The Explorer

Newsletter of Cabrillo National Monument and the Cabrillo National Monument Foundation

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Our world has grown so small

We do live our life in the fast lane. The electronic age has enabled us to communicate with each other at lightning speeds, nearly anywhere in the world. Commuters are now able to travel between continents in the course of a day. And discovering a new culture is now as easy as changing a television channel. Modern technology has made our world grow so small.

With this issue of *The Explorer*, we take a step back into a time when so much of the world was still unknown, but knowledge of the physical world was growing with each new discovery. In every era of humanity, there has been an element of new discovery—even in our world today. In order to narrow our scope, we decided to look at the remarkable time of discovery that occurred between the voyages of Christopher Columbus in 1492 and Juan Rodríguez Cabrillo in 1542—a span of fifty years dominated by global expansion.

So many factors contributed to the expanding knowledge of our world during that time. Mapmakers opened the eyes of people to how the world was growing and continually taking on new shapes. George Herring addresses this important course of growth as maps were constantly being changed. While researching his article, George also found maps using the place names of some of Cabrillo's discoveries—definitely a significant find!

As the world grew, so did the exchange of cultures. Emily Troxell and John Golda both explain how the role of foods and spices motivated expansion of the New World. John presents an interesting look at how spices became such lucrative commodities, while Emily shows how the exchange of exotic foods affected the diets of people around the world. How odd to think that so many foods and spices common in our world today were once catalysts of global expansion!

It is amazing to think of how fast our world can grow. The 16th-century age of discovery was no doubt a fascinating era to experience, but so is our world today. New discoveries are continually being made; these make our world smaller, but can serve to expand our knowledge and understanding of one another.

Debbie Stetz
Editor

The power of spice

by John Golda

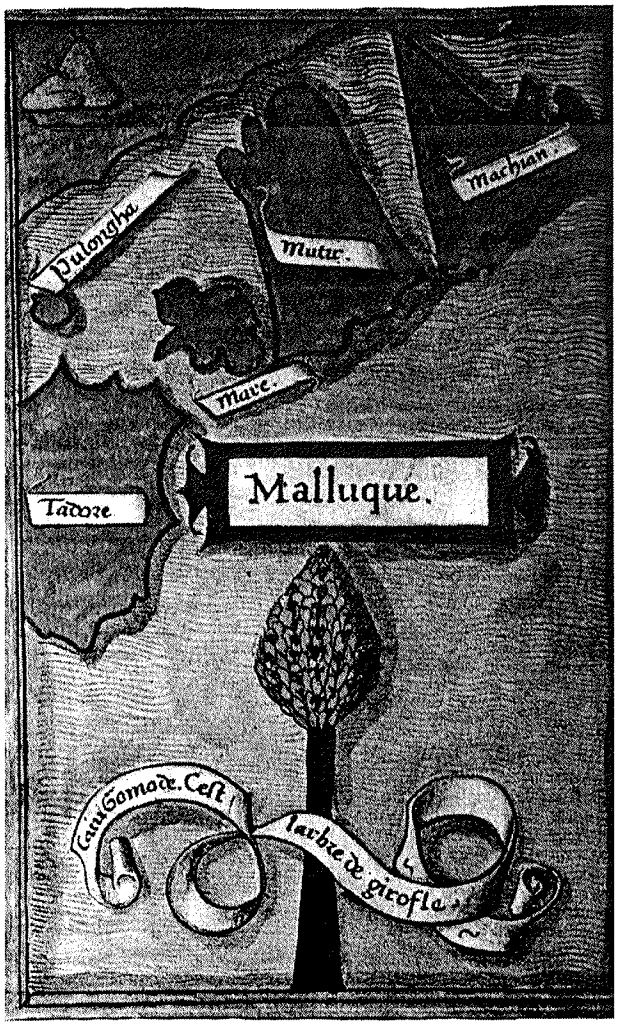
A stroll down a supermarket aisle takes us past products from around the world—foods, flavorings, and culinary treats of all sorts. Today, there is such an abundance of food that much of it has become seemingly trivial and commonplace. But tastes and fashions can define an age. This was never truer than during the Middle Ages and the Renaissance. Luxury goods like silk, porcelain, oriental medicines, and spices such as black pepper, nutmeg, and cinnamon, were all the rage in Europe. Spice did more than just flavor foods, though: It sparked the imagination, made fortunes, and built and destroyed empires. Not only of great value in its own right, spice also acted as a catalyst in the creation of the modern world. The search for exotic spices led to sweeping change in the years between the voyages of Christopher Columbus and Juan Rodríguez Cabrillo—changes that continue to affect us to this day. The closest modern analogy must be the Space Race. The technologies and ideas that resulted from the first step on the moon, like those that arose from the quest for spice, continue to shape our lives.

In this modern world, it is hard to imagine what spice represented to the Renaissance man or woman. While exotic spices had long been known in Europe, they took on a special fascination during the Middle Ages and the early part of the Renaissance. They flavored and preserved a wide range of foods like meat, vegetables, preserves, wine, and beer. Spice was used in such huge quantities and in so many foods that it would shock and appall the modern gourmand. But the cost of spice placed it beyond the reach of the common person. It became the symbol of conspicuous consumption. Spice was so valuable that the men who unloaded it on the docks were sometimes required to wear clothes without pockets, just to help keep them honest. The power of spice stretched beyond its culinary application. Some were also believed to be a remedy for a wide range of medical complaints. One historian cites that a mix of fifteen spices was a cure for "trapped wind," nutmeg was said to cure coughs, the plague, and "bloody flux"—a form of dysentery; cloves cured earaches, and enough saffron was supposedly a remedy for death itself.

With so many uses and such a high demand, spices provided the means to gain wealth and power. A return of two or three thousand percent on the investment in a cargo of spice was not uncommon. It was imported to Europe in quantities we would find staggering today. One Portuguese spy reported in 1564 that over 1.4 tons of black pepper was shipped through Alexandria, Egypt, in the month of October alone.

Venetian merchants held a monopoly on the trade in spice as it reached Europe through Asian trade routes. It was the wish to avoid Venetian markup that led the Portuguese to begin searching for their own routes to Asia. Henry the Navigator encouraged and supported merchants and mapmakers as they took their first difficult steps around Africa on their way to India. In 1511, it paid off. A flotilla of Portuguese ships returned loaded with spices it had acquired in the Far East. Another Portuguese expedition, under Antonio d'Abreu, reached the Moluccas, the pre-eminent source of nutmeg, in 1512. These expeditions marked the beginning of the end of the Venetian domination of the spice trade and the Mediterranean and the dawn of the Portuguese Empire in the Indian Ocean.

The Portuguese may have had a head start on the trade route along the African



Map of the Spice Islands, circa 1521, from the journal of Antonio Pigafetta, the chronicler of Magellan's voyage

MUSEO CIVICO, VICENZA

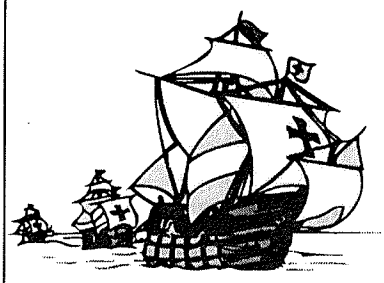
coast, but the Spanish were not to be left out of the race to the Spice Islands. Columbus fully expected to find southern Asia when he set out on his historic voyage in 1492. Spain soon began carving out her own empire, based on the wealth of North and South America. Yet, despite the riches and opportunities held by the New World, the spice of the East Indies still acted as a powerful magnet for the Spanish. During the first circumnavigation of the world, Juan Sebastián de Elcano reached the Spice Islands not long after Ferdinand Magellan's death in 1521. In 1528, Álvaro de Saavedra Cerón, sent to search for Magellan's missing ship, was the first to sail from Mexico to the Moluccas. Like the Space Race centuries later, every small step and every setback provided more and more information on how to ultimately succeed.

The English and the French also joined the race, mounting expeditions to find a route not dominated by the Portuguese or Spanish. They made several attempts to reach Asia, either sailing over the top of the world north of Russia or across the Atlantic to the northwest. John Cabot, Giovanni da Verrazzano, and Jacques Cartier all returned with a better understanding of the coastline, but that of North America rather than that of Asia. While these expeditions did not reach the Spice Islands, they prompted the founding of colonies, which would forever shape the course of history.

A great deal of the earth's surface had been explored and mapped in just fifty years. The world became more and more of a known entity, and still the nations of Europe jockeyed for control of the sources of spice and their trade. Even as the Dutch usurped Portuguese power in the Indian Ocean, the English and the French looked for their opportunities to control the sources of spice. As they struggled to acquire and maintain control, they turned to the typical tools of empire—diplomacy, espionage, and warfare. But the demand for spice in Europe, one the foundations of the age, began to slip, the use of spice in the European diet becoming more restrained by the 1700s. Some historians attribute the decline of spice's importance to the varied diet created by the foods introduced from the New World and Asia. Others say that as spice became more available and affordable, it lost its luxury status and value to coffee, tobacco, and chocolate. For whatever reason, the price dropped, giving it a place on the tables and in the cupboards of people of all classes.

In this modern world, it is hard to imagine what spice represented to the Renaissance man or woman.

Today, walking through the supermarket one can find the spices of the world lined up in neat rows of shiny boxes and jars. The rich, exotic tastes that founded empires are hardly given any thought. People just want a little nutmeg for their holiday eggnog, cloves for their ham, or a dusting of cinnamon for their cappuccino or toast. But on these luxuries the course of world history turned.



Cabrillo Festival Open House

Sunday, October 3, 1999

The Cabrillo Festival commemorates the landing of Juan Rodríguez Cabrillo in San Diego Bay on September 28, 1542. This year's festival features the food, music, and dances of Native America, Mexico, Portugal, and Spain. In addition, visitors will discover a 16th-century conquistador encampment, Native American demonstrations, and children's activities. A recreation of Cabrillo's landing will occur at midday. Admission is free. The park opens at 9 AM and festivities begin at 10. Demonstrations and activities continue until 4:30 PM. The park will remain open until 6:15 PM.

From the superintendent

by Terry DiMattio

This issues focuses on the 50 years between the arrival of Christopher Columbus and Juan Rodríguez Cabrillo's voyage of exploration in 1542. I will let the rangers talk about the world then and the changes that took place. I would like to take a different tack and talk about some of the changes that have happened at Cabrillo National Monument over the past 50 years or so.

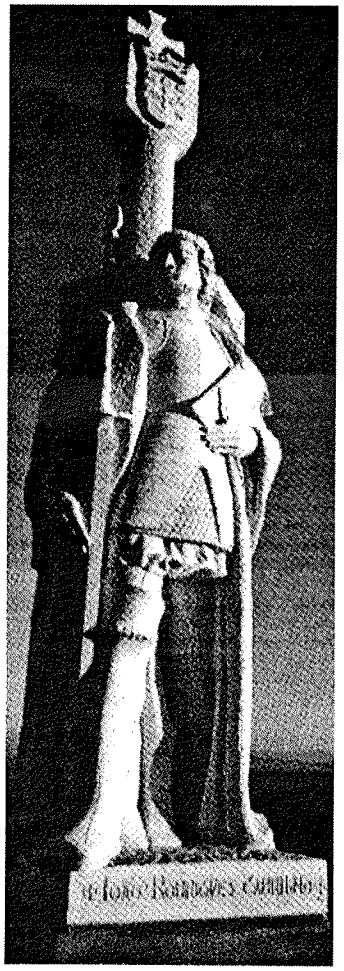
I used to think that 50 years was a long time. But the older I get, the shorter 50 years seems to be. For instance, it has been 30 years since I graduated from college. Time flies. In the life of a national park area, 50 years is not very long. For Cabrillo NM, the last 50 years have seen some remarkable changes. In 1949, the monument consisted of the one-half acre around the Old Point Loma Lighthouse, and it was administered by the superintendent of Sequoia National Park. World War II had been over for about four years, the monument was once again open to the public, and Americans were traveling to their national parks. There were 512,521 visitors to the monument that year. On September 28, the Portuguese American Social and Civic Club and the National Park Service dedicated the original statue of Cabrillo in the small patio north of the lighthouse. In 1952, Park Custodian Don Robinson introduced whale watching to the monument by opening one of the base-end stations to the public for this purpose. Four years later, Robinson became the superintendent of a now independent Cabrillo National Monument, and the Cabrillo Historical Association came into being. U.S. Representative Bob Wilson, long a friend of the monument, guided a presidential proclamation through the intricacies of congress, expanding the park for the first time. In 1959, the monument grew to 80 acres, and visitation rose to 998,900 people, only 1,100 shy of one million visitors.

With the addition of this land, the monument was poised to be developed under the National Park Service's Mission 66 program. Cabrillo NM would benefit greatly by this program, which was designed to build new visitor facilities, such as campgrounds, visitor centers and exhibits throughout the national park system by 1966, the 50th anniversary of the founding of the National Park Service. Under the guidance of Tom Tucker, who had become superintendent in 1963, planning and development of the visitor center complex moved forward. In 1965 construction began. For the first time in its history, the monument would have the facilities it needed: a visitor center, an auditorium, exhibits on Cabrillo and the Age of Exploration, modern restrooms, and adequate offices for the growing staff. And an appropriate place for the statue of Cabrillo.

In 1966, the park service moved the statue to its current location overlooking the entrance to San Diego Bay and Cabrillo's probable landing spot on Ballast Point. That same year visitation exceeded one million people, and has stayed above that milestone ever since.

The years following the opening of the visitor center saw the creation of "Voyage of Discovery," the first film on Cabrillo's voyage of exploration; the second expansion of the monument in 1974 and the opening of the Bayside Trail; the approval of the Master Plan in 1976; the revision of the books "The Old Point Loma Lighthouse" and "Whale Primer"; and the growth of the staff.

Tom Tucker retired in 1980, and that April Doris Omundson, now Doris Bowen, became the park's third superintendent. Doris took the first steps to replace the statue of Cabrillo, which had been cracked during its many moves and had become weathered during its years of standing watch over the bay. Thanks to a generous donation from Marion Reupsch, the statue was replicated in Portugal, and in February 1988, it was dedicated by Superintendent Gary Cummins, who had replaced Doris in 1986. During Gary's tenure we began collecting entrance fees for the first time, initiated planning for a new General Management Plan to replace the now out-of-date Master Plan, and began seriously removing the exotic vegetation around the developed area and replacing it with coastal sage and maritime succulent scrub plants and shrubs.



The new Cabrillo statue, dedicated in 1988

Gary transferred to Petrified Forest National Park in the fall of 1989, and the next June I became superintendent. Since that time the monument staff has accomplished a lot. We finished the General Management Plan, completed the plans for new exhibits on Cabrillo and the Age of Exploration, completed the new film, "In Search of Cabrillo," and with funding from and under the guidance of the Cabrillo National Monument

Foundation we remodeled the View Building and published two new books: "A Harbor Worth Defending" and "An Account of the Voyage of Juan Rodríguez Cabrillo." In the fall of 1990, the NPS began monitoring the tidepools; seven years later, based on the data from the monitoring program, we implemented the Tidepool Protection, Education and Restoration Program. We also hired our first staff members devoted to learning about the health of the terrestrial and marine ecosystems, and in 1995 joined with our neighbors in the creation of the Point Loma Ecological Reserve. This spring we installed new exhibits on the coastal defenses of Fort Rosecrans in the historic radio station, and later this summer we will build the walks and ramp that will provide full public access to this exciting new exhibit.

Of course, this is not all that has happened at Cabrillo NM over the past 50 years. It would take a book to tell that story. I think, though, it helps demonstrate that a lot can happen in 50 years. These accomplishments illustrate that in the life of this park those who work here are making improvements large and small every day. These accomplishments also help us realize that more good things are likely to happen in the next half century. I know that over the next few years you will see a number of changes that we believe will improve the condition of the cultural and natural resources under our care and make Cabrillo NM a more interesting, educational, and memorable place to visit.

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Seeds of Change—1492 Style

by Emily Troxell

As people of the Old World mingled with those of the New, their interaction produced seeds that would mature into life and death forces.

Some seeds were gifts producing mixed results. Some provided life, wealth, and prosperity; some dispensed death. In 1492 no one could predict the impact that any of these seeds would have.

One seed producing mixed results was the potato.

By the time Europeans arrived in the Americas, the native people had developed over 3000 different varieties of potatoes. They were important to the diet of the local people, growing in many climates and ranging in taste from sweet to sour.

European explorers found the potato a curiosity, and took this interesting plant home. At first, the people of Europe were afraid to use it as a food source: Since potatoes are classified as a member of the nightshade family, they thought they might be poisonous. Eventually Europeans began using potatoes for food since several varieties flourished in their climate. Moreover, growing potatoes required far less work than wheat. Potatoes produce three times more calories per acre than wheat, and processing wheat into a usable product consumed many more calories than cooking a potato. People thus had more leisure time when they adopted the potato as a major food source. The general health of the people improved, resulting in an increase in population; the potato provided the calories to feed these people. All was in balance.

Then, around 1845, a blight infected the potato crop, making it unusable for food or for planting. When the primary source of nutrition was lost and there was no other crop available to fill the void,

Potato harvest in Peru

huge numbers of people died of hunger. Others, realizing that life held little for them in their native lands, migrated to the land of plenty—the United States. In 1847 a much drier summer checked the blight, and about this time new varieties of potatoes were developed that were not as susceptible to this problem. After a few years, mixed farming patterns that included cattle, hogs, and horses, in addition to potatoes, came into existence. The population stabilized at a lower number than before and life moved on. The people had learned not to have too much of their food supply depend upon a single source.

One seed—maize—brought life, wealth and prosperity.

Corn was an indispensable part of agriculture in the Americas. As agricultural practices developed, the people grew corn, squash, and beans as staples of their diet. Squash and beans were planted among the corn so the cornstalks could provide support and shade. All of these foods could be stored for long periods of time. But most importantly, they worked together to

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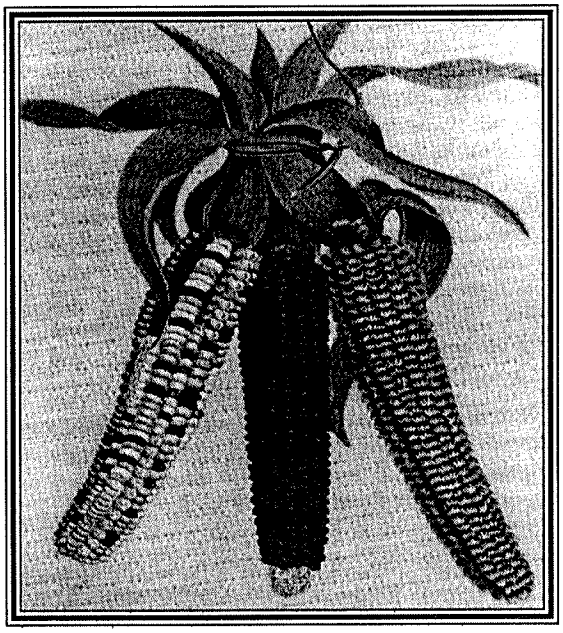


provide a balanced diet. Coupled with peppers, all the elements of good nutrition were present.

The Europeans took corn from the Americas and introduced it to Africa and China. Coastal Africans found corn useful, and began to depend on it as a food source. Use of corn did not spread quickly throughout Africa, in part because African people did not travel as much as people in other parts of the world. Also the harsh climate of the interior of Africa was not suitable for its growth.

The people of China found corn quite agreeable. They soon were planting corn on land that was not developed for rice. The fields did not have to be terraced, and corn required less water than rice. True, rice and corn produce about the same amount of calories per acre, but corn requires less work and time than rice. The result was more food for the population. Different varieties of corn were developed that worked well to feed both man and animal. All varieties grew quickly enough so that central China could support a full crop during the summer months, and several crops could be grown each year in the southern areas.

Today corn provides 30% of the caloric value of the Chinese diet. Large quantities are used in processed foods. Specific varieties are used primarily for animal feed. After the corn is harvested, corn straw is burned to renew the soil and to make way for other crops. At times the smoke from the burning cornstalks creates a haze so thick that it is hard to see any distance. The dried corn grown for animal feed, while still on the cob, is hung on trees in huge strings that can be as long as 20 feet long and six feet across. Here the corn will be safe until it is time to feed to the livestock.

As China moves into the twenty-first century, this seed supports and enriches her heritage just as it has that of the Americas.

And one seed dispensed death!

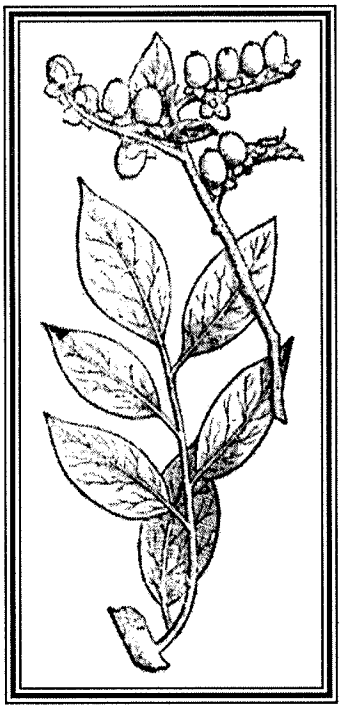
"In the yere of Chryst 1493 or there aboute, this most foule and most grevous dysease beganne to sprede amonge the people," wrote Ulrich von Hutten, a noted sixteenth century European observer. Where syphilis started is still in question. However, some records are clear. No similar disease description has been found in the Old World pre-Columbian literature. No Chinese records indicate a similar disease. Evidence of syphilis has been found in early remains of the people of the Americas. Syphilis, also known by many other names, was not reported in Europe before 1493.

The disease soon brought misery to many people in the Old World. Shortly after infection, a widespread rash and ulcers appeared. The sores often extended into the mouth and throat. Severe fevers and bone pains were frequently accompanied by early death.

Rapid spread of venereal diseases requires contact between many individuals. When ships entered foreign ports after many months at sea the crewmembers often engaged in sexual encounters with local inhabitants. When the crew returned home, the disease was spread to their spouses. A similar situation occurs during periods of war. In 1494, Charles VIII of France wished to claim the throne in Naples. His troops marched across the Alps into Italy. As was the custom, his soldiers followed their conquest with bouts of rape and pillage. The syphilis epidemic grew exponentially and Italy recorded the first widespread outbreak of this horrible disease.

The only known remedy for syphilis in the Americas was to boil the wood of the guaiacum, a tree. Use of this medicine caused the patient to perspire freely which apparently had a palliative effect upon the disease. Soon it was used widely as the only possible control of the disease—other than abstinence. By the seventeenth century, the effects of the disease had become less intense. But the legacy remained.

As the Europeans continued to exchange cultural and physical assets with the people of the Americas, the societies of both people were affected in ways more profound than either could have predicted.



Guaiacum, a medicine from a West Indian tree, was used by Native Americans to treat syphilis.

Where in the World Were They?

by George Herring

Christopher Columbus was lost to his dying day. In fact, between 1492 and 1542, *all* Europeans in the New World, in a sense, were lost. Why? Because most Renaissance mapmakers accepted the classical belief that China was located approximately 180 longitudinal degrees east of Europe[1]. It is actually 120 degrees east. In this article I will use early 16th century maps in an attempt to convince you why Columbus, Juan Rodríguez Cabrillo, and others thought Asia lay just beyond the western horizon.

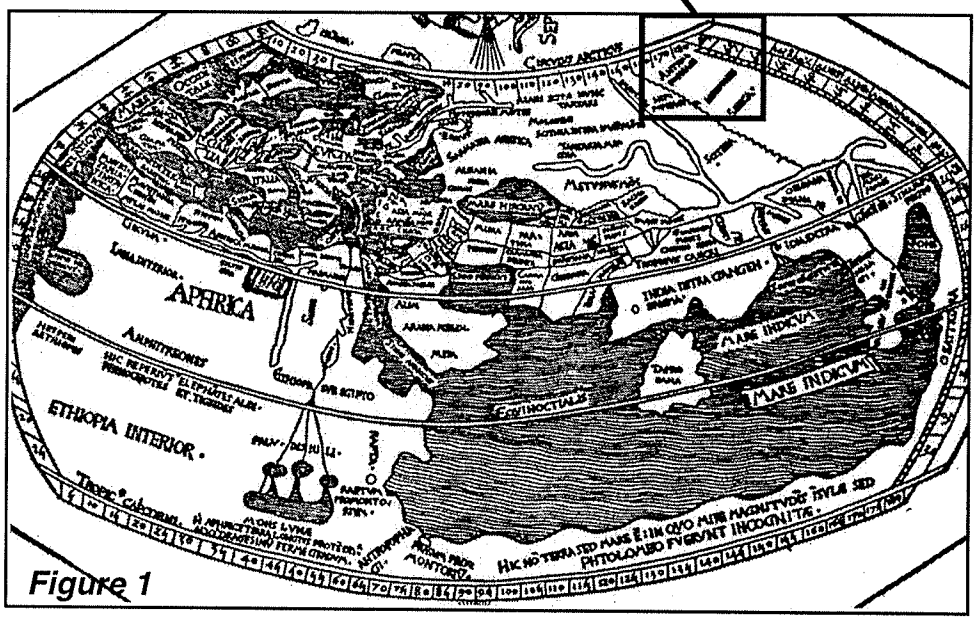
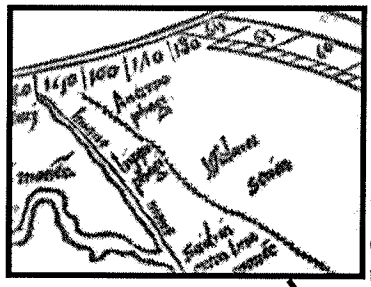


Figure 1

Let's begin with this 1503 woodcut-map (Figure 1), drawn by Gregor Reisch, based on the work of Claudius Ptolemy, a Roman-Egyptian geographer of the 2nd century AD[2]. Ptolemy collected the geographic work of other scholars and the tales of travelers to fill in the details of this map. A 1478 version of the same map is known to have been in an Atlas owned by Columbus. The important feature of this map to note relative to our story is the extent of its eastern extreme. Asia is depicted as extending more than 180 degrees to the east of Spain!

Why does the map depict Asia extending so far to the east? Because Ptolemy said so, that's why. Renaissance scholars had no means of measuring longitude and only crude estimates of the distance covered by ships. They had no reason, or evidence, to refute the knowledge of Ptolemy. Columbus, like most explorers for 100 years after him, accepted Ptolemy's estimate[3]. And, like many amateur scientists, he manipulated his data. He interpreted the writings of Marco Polo to indicate that the mainland of Asia extended east 253 degrees, and he cited Polo's accounts of a large island named Zipango (Japan)[4] said to lie an additional 30 degrees east of China. This left, in his estimates, about 77 degrees of ocean to cross from the Canary Islands to Japan[5].



When Columbus bumbled into the West Indies he had traveled about 60 degrees, but he estimated he had traveled about 75 degrees—far enough, he thought, to have reached the eastern fringes of the East Indies. Since the people he encountered appeared to be "Indian," it was natural for him to conclude he was in the "Indies." He maintained that Cuba and the other islands of the Caribbean were the East Indies until his death in 1506.

Scholars and explorers throughout the early 16th century argued about just what Columbus had found and how it fit with the writings of Ptolemy and the beliefs of the Church. Consistently they persisted in the belief that China lay less than 180 degrees west of Spain (60 degrees or less west of Mexico.) Furthermore, according to the Bible the apostles had spread the gospel to all the peoples of the world. For this to be feasible it was necessary for mapmakers to depict the Americas as accessible from Asia. Virtually all 16th-century maps, therefore, depicted Asia and the Americas as connected or separated by only a narrow strait of waters (the Straits of Anián) somewhere in the North Pacific[6].

The next map (Figure 2, p.8), probably by Giorgio Callapoda in 1550, is typical of such mid-16th-century maps. The tip of the Baja California peninsula is shown as 245 degrees east (115 degrees west) of Spain—15 degrees too far to the west[7]. The easternmost regions of China (Mangi) are shown as lying 210 degrees east of Spain; Japan is shown midway between them. Only 40 degrees separates New Spain from China!

Assuming Asia to be relatively close, the Cabrillo Expedition set out from New Spain in 1542 with high hopes. Cabrillo sought an east–west trade route to the Indies along the Pacific coast, which appeared to tend toward the west[8]. Since China was

Continued on next page

thought to be only 40 degrees to the west it seemed a good gamble[9]. Even after return of the expedition in 1543, which found that the coast tended north in California, the belief that China was close still persisted. Now, however, most maps depicted Asia and North America to by joined at a latitude of 45 degrees north or greater (above the 42 degrees of latitude the expedition reported reaching.)

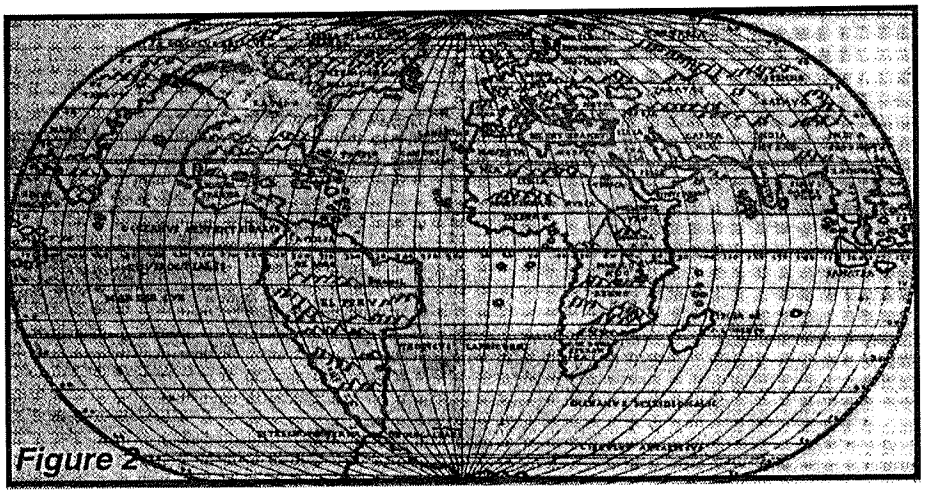


Figure 2

This can be seen in both the Callapoda map, and in the map, by Paulo Forlani and Bolognini Zaltieri dated about 1556 (Figure 3). Besides perpetuating the myth that China was relatively close to New Spain, I find this map particularly interesting because it clearly portrays knowledge of the Cabrillo expedition. Look closely at the West Coast of North America and you will see Cabrillo's place-names applied to the West Coast of North America: P.de S. Michel (Old Italian for Puerto de San Miguel—Cabrillo's name for San Diego); Galera—Cabrillo's name for Point Conception; and Sierra Nevada—the name Cabrillo provided for the Coast Ranges of California. Other familiar Cabrillo place-names appear on the

map. Reports of the Cabrillo expedition had obviously reached the mapmakers of Europe!

Not until the Manila Galleons began regularly crossing the North Pacific in the late 16th century did European maps begin reflecting the true distances between Asia and North America. This 1587 map by Gerhard Mercator (Figure 4, p. 9) is the first I am aware of that began to portray the true distances involved in an east–west crossing of the North Pacific.

Between 1492 and 1542, European explorers foundered on an important geographical question: How far is it to Asia from Europe? Relying on classical and Biblical sources, their world view tended to place Asia much farther to the east, and therefore much closer to the west, then it actually is. Because of this, early explorers in the New World didn't really know where they were. They were lost. To Columbus and Cabrillo the Asian spice trade always seemed to be just over the western horizon. With this motivation drawing them onward, 16th century Europeans pushed back the unknown until, at last, they came to realize the true dimensions of their world.

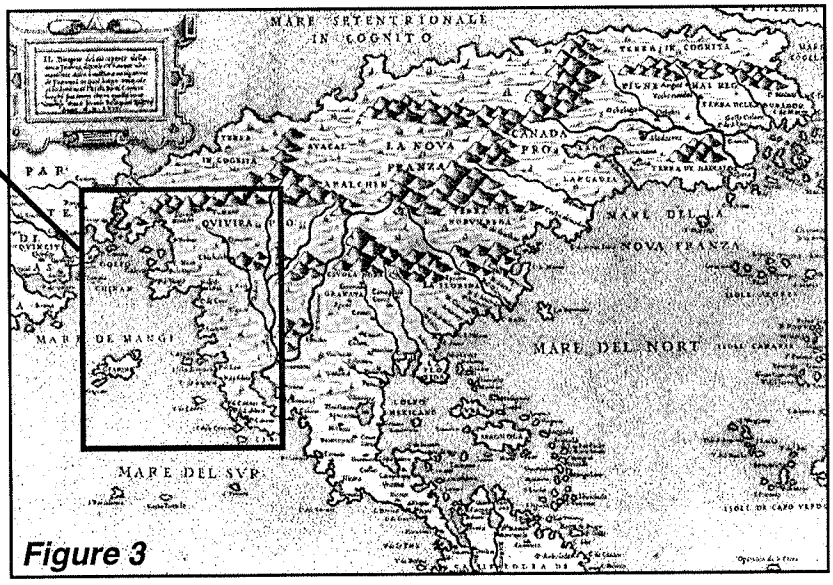


Figure 3

Notes:

1. As you look at the maps, please note that in the early 16th century 0 degrees of longitude is drawn through the Canary Islands which is 9 degrees west of 0 degrees on a modern map.
2. Early in the 15th century the works of Ptolemy and many other ancient Greek writings were translated from Greek into Latin by Byzantine scholars fleeing the crumbling Byzantine Empire. This, combined with the invention of the movable type printing press, helped fuel the Renaissance. This in turn led to the wide publication of maps such as the ones printed in this article.
3. I have yet to find a historian or

geographer's authoritative opinion of how many miles each Ptolemaic degree represents. Nonetheless, they appear to be close in distance to modern maps. Presumably Ptolemy accepted and continued the estimate of Erastathenes (276-196 BC) that the circumference of the earth is 252,000 stades. A stade (one stadium length) is believed to have been 148 to 158 meters, making Erastathenes's estimate at about 38,000 kilometers—remarkably accurate. The earth's circumference at the equator is 40,076 kilometers, which is slightly wider than the planet's north–south circumference which Erastathenes measured. He made his estimate by triangulating the shadows created by the sun from statues and in wells at different latitudes, at high noon on the same day.

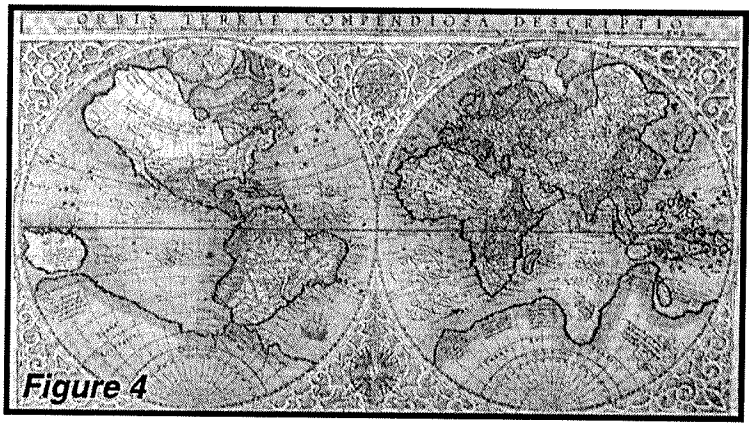


Figure 4

4. Zipango is Marco Polo's mispronunciation of the Chinese word, Jih-pan-kuo, meaning "land of the rising sun." Marco Polo was correct that Japan is about 30 degrees from Peking, but it is to the north–northeast, not east.

5. Christopher Columbus wildly underestimated the distance of a longitudinal degree at 28 degrees north latitude to be 62 kilometers (it is actually about 90 kilometers). His estimate would have made his crossing from the Canaries to Japan about 4300 kilometers. No Classical or Renaissance scholar believed Japan could be that close. Paolo dal Pozzo Toscanelli, using numbers from Greek sources before the time of Erastathenes, estimated the distance might be little as 5200 kilometers and said so in a letter to the Portuguese king Alfonso II in 1478. This letter had a strong influence on Columbus, but most contemporary scholars regarded Toscanelli's estimate as foolishly optimistic.

6. They were not, after all, wrong. Only 48 miles separates Alaska and Siberia, but this strait is far to the north and west of their projections. Any view which differed greatly from that of the establishment might have drawn the attention of the Inquisition in this time period. This may have reinforced the view that modern Korea and British Columbia were close together or a single land mass.

7. Many maps after 1541 depict Mexico City as 115 degrees west of Toledo, Spain. This was based, inaccurately, on a scholarly guess. To estimate longitude scholars needed an astrolabe, which they had, and a means to know the exact time where they were relative to the point from which they were measuring their distance. No clock at that time could keep accurate time during a ship crossing. Thus people in the Americas had to guess how many hours behind Europe they were. By observing two lunar eclipses from both Mexico City and Toledo, scholars hoped to calculate the exact time difference between both locations. They calculated wrong and subsequently estimated the distance between the two cities as 115.5 degrees. It is actually 90 degrees, a difference of 25.5 degrees, which is an error of about 2400 kilometers!

8. Compass needles point to magnetic north, not true north. Most early 16th-century explorers on the Pacific Coast of the New World failed to adjust for this compass declination error, greatly influencing maps of the period. At the tip of Baja California this error is 12 degrees, which explains why the first maps of the peninsula depict it tending northwest to southeast. Likewise, maps of the Pacific Coast of Central America depict it as tending east–west, leading to the designation of "South Sea" being applied to the Pacific Ocean south of it. In their minds this east–west orientation compensated in the northern latitudes for the vast east–west distance covered by Magellan in the South Pacific.

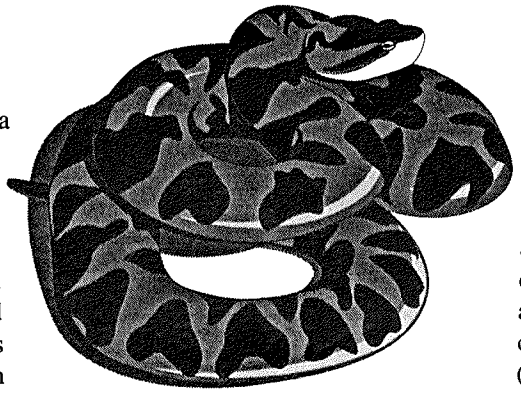
9. Careful reading of *An Account of the Voyage of Juan Rodríguez Cabrillo,* page 81, reveals that Bartolomé Ferrelo, on his second attempt to get around Point Conception, sailed "southwest" from the Channel Islands about 100 leagues (400 miles) before running north and east. Might he have been looking for Japan? Maybe, maybe not, but interesting to think about.

Suggested Further Reading:

Thomas Suárez's *Shedding the Veil* contains an excellent collection of world maps from the period and his commentary on how these maps evolved is fascinating. Samuel Eliot Morison's *The Great Explorers* is a good general introduction to the navigational assumptions and accomplishments of Columbus and other explorers in this period. To learn more about Cabrillo's place names and for an excellent modern translation of the account of this expedition see *An Account of the Voyage of Juan Rodríguez Cabrillo* published by The Cabrillo National Monument Foundation.

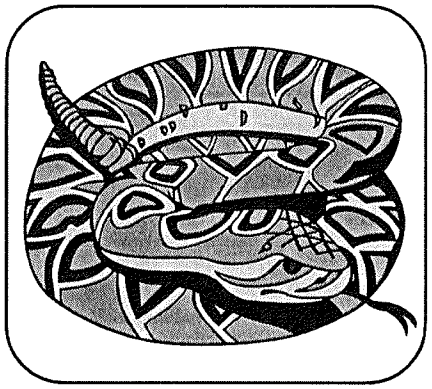
The "H" upon my brow

by Samantha Weber



I have an unusual officemate—a Burmese python. I am snake sitting. That seems to be the way with herps (reptiles and amphibians). Once it is known that you like them, people treat you differently. You start to get stuffed lizards, plastic snakes, and gecko pens for gifts. People cut out articles on herps and mail them to you. Once I checked my mailbox at work and found not paperwork but a dead western fence lizard (*Sceloporus occidentalis*). No note to accompany it, no toe tag, just a sad little lifeless body. Although I felt bad for the little guy, the situation itself was almost comical in that people are comfortable enough with who I am and what I do that they'll anonymously leave a dead body in my "in" basket and feel assured that what needs to be done will be done. This is particularly true when it comes to herps. This was one of a series of clues that have led me to believe that I bear a scarlet "H" on my forehead—invisible to me, but easily read by those who know me.

A fun part of that "mark" is that other people who like herps know that you are "okay." This is not snobbery. What it means is that while you watch their eyes sparkle during their re-enactment of some particularly exciting snaky encounter you are not thinking "Who is this crazy person and will someone please call security?" Instead, you are leaning forward in your chair, saying, "Wow! I'm so jealous!" And you mean it.



Recently, a herpetologist friend of mine, Chris Brown, who works for Dr. Robert Fisher at San Diego State University, related a particularly interesting encounter with a red diamond rattlesnake (*Crotalus ruber*). I was looking at some spectacular slides he had taken of one and, of course, I was jealous. I wanted to know how he had accomplished this feat. Chris and I are creating a poster for the herpetology study as part of the park's Canon USA, National Park Foundation's "Expedition Into the Parks"grant program. This is a grant Dr. Fisher and I received in 1998, right when the herp study was running out of fiscal gas. As "Project Manager," part of my commitment to the grant is to develop an educational poster of the reptiles and amphibians of Point Loma. Toward that end, Chris, VIP Todd Partridge and I have been meeting to look over Chris's photos, reviewing what we have and determining what we need. Todd is the graphic designer for the poster; he is particularly well qualified for this job because besides being a brilliant graphics designer (that's his day job) he has helped sample herps here since the earliest days of the project. This man knows his side-blotched lizards from his western fence lizards. The three of us get together from time to time and look at great herp photos, swap zip disks full of images and the occasional adventure story—like this one explaining how Chris got those amazing red diamond rattlesnake photos.

Chris and his friend were out for a hike recently when they saw a dead rabbit in the trail. It was freshly dead but didn't show any obvious injuries, so they were intrigued. His friend bent over to examine the rabbit more closely and was just turning to tell him "There's these two swollen bumps on its neck..." when Chris said "Snake!" Headed their way, looking both beautiful and focused, was a red diamondback rattlesnake. This animal is easily distinguished from our southern Pacific rattlesnake (*Crotalus viridis helleri*) by the black and white bands visible just before its rattle. This particular snake was headed toward its dinner (said rabbit), having apparently created the two swollen bumps (fang marks) on the rabbit at no small risk of personal injury, and seemed unamused by having its dinner so rudely examined by passersby. After some quick and careful photos of questionable wisdom, Chris and his friend left the snake to dine in peace, with slides and story in tow. PLEASE, folks, do NOT try this at home. Chris is a very experienced, professional herpetologist and even he yells "Snake!" when a rattler is heading his way.

Another benefit of bearing "the H mark" is that herp folks begin to trust you to care for their beloved pets—the ultimate compliment. This is my first snake-sitting job, so I'm particularly proud and determined to do it right. Right now, Monty, the Burmese python I mentioned, is happily napping inside a box Jeff Allen and I placed in her cage Monday. Nice, dark, cave-like thing and she instantly fell in love with it. Crawled right in and hasn't really come out since (except, based on some small pieces of evidence, to powder her nose). Jeff, an intern for the Natural Resource Science Division, has had this python since she was a baby snake. When he first got her she was only as big as a pencil. If you're near a pencil, pick it up. Mentally place eyes on it and a heart inside it. That's not a big animal. Now she is three and one half to four feet long with beautiful markings.

This stint of snake sitting will help me decide if I, too, want a pet snake.

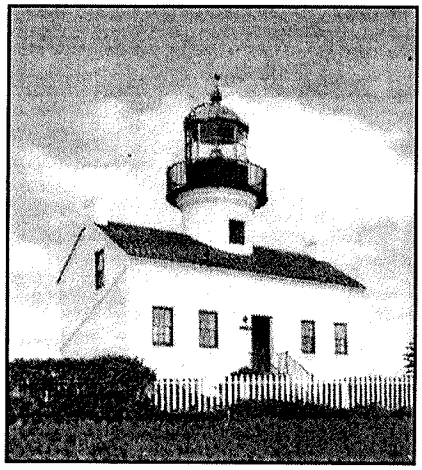
That is a big step in the ladder of herpetological devotion and will take some careful consideration. Particularly since I, at present, have zero pets; just a few plants with minimal personalities (well, except for the carnivorous ones). I am getting desperate to have some other heart beating in my house besides mine, however slowly.

If I decide on a snake, I think I'd want a rosy boa (*Lichanura trivirgata*). I am not the only one. Rosy boas are native to San Diego and very popular pets. They are rosy pink and grey with glossy skin, they are docile, do not get very large (max out at 44 inches according to Peterson's Field Guide) and live well in captivity. This is part of the problem. Rosy boas have been captured and removed from the wild for years by conscientious herp enthusiasts and shiftless profit-seekers alike. Combine that with the usual progressive loss of habitat, and rosies are now much less a part of our landscape than they had been. That is why I asked the herp guys for the name of a pet store that raises its own rosies vs. taking them out of the wild. That is the only place I'd even consider buying an animal native to the area.

Given the possible ethical conflicts of seeking a native species as a pet, why even go native? There are two reasons. The first is that I want to learn about the southern California natural environment, particularly those aspects of it which are relevant to Cabrillo National Monument and Point Loma. I am less interested in learning about a snake from, say, Burma (nothing personal, Monty). This is why I came back to southern California in the summer of 1992 to do my thesis work, versus staying in Michigan where I was a graduate student. I wanted to learn about this community, the amazing collection of unique plants and animals which together comprise what I see myself as duty-bound to try and understand and preserve.

Second, I have decided that one of the best ways to learn about something is to raise it (wherever this is practical and ethical). A friend of mine who studies moths proved this to me. His name is Dan Rubinoff, a Ph.D. candidate at U.C. Berkeley. He has been raising moths and butterflies since he was a kid. At any one time of the year, Dan knows which of dozens of species will be laying eggs, hatching, what they eat, what they'll need for their metamorphosis (a branch to hang from or dirt to dig under), and about how many months or years they will hang out until they come out. He is even attuned to what sort of environmental conditions they need before they will peek out (e.g. cold and wet, then warm)—this is critical because he only wants to be here in San Diego when his particular "bugs" are out. Much of this is because he raised them and their very lives depended upon his understanding of their often quiet particular needs. I want to experience that level of understanding.

In the end, if I do get a pet snake, then the mark on my brow, which is now fairly light, will become much darker and probably permanent. I will start to learn more and more, want to talk about my snake, read about my snake, and end up spouting what I think are delightful snaky anecdotes during lunch at work, but which may end up clearing the room. That's okay, though. My advisor would be proud (she studied frogs), and I'd become a member of a caste of marked people I've found to be uniformly approachable, enthusiastic, and fun. Plus, I'd have that a precious little heart beating in my little home. Thump...thump...thump...



National Park Service birthday celebration

August 25th, 1999, marks the 83rd birthday of the National Park Service. Cabrillo National Monument will celebrate the occasion by opening the tower of the Old Point Loma Lighthouse to the public from 10 AM until 4:30 PM. Birthday cake will be served in the visitor center view building at 2:30 PM. Admission to the park will be free on that day.

The tower is open to visitors only twice each year, the other occasion being the anniversary of the completion of the lighthouse, November 15.

We invite you to join us on August 25 to share in the celebration and take advantage of the rare opportunity to experience the magnificent view from the tower. Interpretive staff members will be on hand to talk about the lighthouse, the historic Fresnel lens, and the life of the lightkeepers.

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