voyage around the world in 1577–1580 and the destruction of the Spanish Armada in 1588 ensured England's place as a great naval power. By the end of the 16th century neither Holland nor England was content to abide by the Treaty of Tordesillas, under which Spain and Portugal had divided the world between themselves a century earlier.

The British founded their East India Company in 1600, incorporated as "The Governor and Company of Merchants of London Trading into the East Indies." Two years later the United (Dutch) East India Company was formed with a capital of about 6 1/2 million *guilders*. This corporation, financed by many shareholding individuals, provided sufficient funds to undertake an ambitious, venture, the development of a Dutch empire in Asia. Although in the early 17th century the British were as strong as the Dutch, the Hollanders were far more willing to take the tremendous risks involved to achieve imperial supremacy in the East. The arrival of the Dutch in the Indian Ocean with their well-trained troops and more powerful fighting ships was destined to be disastrous for Portugal.

The Portuguese, meanwhile, had consolidated their own eastern empire in a most brutal fashion and with great loss in good will that could have stood to their advantage. Their regime in the Spice Islands was noteworthy for its violence, plunder, and oppression of the natives, including the poisoning of the king of Tidore in 1524. In Ceylon, settled by the Portuguese in 1505, the cinnamon forests were ruthlessly exploited, a system of slavery was established, and a cinnamon monopoly for the benefit of Lisbon was secured by the end of the sixteenth century.

Between 1605 and 1621 the Dutch managed to drive the Portuguese out of the Spice Islands, giving



Bartering for spices in the market place of a German city in the 16th century.



European spice merchants.

In the sixteenth century, the Fugger firm of Augsburg traded in spices over the new sea route to India and acted as papal bankers.

the Netherlands a virtual monopoly of the trade in nutmeg and cloves. They concentrated their cultivation of nutmeg trees on the islands of Banda and Amboina, and of cloves on Amboina; a scheme was conceived in 1651 to uproot all nutmeg and clove trees on the remaining islands so that the monopoly would be complete and easier to maintain. The penalty of death for possessing, selling, or secretly cultivating cloves or nutmegs forced the natives of the Spice Islands to accept this plan. By 1681 approximately three-fourths of the nutmeg and clove trees of the Moluccas had been destroyed, thus creating an artificial scarcity of these spices in Europe, and driving prices up for the benefit of the Dutch East India Company.

The story of spices in the East Indies in the 17th and 18th centuries was written in blood. The Dutch occupied Ceylon in 1636, and were as cruel to the cinnamon slaves as the Portuguese had been. Villages were forced to supply a stipulated quota of cinnamon bark, and when in default the men were tortured or killed, while the women were severely whipped.

By the end of the 17th century the enterprising Dutch colonizers had crushed the Portuguese, virtually driven the British out of the East Indies, and thereby gained complete control of the lucrative spice trade—there was a Dutch monopoly not only in nutmegs, mace, and cloves but also in Ceylonese cinnamon, Indian pepper, ginger, and turmeric.

Occasional overproduction drove the Hollanders to destroy excess spice stocks. For example, in the year 1760 such large quantities of cinnamon and nutmegs were burned in Amsterdam that spectators could wade in nutmeg butter.

But the days of this stranglehold were numbered. Between 1770 and 1772 Pierre Poivre, the French administrator of the island of Mauritius, managed to smuggle clove, nutmeg, and cinnamon plants out of the Dutch-controlled Spice Islands. New spice plantings were established in Réunion, the Seychelles, and other French colonies. The blockade of Dutch East Indian ports by British ships in 1780 barred the export of spices to Holland.

No monopoly can last forever. In 1799 the Dutch East India Company, its profits having become smaller and its administrative expenses increasing, went bankrupt. The empire-building firm was dissolved, as Holland's greatest period of trading affluence came to an end. Losses from piracy and smuggling combined to bring about an economic collapse, and despite strict controls spices were introduced and cultivated in other tropical areas that had freed themselves of Dutch influence or that had never been under its heel.

The Dutch ports of India's Malabar Coast were conquered and taken over by England as the Netherlands lost its leadership in European commerce. In 1795 the British planted clove trees in Penang, an island-near the west coast of the Malay Peninsula. By 1796 England had taken over all Dutch possessions in the East



German spice warehouse of three hundred years ago.



Spices added flavor to drab European food in the early sixteenth century.



Ginger, 1492

Indies except Java. Even Java was temporarily occupied by them from 1811 to 1816 under Sir Stamford Raffles.

Many decades of constant fighting finally drove the Dutch and, English to define their respective rights in a treaty signed in 1824, 9 years after the Vienna Congress. By its terms the Dutch received all the islands of the Malay Archipelago except the northern half of Borneo; it remained British, as did India, Ceylon, Singapore, and the Malay mainland to the borders of Siam.

The relative calm of the mid-19th century marked a temporary respite in the intense and prolonged struggle for supremacy in Far Eastern trade, especially in silks and spices, a military-economic competition that had been dominated successively by the Romans, Arabs, Venetians, Portuguese, Dutch, and English.

Toward the end of the 18th century the United States, having achieved stature as a national power, for the first time plunged into the world spice trade. The British taxes and trade restrictions of colonial days no longer obstructed American commerce. Well-built New England privateers, dependable and seaworthy vessels that had been tested and proved during the Revolution, became available for peacetime assignments. The stage was set and the timing right for the rapid development of the budding Yankee merchant marine. Schooners, sloops, brigs, and fast clippers set sail from such ports as Salem, Boston, Portsmouth, Bath, and New London, bound for the Orient. They traded American salmon, codfish, tobacco, snuff, flour, soap, candles, butter, cheese, beef, and barrel staves for such Eastern commodities as tea, coffee, textiles, indigo, and spices (pepper, cassia, cloves, cinnamon, and ginger). En route, there was bartering for sugar and rum in the West Indies. The most remunerative trade, however, was in spices, and especially in pepper.

These long voyages were fraught with danger. Added to the hazards of storms at sea, shipwrecks, and assaults, from Barbary, Arabian, and Malay pirates were repeated seizures by French privateers. Trade was so imperiled that in 1798 the United States authorized the arming of American merchant vessels to fight off such attacks.

Between 1800 and 1811 Salem enjoyed a virtual monopoly of the Sumatra pepper trade, because of its aggressive shippers, swift vessels, and capable mariners. Salem, then the sixth largest city in the United States, for several years paid an average of 5% of the nation's total import duties, of which pepper formed an important part.

The first successful commercial pepper voyage from Salem was completed by the schooner *Rajah*, of 120 tons, which left Salem on "a secret voyage for ports unknown" in November 1795, returning 18 months later to New York with a full cargo of bulk pepper taken on at Benkoelen in southwestern Sumatra. On this 1 voyage the ship's owners, Peele and Beckford, made a profit of 700%, thanks largely to the skill and cunning of the shipmaster, Captain Jonathan Carnes, on the dangerous 26,000-mile round trip. He was able to buy a large amount of pepper cheaply from the native rulers on the coastal areas of Sumatra and avoid the higher prices charged by Dutch merchants in Batavia, Java, for limited quantities of the spice.

The success of the *Rajah* stimulated other Salem merchants, notably the Crowninshields, to plunge into the pepper trade. In 1799 2 Crowninshield ships, the *America* and the *Belisarius*, brought back to Salem sizable cargoes of pepper from the Coromandel Coast of southeastern India. The region most favorable for buying up large quantities of pepper, however, was Achin, on Sumatra's northern coast. By 1805 the *Rajah* and the *America* had each completed 5 trips to Sumatra, bringing back over 1200 tons of pepper on which duties of some \$175,000 were paid to the United States Government.

Most of the enormous quantities of pepper imported by this small New England port of Salem had to be re-exported directly to such European ports as Stockholm, Gothenburg, Hamburg, Copenhagen,



Cloves, 1487

and Antwerp or were transhipped to Philadelphia, Boston, and Baltimore for processing and distribution by other American merchants and exporters. The largest single cargo on record for one of the Salem pepper fleet was of just over 1 million pounds (500 tons) of pepper, brought from Sumatra to Salem in 1806 by the *Eliza*, a sailing ship of 512 tons.

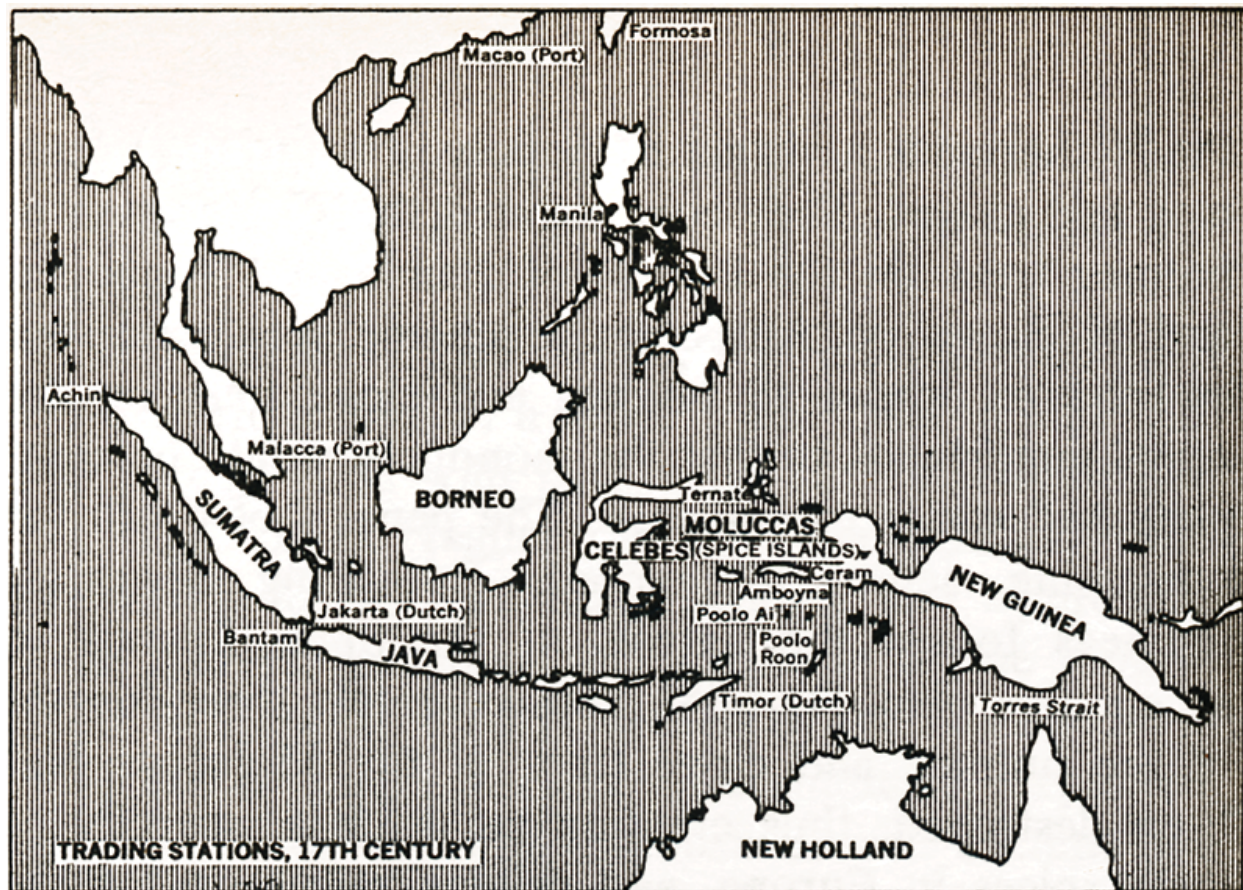
Except for 3 years when the British blockaded American ports during the War of 1812, the Salem pepper trade flourished from 1797 to 1846, reaching its peak in 1810. After 1846 an overproduction of spices brought a gradual decline in its economic importance until the final demise of the Salem pepper trade following the outbreak of the Civil War in 1861.

In its half century of supremacy Salem is reputed to have produced some of America's first millionaires, one being the shipping entrepreneur Elias Derby, who made his fortune in the lucrative India and Far Eastern trade although he himself never went to sea.

Modern spice trade (19th and 20th centuries)

Compared with tea, sugar, and other tropical products, the spice trade played a minor role in the economy of the British Empire. The Dutch retained their position as the leading spice producers of the 19th and early 20th centuries. To do this their imperialistic system in the Dutch East Indies had to be tempered. A more benign form of government was instituted following the publication in 1860 of a novel entitled *Max Havelaar*, by E. Douwes Dekker, a former Dutch colonial officer in Java. In this book, written under the pen name "Multatuli," meaning "I have endured much," Dekker disclosed the brutal and inhuman treatment of the native laborers and peasants in the Dutch East Indian colonies. This powerful exposé had a profound effect on public opinion in Holland, which in turn forced government reforms.

The important spice-producing regions of Java and Sumatra, which were scientifically developed, were



Trading stations for spices in the East Indies in the 17th century.

destined to remain under Dutch control until World War II. Through their efficient administration and new advances in tropical agricultural techniques, spice production so increased that by 1938, for example, over 55,000 tons of Indonesian black and white pepper were exported, while in that same year India exported only 700 tons of pepper. Today, with the Dutch forced out of Indonesia, the situation has changed: India has joined Indonesia as the world's leading pepper producer—each country now exports between 20,000 and 30,000 tons of pepper annually.

Nor does Indonesia still supply the world's markets with large quantities of cloves, as it did during past centuries when the Spice Islands were at their zenith. In fact, the republic finds it necessary to import cloves, today from China, Zanzibar, and the Malagasy Republic to supply flavoring for the popular Indonesian *kretek* cigarettes, which contain about one-third ground cloves and two-thirds tobacco.

Although Columbus never reached the glittering palace of the great khan or inhaled in his travels the true aroma of cinnamon bark or clove buds, he did succeed in opening up the Western Hemisphere to world commerce and presenting three new spices to the Old World. The pungent, inexpensive, and useful capsicum peppers were soon introduced to Europe, Africa, and Asia, where they could be grown as well as enjoyed by the common man; allspice and eventually vanilla became important flavoring condiments exported from the West Indies and Latin America to Europe.

Substantial spice plantations have now been established in the Americas. The best quality cardamom comes from Guatemala, the finest nutmegs and mace from Grenada, select black pepper from Brazil, and substantial quantities of sesame seed from Mexico and Nicaragua. Although in the 16th century the spice trade was almost exclusively centered on India, Ceylon, Java, China, and the Moluccas, by 1973 the pendulum has started to swing, at least to some extent, toward significant spice-producing regions in the Western Hemisphere.

Unlike the 16th and 17th centuries, when monopolies dominated the spice trade, commerce in spices is relatively decentralized at the present time. The most important trading center for spices in the West may be said to be New York, followed by Hamburg and London; in the East, Singapore remains the principal entrepôt.

An unusual culinary development occurred early in the 20th century—onions and garlic were successfully dehydrated for the 1st time *on a commercial basis*, following many years of experimentation. As early as 1780 a British patent with the title “Drying Vegetables” had been issued, and by 1845 a patent had been issued in the United States on a process for drying potatoes. The Pajaro Valley Evaporating Company of Watsonville, California, produced dehydrated onions on a small scale in 1889. (In 1950 several tins of this product, dehydrated in Watsonville 61 years before and protected by oiled paper around the threads of the screw caps, were found in Skagway, Alaska—and the onions were still pungent and edible.) Further work on the dehydration of onions and garlic in powdered and granular form was carried out during World War I. The dehydration of onions and garlic on a large scale in Egypt, Eastern Europe, and the United States, starting in the 1930s, was a most significant technological change in the processing of spices and herbs.

Another important development in modern spice processing has been the increased commercial use of *oleoresins* in the industrial market for spices. The oleoresins of a spice, consisting of natural resins and volatile essential oils, contain the constituents of flavor, odor and pungency of the spice in concentrated



ONIONS, 1487



GARLIC, 1487

form. Oleoresins are products obtained by extraction of the spice by solvents, with subsequent removal of the solvent. Spices may contain from 3 to 30% by weight of oleoresin, with an average of about 10%. Spices produced under primitive tropical conditions may become contaminated by molds and bacteria. While these products should not be used, as condiments in this condition, they can be successfully extracted to give a non-contaminated oleoresin. The use of oleoresins allows for a more uniform flavor level adjustment in a finished food product.

Since the introduction of ginger oleoresin in 1899, there have been differences of opinion within the food industry as to the value of oleoresins in comparison with dried natural spices: In baking, dried spices are generally preferred, since to a large degree the traditional appearance of the natural spice is desired—as in the case of cinnamon buns, for example; while in the canning and frozen-food industries, oleoresins of spices are more widely used. Often here, the particulate matter of the spices is objectionable. At the present time, oleoresins represent approximately 1-6th of the total dollar volume of the spice business in the United States.

The dramatic advance of chemical technology in recent years poses a dangerous threat to the spice trade, and could eventually cause serious economic damage to the spice-producing underdeveloped countries of the world. Even today, it is a comparatively simple matter for chemists to synthesize spice essences and flavors from cheaper and more abundant raw materials such as wood pulp and coal tar, a development which, if carried to extremes, could portend disaster in the long run for the world's plantations of tropical spices. For example, a single chemical plant in Wisconsin is now capable of producing from wood pulp enough imitation vanilla flavor to supply the total United States requirements of this flavoring.

As we look back across some 5000 years of recorded history we begin to grasp the pivotal part that spices have played in the development of modern civilization. In an epoch when Europe knew nothing of sugar, tea, coffee, chocolate, potatoes, citrus fruits, or tobacco, to say nothing of plumbing or refrigeration, Oriental spices supplied flavor and piquancy for food and drink and fragrant aromas to mask a multitude of unpleasant odors. So useful, indeed indispensable, were spices, both politically and economically, that kings sent expeditions in search of them, merchants risked life and fortune to trade in them, wars were fought over them, whole populations were enslaved, the globe was explored, and such far reaching changes as the Renaissance were brought about by the restless, ruthless competition.

Today, happily, we no longer are dependent upon spices to protect our noses, but we have discovered in them an almost infinite variety of new pleasures and experiences with which to delight our palates. They have become, in short, less a necessity and more a treasured enhancement of the art of living.