

CHAPTER FOUR

Managing the Humors

In July 1757, the Condesa de Miravalle noted in a letter to her son-in-law that she had been so busy attending to sick family members that she had not even had time to purge herself. An author of one of the *Relaciones Geográficas* from the sixteenth century remarked that the Indians of Cuicatlan were usually healthy, although they sometimes got fevers from eating too much fruit. And in his account of their journey through Mexico in the 1580s, Antonio de Ciudad Real described the experience Fray Alonso Ponce had when he fell deathly ill with *dolor de ijada*. According to the chronicler, the cause of the illness was self-evident: it came from "the [rain] water that fell on him, and the excessive cold he experienced from Xalapa to Quechúlac, such that,—all of this entered his side [*ijada*] and took root there, so that in order to cure him, many *beneficios* were necessary . . ."1

Each of these anecdotes is revealing. Collectively they confirm that ordinary people—that is, those outside the circle of medically trained professionals—had well-formed ideas about what constituted a threat to health. Examined more closely, they display some of those notions being applied in daily life. To maintain the body's humoral balance, a periodic purging or bleeding was viewed as an especially beneficial prophylaxis; food, with its elaborate qualities—hot and cold, wet and dry—directly influenced the inner workings of the body, hence its heavy medicinal use as well; and exposure to all sorts of environmental hazards—excessive heat, cold, or humidity, sudden temperature changes, bad air, and putrid vapors—produced dangerous physiological changes.

Behind these lay notions about illness were particular ideas about the nature of disease and the inner workings of the human body. Here we explore these ideas through the prism of European medicine, a body of thought imported into Mexico during the very first years of the viceroyalty and the only legally sanctioned medical model throughout the three hundred years of colonial rule. Early modern medicine was based largely on humoralism, a set of anatomical and physical ideas inherited from ancient Greek medicine. Although these theories were quite elaborate and not fully accessible to many outside a small circle of educated professionals and laypeople, the basic notions about the human body that underlay them were widely accepted in the general population. Apart from divine or supernatural causes, the most common threat to human health lay in the environment and in one's own daily lifestyle. Consequently, a large part of early modern medicine was as concerned with preventive health care as it was with the treatment of disease. Ideally, the practitioner sought to maintain a patient's health by regulating his or her environmental conditions, diet, exercise, rest, and psychological well-being. Our point of entry here will be to delve into that body of advice lore, proffered by contemporary experts, which emerged around the classical rules of hygiene, or what today we would call preventive medicine. When viewed with other colonial sources—personal letters, chronicles, travelers' accounts—this point of intersection between medical theory and daily life, which was the area of academic medicine that was most accessible to laypeople, contains

invaluable clues about an important part of everyday life in colonial Mexico, namely, how people thought about and managed their health. It also provides another angle from which to view Europeans making sense of the new climates, foods, and peoples of their colonial possessions.

European Origins: Humoralism

Humoralism first emerged in the fifth century BC in the Greek communities of Ionia (Asia Minor) and the Greek mainland, and for more than two millennia it formed the basis of the Western medical tradition. Although its theories were continually being revised by later scholars, its main features remained recognizable up to the birth of modern medicine in the nineteenth century. Its most basic premise was that a person's health was the result of a natural balance of the four main bodily fluids, or humors, and that illness resulted from a disturbance in that balance. The early Hippocratic texts on medicine depicted the body in constant flux making health precarious as it was continually exposed to the harmful influences from one's diet, lifestyle, and the environment. Thus, a diagnosis of a particular illness was a complicated matter, as so many factors, both inside and outside the body, might be involved. Yet if the right balance of humors could be found, health could be restored and, with a good deal of prophylaxis, be maintained as well. Humoralism was a holistic medical system: it stressed the unity of the individual, the connection between mental and physical processes. It also was both highly individualist—in that each individual had their own natural humoral composition, or temperament—and universal, because the variation of diseases was not unlimited and the same pattern of illness could afflict many individuals.²

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One of the most important developments of classical Greek thinking was its promotion of natural explanations for the phenomena of the world. In the field of medicine, this led to the search for natural explanations of disease, a major departure from medical systems that saw illness originating from supernatural entities, either as divine punishment or the manipulations of people with special powers. In the Hippocratic text *On the Sacred Disease*, the author explicitly ridiculed the idea that epilepsy was caused by divine forces and in fact none of the works of the Hippocratic Corpus, the earliest writings on humoralism, contain any mention of disease being caused or cured by the gods. These early writings were later synthesized in the second century AD by Galen of Pergamum (now Bergama, Turkey), who united clinical Hippocratic medicine into a theoretical framework. Galen produced and promoted a vast opus of some 350 works ranging on such topics as bloodletting, the pulse, and the soul. Translations of the Galenic and Hippocratic texts into Arabic in the ninth century spread humoralism throughout Muslim lands and during the Middle Ages these same texts were introduced into the Latin West, forming the basis of learned medicine for the next millennium. The Galenic system linked the four elements and their qualities—fire (warm), water (cold), earth (dry), wind (moist)—with the four humors in the body: bile (warm-dry), phlegm (cold-moist), black bile (cold-dry), and blood (warm-moist). The natural mixture of

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these humors determined an individual's temperament, most people having one or a pair of humors in predominance, which, in turn, determined psychological as well as physical disposition. A vestige of this belief survives today in the English adjectives sanguine, phlegmatic, choleric, and melancholy to describe personality traits.³ That medical theories and therapies would have centered on bodily fluids is understandable. The word "humor" comes from the Greek word for fluid or juice. Because all living things have some form of fluid—sap in plants, blood in animals—assigning them a vital part in the physical process of life made perfect sense to people in ancient times who based their understanding of the world solely on its observable phenomena.⁴

A large part of classical and early modern medical writing was concerned with what today we would regard as preventive medicine, or what the Greeks called "hygiene" or "regimen." Today, hygiene's association with health is mostly limited to ideas of cleanliness; since the nineteenth century, the germ theory of disease—the idea that microorganisms can cause illness—has made us aware of the role cleanliness plays in the maintenance of health. The classical view of hygiene, however, was not necessarily concerned with keeping clean but with personal lifestyle and one's relationship to the environment. Climate and geographical location, food and drink, patterns of sleeping and waking, the retentions and evacuations of the body, motion and rest, and one's emotional state were all taken into account when explaining and curing sickness. Sometime after Galen, these were often referred to as the six "nonnaturals," a term with mysterious origins and somewhat confusing connotations because they were indeed natural processes of the body. In his *Ars Medica*, Galen explained why hygiene was so important for one's health:

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Of necessity we are immersed in the surrounding air, and we eat, drink, wake and sleep. We are not necessarily thrust against swords or beasts. Hence in the first category of causes but not in the second there is an art devoted to the protection of the body. Now that these matters have been set forth, we shall find in each of these items which necessarily alter the body, its own kind of healthful causes. One comes from contact with the surrounding air, another from movement and rest of the whole body or its parts, a third from sleep and waking, a fourth from things taken into the body, a fifth from those that are excreted and returned, a sixth from affections of the mind.⁵

The six nonnaturals were not viewed solely as prophylaxis but as a framework on which to structure therapies as well. The intake of medicine figured into the category of food and drink, bleeding and purgatives were an important element of bodily evacuations, and much attention was given to the type of environment or air best suited for curing ailments. A patient's emotional state was not to be neglected either; passing time in the countryside with pleasant company might prove more effective than the most potent elixir.⁶

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The theory of humors was further strengthened, and complicated, by coordinating them to the time of year and to the stage of one's life. Thus, a particular humor predominated during each season and at different ages of a particular individual. Blood, for example, was more abundant

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in young children and in everyone during the spring, resulting in more diseases caused by a *plethora* of blood, such as spring fever or bloody noses. In summertime, and during youth, the hotter and drier yellow bile predominated; black bile in the fall and throughout adulthood; and phlegm, being cold and wet, increased in winter and in old age. Linking the four qualities with observable phenomena not only boosted the explanatory force of the medical model; it also provided the doctor with some foundational information by knowing in advance just what humor was likely to be predominant and which were likely to be deficient. Of course, this added to the complexity of diagnosis because one's stage in life did not necessarily correspond to the season and each person had their own humoral composition.⁷

It is not difficult to see why humoralism became so dominant in Europe and in the Islamic world. Its ability to explain almost anything made it both credible and unfalsifiable, provided one accepted its premises, which according to Galen were "common notions," or "what everyone knew." Moreover, its errors could easily be ascribed to the practitioner or patient, not to the system itself. Perhaps its real strength was that it offered a basis for treatment, and, even more important in an age before effective medicine, for prophylaxis, that to a large extent corresponded to what the patient might observe. Many illnesses do tend to be more common at certain times of the year, attack certain age groups and not others, and seem to get better after treatment.⁸ In other words, because of its inclusiveness, flexibility, and accessibility the system worked well for physician and patient alike, which helps to explain its long dominance in Western culture.

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Above all, to the physician it offered the apparent certitude of an effective system of practice. Its very antiquity, even to Galen, helped to confirm its authority. Its regularity provided a method for controlling health and disease, by both intervention and prophylaxis, while at the same time its emphasis on the individuality of each patient and ultimately of each condition gave ample opportunity for practitioners to display their skills and their learning in understanding that individuality and in prescribing accordingly. Yet, as a system, it was sufficiently simple for many patients to grasp, and even thereby to treat themselves, and hence to join with their physician in a combined attack on disease. The very accessibility of humoralism may well have helped to establish the credentials of those who put its theories into practice at the bedside, and has given the patient added confidence in what was being done, simply through being able to follow what was being said or prescribed.⁹

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Thus, as a framework for conceptualizing how the body worked, humoralism's great advantage lay in its accessibility to the layman. Like other aspects of their European culture—and that part of a culture concerned with the constraints of life and death, health and disease, surely is one of its most significant—the humoral medical model was fundamental to a Spanish understanding of the natural world. During the early years of New Spain's existence, it was dominant only where Spanish settlement occurred. Because they rejected indigenous medical practices, Spaniards set about importing their own medical institutions, personnel, and knowledge from the mother country. But as Spanish and, later, Europeanized mestizo

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communities, grew, so did humoral medicine. Although other medical approaches—indigenous medicine, Christian faith healing, rituals based on magic—robustly functioned alongside it, and, indeed, were incorporated into its methods, humoralism eventually became the dominant way of understanding the body in nonreligious terms by the late colonial years.

Hazardous Environments and Risky Behavior

Juan de Esteyneffer begins his eighteenth-century medical guide, *Florilegio medicinal de todas las enfermedades*, with some general information about why people become ill. Disease causes fall into two large categories, he writes: the first group consists of "intrinsic" or interior causes, that is, they come from the humors themselves, which sometimes "make sick the inside of the body and all its parts"; the second type, the "extrinsic" or external causes, are much more common: 12

These are called so because they are offered outside the human body, by which they alter and vary its maladies, [they are] the air, food and drink, sleep and awakesness, movement or exercise and rest, evacuations and retentions, passions of the mind [*los accidentes o pasiones del ánimo*]. All are necessary and all affect the body. Those maintained in a measured and proportioned manner conserve the body's health, and those lacking or exceeding in proportion cause disease. And these are the most ordinary causes outside of others that sometimes appear.¹⁰

Esteyneffer's medical ideas, which were representative of learned medicine in the Americas and Europe in the last half of the seventeenth century, were still solidly based on a Greek medicine as it was first theorized in the Hippocratic Corpus, and later by Galen and Arabian authors. The art of hygiene, used here in its classical sense, formed the foundation for this medicine. As a holistic approach to health, it was primarily concerned with how one's body was affected by the environment and one's own lifestyle, and each of the six nonnaturals were separate factors around which preventative and therapeutic strategies were organized. As ideas about what caused disease began to change in the nineteenth century, and the nonnaturals became secondary, medicine lost its holistic quality. By the time scientists discovered that bacteria and viruses were the primary causes of infectious disease in the twentieth century, the concept of hygiene had similarly lost its holistic perspective, making dirt and hidden germs the motives behind modern hygienic practices. Social and cultural changes also influenced this evolution. In the eighteenth century, the elaboration of manners in the upper classes began to change standards of cleanliness, notions that filtered down to the middle classes in the following century. And although Christianity had always imposed moral and even ascetic overtones onto notions of hygiene (the sins of gluttony and drunkenness!), the shift to an emphasis on cleanliness cemented its association with moral worth in the modern collective mind. Not all classical conceptions of hygiene have been lost, however. 13

Lifestyle still forms a part of medicine, and increasingly so because what tends to kill us now are chronic ailments, many of which are associated with how we live. These are links to an older concept of hygiene, which has now lost its name.¹¹

People's ideas about the ages and stages of life were firmly linked to concepts about personal hygiene. The rules for good hygiene reflected the Hippocratic notion that different regimens and measures had to be appropriate to the age of the individual. The idea of the ages of man is, of course, an old one, with roots reaching far back into literature, religion, and medical theory. The Galenic view was that an individual's life span was fixed by nature; thus, the goal of proper hygiene was to reach the allotted number of years. During the Middle Ages and Renaissance, however, a more active and malleable view of nature slowly evolved in which the human life span could be prolonged with the right regimen. Much of the medical advice from this period advocated special remedies, diets, exercise, and bathing regimes to extend natural lifetimes.¹² **14**

Christobal Méndez, a sixteenth-century Spanish physician who wrote one of the earliest books promoting the virtues of exercise in Europe, included two chapters on the stages of life. "Everyone knows there are six ages," he writes, and "everybody should remember them to preserve his health and to know in what age he is included." The early years of life were classified similarly to our own modern notions of childhood: the period of infancy consisted of the first three years, when children should be rocked in their cradles "with sweet and pleasant singing"; and, from three to fourteen years, the age of childhood, "because up till then, man preserves his innocence." Méndez's advice for parents includes keeping children (almost all of his advice applies only to boys and men, as females were excluded from vigorous activity) away from games that were played for profit, like bowling or card games, because they are likely to "pick up bad attitudes which are dangerous." Also, if children are too active after eating, "they may suffer that unhappy disease, stone in the bladder." The third stage of life, adolescence, which continues to twenty-five years, is when people have their best health, "the period when we suffer least from work." The fourth stage, through age forty or forty-five, "when men are in complete strength and vigor" is youth; the appropriate form and amount of exercise is very important at this time of life, writes Méndez, because "if we do not do what is necessary to consume and expend [the superfluities], diseases attack that give trouble in old age like torments in the side and kidneys, gout, and the disease of stones." The last two stages, old age—up to seventy years—and the remaining years of very old age or "decrepitude," are the periods in life in which people "have very weak natural heat [and] the superfluities increase." Gentle movement and temperance in everything is the rule for old people. Proper exercise includes riding a mule, slow walking, and for very old men, being rocked "very gently in cradles because as they return to the age of children we have to give them the same kind of exercise."¹³ **15**

The human life span, then, could be viewed as a gradual process by which the body slowly lost its natural heat and, according to Juan de Cárdenas, the humidity that fueled it. **16**

. . . natural death . . . is when a man without any type of illness, but only from pure old age, dies for lack of any trace of the natural heat that has sustained him, and this he loses because he has used up that sustaining humidity, in which this natural heat is conserved.¹⁴

Life often was compared to a lamp or candle that would naturally extinguish itself when its fuel had been used up. "The light lasts as long as the natural heat and humidity of the oil does . . . as soon as any one of these qualities are lacking, it dies and goes out, and so is the life of man." One started out in life with plenty of heat; children and adolescents were naturally "hot" (even more so if their individual complexions were dominated by one of the hot humors), thus foods that warmed the body were only to be eaten with precaution. This age group, too, needed more circulating air in their sleeping rooms than other age groups so that it will "temper the fire and heat of their boiling humors." The progressive loss of this body heat was visible in the gray hair older people acquired. When heat left the body, the cold and wet humor phlegm took its place, and since "its own natural color is white, the force of its excretions . . . turned the hair white, because the hair is nothing but some humors and excretions which result from the humors of our bodies."¹⁵ One's personal regimen, then, was intimately tied to one's stage of life as well as to everyday health maintenance. 17

Invasive Airs

From the moment that humans began to find explanations for their illnesses in the natural elements of their own world, rather than in divine causation, the human milieu has been viewed as a prominent provoker of disease. Exposure to cold or hot winds, the sun's harsh rays, cold rain, proximity to lakes and marshes, and such urban features as cemeteries, public latrines, and garbage dumps were all believed to directly influence the inner workings of the body. In a myriad of ways, the environment posed a major health hazard. In the early years of the twenty-first century, the idea that external conditions play a part in the occurrence of disease is not an alien concept to us. The degenerative and chronic diseases that are the prime causes of morbidity and mortality in Western societies today are now frequently linked with changes in the environment. Modern studies confirm that sustained exposure to chemical and radioactive materials can cause some cancers, and our polluted air creates serious respiratory problems in many people. Although the particular aspects of the environment that are singled out as being unhealthy may have changed over the centuries, the linking of disease to conditions in the world that surrounds us is therefore not a new phenomenon. 18

For practitioners of Galenic medicine, illness was simply an imbalance in the humors of the body; not so simple, however, was knowing what upset this balance in the first place. Any variation or excess in personal regimen was always suspect, a topic we turn to below, but beyond this, were the elements of the environment that might trigger an episode of illness. It was common knowledge that climate produced physiological changes; everyone knew, for example, that cold and damp weather led to colds and excessive heat to fevers. Certain 19

endemic diseases seemed to be connected with certain geographical locations and weather patterns. And epidemics, which inexplicably inflicted the same symptoms on many people at the same time, frequently were blamed on bad or corrupted air.

One of the first texts in the Hippocratic Corpus to address the connection between the environment and health, *Airs, Waters, Places*, written sometime in fifth century BC, was designed to enable the practitioner to anticipate what diseases he was likely to observe in a new, unfamiliar town. According to this foundational text, both the cold north wind and south hot wind were best avoided for the threat of disease they contained. Topographical features such as altitude, exposure to winds, nearness to rivers, lakes, or forests also were critical factors when choosing a place to live or a travel route, as was the quality of water. The most dangerous waters were ones that were stagnant, such as those found in marshlands, or those emanating from a ground source, while the best waters came from high places. And rainwater, although praised as light, sweet, and clear, could quickly turn foul.¹⁶ **20**

Classical ideas on the connections between the environment and health show up often in colonial Mexican sources. The *Relaciones Geográficas*, the detailed questionnaire that circulated throughout New Spain between the years 1578 and 1585, contains numerous examples of Spanish preoccupation with the connections between geography, climate, and disease. Among the many questions generated in this ambitious project was one that asked if a town or site was healthy or not. The answers reveal a lot about lay perceptions of disease causation. The *Relación de Chinantla*, for example, says that "[this place] is hot, humid, and sick: it rains eight months of the year; for three months big, cold north winds blow, which cause the Indians to get sick with coughs and colds, and sometimes they get *dolor de costado*. The wind rules this province."¹⁷ Heat and dampness were dangerous to health, as was cold wind, but warmth and dryness were good: the town of Taxco "was more healthy than its surroundings, even though it is naturally hot, because . . . the high location makes it airy and from this it is moderately hot and dry."¹⁸ But too much dampness, not only from rain, but in the form of fog, mists, or evening dew as well could make one vulnerable to illness. "The *Villa de Tepuztlan*, is an unhealthy place because it is in a valley between some mountains . . . where, as there flows much water, there is an unusual amount of humidity and fog, which causes a heavy evening mist (*serenos*) . . ."¹⁹ The Indian *pueblo* of Chimalhuacan is unhealthy because of "the great quantity of humidity it has and from the vapor of the lagoon that is near it, and for the many sources of water and springs there are here . . ."²⁰ **21**

Personal accounts of illness also testify to the unshakable conviction people had about the role weather played in their health. Exposure to extremes of temperature, especially to coldness when it was accompanied by wetness almost always prophesied serious illness. A letter writer in the sixteenth century recounts for relatives back home the frightening accident he had while traveling near Puebla on horseback in December of 1559 and the resulting "*año de enfermedad*" that followed. **22**

. . . a horse fell with me into the river, and it was my misfortune that this happened during freezing weather . . . the way out was a wet and frozen slope of a ravine, made into a hard icicle . . . the horse slipped on all four legs and fell onto his back with me in the water, and, God being served, I was not caught underneath, and from this fall I did not have one thread of dry clothing left. . . . I wiped myself off as I had no way to obtain dry clothes, and all that cold entered my gut [*en las tripas*], so that I suffered from the pain of it until the month of April, and as my pain was getting better with the hot weather, all my limbs were becoming crippled, so much so that I could not even bring a jug of water to my mouth. . . . I had to put myself under care in August and was nine days "in sweats" [*en sudores*], and first I spent my money on stupid doctors, and after that, God being served, I found a doctor who in twenty days cured me.²¹

In another letter written by a barber-surgeon in service to a local convent, we see that going out at night can lead to all sorts of health problems. "Of my health," he writes, "I have been at times very badly indisposed, and it is because of the work I do at the convent of the friars, who get up at one or two o'clock in the morning, and the evening mist [*sereno*] in this land is so bad, it has damaged me horribly, and in truth has reduced the days of my life . . ." ²²

Just how did humidity work with inclement temperatures to threaten the body? The letters' authors do not explain this, nor presumably did laypeople sense the need to conceptualize this process in a formal manner. It was generally understood that a wet chill could cause a disequilibrium of the humors somewhere in body; this knowledge was simply what everyone knew, a commonsense notion. Underlying this conception, however, was a very specific image: the penetrable body whose skin was seen as porous, creating countless openings through which damaging substances could easily slip in. The combination of heat and water was viewed as especially dangerous because hot temperatures opened up the pores, allowing the damaging effects of water to enter the body and upset the equilibrium of the humors. In the *Relación de Zapotitlán*, the author writes that the Indians of "these towns" often get *pasmo*, a "dangerous disease" that comes because "there are torrential downpours here and, as the land is hot, [this causes] the pores to open, and if a remedy is not applied right away, fever comes, and later the *pasmo*."²³ The same kind of disease causes are cited by Bernardo de Vargas Machuca, a professional soldier who spent more than twenty years in military campaigns in the New World. In his book, *Milicia y descripción de Las Indias*, which might be described as a conquistador's handbook, Vargas Machuca devotes a special chapter to the treatment of wounds and illness. Colds are the most common ailments in the military, he writes, because "these lands are so hot and the soldier is always marching on foot and sweating . . . his body becomes hot and open [*abierta las carnes*], then he becomes sick. The same happens when passing rivers or in downpours, which are never lacking."²⁴ This permeability of the skin proved to be a constant source of anxiety for European inhabitants in the New World. The climate—with its extremes of heat, moisture, and cold—opened up the body's surface to a whole host of elements that threatened to upset the delicate balance of humors.

The fog and mist that forms during the night were viewed by Spaniards as an especially perilous element of the environment. Juan de Cárdenas devotes a chapter of *Primera parte de los problemas y secretos de la Indias* to the question of: "Why is the night mist [*sereno*] in the Indies so much more harmful than in other places?" He cites two reasons: one, because the *sereno* is so plentiful in the Indies; and second, because the bodies "of those of us that live [here] are very abundant in humidity, which notably increases and doubles with the *sereno*." Cárdenas wants, first of all, to edify his readers on the general subject of how cold moisture affects the body, "because a thousand times we hear about the damage and effects it causes us, and hardly is there a disease for which we do not make it the inventor."²⁵ Because most people are confused about what constitutes *sereno* and what its qualities are, Cárdenas provides a definition:

... *sereno* is nothing more than that subtle and delicate vapor, that, having risen during the day with the warmth of the sun, becomes condensed with the cold of the night. The properties and natural qualities of this vapor, or *sereno*, are coldness and humidity which have great subtlety and penetration. . . . We can infer thus, that the more humidity there is in the land, as there is strength in the sun to raise this vapor, there will be a greater quantity of vapor . . .²⁶

The Indies, Cárdenas writes elsewhere in the book, has an abundance of humidity, because of its many bodies of water in the form of rivers, marshes, and lagoons. Furthermore, there "is always heat in great quantity."²⁷ This combination of copious sunshine and abundant water made it a natural place for heavy night mist.

Cárdenas's other explanation for why *sereno* is so dangerous in the New World is that people of European descent who live there seem to acquire a great deal of humidity or phlegm in their bodies. This comes from simply being in a humid environment, but also from faulty hygiene: ". . . from the little exercise they do, from too much food and drink, and even from too many carnal acts that many here engage in." Consequently, this excess humidity "swells the body with excrements, which, little by little, and without illness, strangles its natural heat and shortens life."²⁸ Climate—in this case, the excessive humidity—combines with lifestyle to play an important role in everyday health. In classic humoral theory, Cárdenas reasons that any shift toward an excess or deficiency in one of the body's humors will set off a *destemplanza*, or an imbalance in the system: "as experience shows us, when a body undergoes a *destemplanza*, it will receive more damage when more similar things are applied to that *destemplanza*, for example, if a man is imbalanced with too much cold, it is clear that the more cold things we apply to him, the more impaired he will become."²⁹ In the case of *sereno*, then, its abundance in the atmosphere combines with the excess of phlegm in European bodies to threaten health.

Hot climates also generated a great deal of concern about one's vulnerability to disease. Coming from subtropical zones with more temperate climates, Spaniards were unaccustomed to the awesome heat and humidity of the tropical regions of Mexico. For the most part, these areas were viewed as extremely unhealthy, but not always. Antonio de Ciudad Real's impression of Yucatan's climate is generally a favorable one, although the humidity, as always,

is problematic. It is, he writes, "extremely hot, but very healthy, especially for old people, because of the good air and provisions it has. It is very humid, and because of this, not healthy for legs but good for heads." It also rates more favorably because, as it lacks rivers, it has fewer mosquitoes than other areas the traveling friars had visited.³⁰

In general, however, Spaniards viewed the tropical coasts of Mexico as unhealthy places in which to live and through which to travel. The surgeon Pedro Arias de Benavides warns those traveling to the New World that they should "leave the ports as soon as possible and go to the interior because there the land is healthy and even if they get sick it is not of great consequence, which is quite the contrary in the sea ports for the great amount of heat there is in them."³¹ The archetype of all sickly locations, of course, was Vera Cruz, a place that generated a plethora of negative commentary throughout the three centuries of Spanish rule, and was often referred to as *la tumba de los españoles* because of its association with the *vómito prieto*, or yellow fever. The author of the *Relación de la ciudad de Veracruz* gives an extensive account of why the site is so unhealthy:

. . . [Vera Cruz] is naturally unhealthy, for many and strong reasons . . . besides being situated in a low place, and being naturally humid, and being sheltered from the healthful winds, and open to the unhealthful ones, it is also very hot here for most of the year . . .

The heat—or, more precisely, the sun—causes several things to happen that makes this particular location so insalubrious. The sun's rays are so "strong and direct" and the resulting landscape of "sand dunes and hills of dead sand, without a tree or living plant," are so desolate that the sun strikes and "wounds with a vehemence." This, in turn, causes:

. . . many exhalations and hot vapors to rise, which seize and burn the atmosphere in this infamous region . . . [and] with this excessive heat, the blood boils and *cólera* begins to grow, which causes [in the body] a surplus of heat, [intensified by] the humidity and rains, that in this land are incessant during the summer and part of the fall . . . [all this] generates many dangerous diseases caused by the corruption of the humors . . .

Extremely hot weather threatens the body by raising its internal temperature to a dangerous level. In addition, the unhealthy winds magnify the body's compromised state: "not only do they enfeeble and weaken the natural forces, but they also unleash the humors and corrupt them, especially when, together with the rain and heat of summer, they begin to blow." The author of this *relación* further cites the sudden shifts in temperature that tend to occur in coastal climates such as Vera Cruz's, noting that "the weather changes that commonly happen here alter bodies notably."³² Nearly two hundred years later, the same kinds of observations were being made on the diseased state of this city. The Capuchine friar, Francisco de Ajofrín, who disembarked there in 1763, remarked that: "all the people who live here, even the young people, are of pallid complexion, and are in such a broken state of health [*tan quebrados*], as if they were convalescing from a grave illness, and the cause is the continual transpiration and

sweating from the excessive heat, [which is] seen also in their actions and even in they way they speak . . ."33 High temperatures, humidity, the sun, and harmful winds all combined to make Vera Cruz a pestilential place.

These classical notions about health and the environment were part of the framework Europeans used to make sense of foreign lands and different climates. Basic to Galenic conceptions of the body was the idea that an individual's temperament, or *complexión*, was partly determined by the environment, especially the climate of one's birthplace. A move to a different land exposed one to a new climate that might not be compatible with one's natural temperament thus putting the body at risk. Europeans struggling to adapt to new environments were especially vulnerable to heat and humidity which tended to "weaken" their constitutions. A period of "seasoning," or gradual adaptation, not only to climate but also to new foods and drinks as well, could restore strength to a compromised constitution.³⁴ 32

In the last half of the eighteenth century, educated commentators' observations on the connections between climate and disease became decidedly more "scientific." In his popular *Mercurio volante, con noticias importantes y curiosas sobre física y medicina*, José Ignacio Bartolache described with excitement the new instruments used for charting weather patterns, the thermometer and barometer. Shortly thereafter, a series of articles written in the spring of 1784 in *La Gaceta de México* explained for readers how they aid in "observing the condition of the air that surrounds us." The weather conditions of several months were exhaustingly described with great precision, but the connections between temperature, humidity, and health remained essentially the same as they were in the sixteenth century. The unusual amount of humidity during the fall of 1783 caused a rise in *dolor de costado, insultos, pulmonías*; a sudden drop in temperature in February caused these ailments to increase even more, along with "fluxes of the eyes" and fever in children.³⁵ The development of instruments for measuring such things as rainfall, temperature, and wind velocity stimulated further efforts to quantify climatic conditions. Yet, rather than challenge centuries-old notions about disease causation and the environment, the new instrument-based observations tended to reinforce them.³⁶ 33

Miasma

Colonials, then, had to be mindful of the climate and its potentially harmful affects on their health. But sudden temperature shifts and penetrating moisture were not the only dangers the environment held; everyone knew that it possessed a much more horrifying threat, jeopardizing not just isolated individuals, but large sections of the population as well. For concealed in the surrounding atmosphere was the threat of pestilence. Today, our understanding of epidemic disease is based on concepts of bacteriology and virology. Even most lay people know that infectious disease is caused by microorganisms that invade the body and then is spread either by person-to-person or person-vector-person transmission 34

chains. In this biomedical model, the environment plays a minor role. Up to the nineteenth century, however, people conceptualized epidemics in a fundamentally different way. As one medical historian put it: "Far from regarding epidemic diseases as distinct in origin from environmental maladies, [people] commonly viewed them as a special case—by far the most serious—of disease induced by the environment."³⁷ In this view, pestilence came from the air itself.

According to a report put out by the Protomedicato in 1696, the noxious air in Mexico City had several sources: the vapors or exhalations coming from the muddy shores of lakes and lagoons, which, with the heat of the sun, become foul smelling and poisonous; a cold winter followed by extreme heat in the summer, which causes the fish and other aquatic animal life to rot and corrupt the air with their odor; shallowly dug gravesites; an accumulation of human and animal fecal material in parts of the capital; the large amount of garbage found in the city; and the wasteful practice of slaughterhouses which killed more animals than needed, leaving the extra carcasses to rot in the streets.³⁸

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The particular causes singled out by the Protomedicato were all based on centuries-old conceptions of miasma, or the idea that "corrupted" air itself was a significant cause of disease. In their attempt to explain epidemics naturalistically, the Hippocratic authors cited the air as a cause of illness and its tainting by miasma as the reason why so many people could be struck with the same set of symptoms at the same time. In early Greek writings, miasma was associated with notions of staining or tainting, and ideas of pollution. The exact way in which miasma transmitted disease was not explicitly clear, but the process was often reflected in analogies and metaphors that mirrored the workings of the natural world. Some of the examples offered to explain what happened to air to make it pathological were the rotting of fruit, in which decay spread from one part of the fruit to another, or the processes of dyeing cloth or fermentation in wine-making.³⁹ How were miasmatic places identified? Before the age of chemical analysis of air, water, and soil, the health hazards of the environment had to be judged by an individual's senses. The common feature that seemed to link them was foul odor, and, for this reason, such malodorous sites as marshes, slaughterhouses, tanneries, cesspools, cemeteries, and refuse dumps were singled out as sources of corrupted air.

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In colonial Mexico, the repeated cycles of epidemic disease understandably created anxiety and panic in the population, especially for those living in urban settings. And although colonial authorities in the sixteenth and seventeenth centuries were preoccupied with containing the sources of tainted air, it was not until the eighteenth century, during the reign of the reform-minded Bourbons, that these efforts became conceptualized as a concern for public health as a whole. This period coincided with a general renewed interest in the West of Hippocratic concepts linking the environment with health, although now the model of hygiene was shifting from an emphasis on the individual to one based on the collective.⁴⁰ The obvious remedy for stagnant and corrupted air was to somehow get it circulating. Many ideas were offered, ranging from the practical to the ridiculous. In 1763, the viceroy, the Marqués de

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Cruillas, mentioned in an *informe* on yellow fever that it was necessary "to clear away the mountains at a distance of one league from populations so that the air might circulate . . ." The uninhibited flow of air was also a concern of city planners. One observer in the eighteenth century noted that streets should be laid out long and wide, without "torturous recesses," so that when the wind blows "it will sweep away the fog and clean the atmosphere of any harmful humidity." The Protomedicato offered other pragmatic suggestions: "the streets and ditches should be clean . . . that under no circumstances should dead bodies be left in the commercial district, nor on street corners; that graves should be dug deeply; that of the Indians coming into the city, the sick ones should be kept at the hospital, and the healthy ones returned to their pueblos."⁴¹ The Protomedicato's declarations also demonstrate the widespread belief that the air was fouled not only from substances above ground but from below it as well. The preoccupation with burying the dead in deeply dug graves sprang from the fear that as dead bodies decayed, they released corrupting vapors into the air. The same dangers materialized with earthquakes, which left crevices in the ground, or for laborers when they descended to work in mines, and even by cultivation, which released trapped vapors hidden in the soil. These commonly accepted notions engendered a preoccupation with fissures, faults, and the boundaries of any dangerous terrain, where noxious vapors might ascend into the atmosphere and endanger human bodies.⁴²

If the environment played such a large role in the cause and spread of disease, it would seem there was little that people could do to protect themselves. Yet, there is nothing in the historical record to show that people were passive or fatalistic about the threat of disease coming from their surroundings. The familiar dictum of 'flee quickly and far' was advice people undoubtedly followed when they could, but not everyone could flee; knowing how to insulate themselves from pestilence at home was therefore crucial. Home-care manuals and newspapers were full of prophylactic advice. In an article on the smallpox epidemic that struck Mexico in 1779, José Ignacio Bartolache tells readers that a bit of fine vinegar applied to the mouth and nose may offer protection from the current pestilence. Esteyneffer advises readers to eat rue leaves every morning along with bread, fresh butter and honey, or a bit of a paste made from figs and nuts as a prophylactic against pestilence. He also mentions that "some use with good effect the drinking of one's own urine . . . for protection in contagious times." And if controlling the macro-environment was impossible, at least people could attend to their own micro-environments. Well-ventilated rooms, with fresh air flowing freely, were of paramount importance as was the use of aromatic substances to purify the air. One health manual recommended "spraying the sleeping chamber many times with rosewater and vinegar, and put[ting] green herbs in the room, as well as things like willow branches, vine leaves, cypress, scape, or green reeds." Another noted the benefit of always carrying a piece of juniper root on one's person, "the frequent smelling of which is good protection against the *peste*." Collectively, too, in villages and cities alike, people tried to cleanse the air with bonfires or by shooting off canons.⁴³

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Such tactics confirm that colonial Mexicans viewed the ungovernable environment as a major source of illness, even though they could at least take some personal action to protect themselves from its dangers. But contemporary etiology was not so simplistic that it laid the blame for all ailments on bad weather. Most illnesses had various degrees of causes and all sorts of variables, including one's lifestyle, could combine to influence what happened in the body. 39

"Mal orden y mala regla"—Lifestyle

If people felt relatively exposed to one of the main sources of their ailments—the environment—they could at least take solace in the fact that the other major source of sickness—their personal habits—lay somewhat more in their control. It appears, however, that inhabitants of the past were no better than we are today at controlling their unhealthy ways. Agustín Farfán, a sixteenth-century physician who wrote one of the earliest medical guides in New Spain, has trouble containing his annoyance with his contemporaries in his discussion on "weakness of the stomach." "The causes of this illness," he writes, "are many, and the most common is the poor order and regulation [*mal orden y mala regla*] we have in eating and drinking, and if you do not believe me, show me (for the love of God) a man that will desist from eating that which he knows well from experience will do him harm."⁴⁴ And, although Cárdenas ascribes much blame to a humid climate, he is equally critical of his fellow creoles for their intemperate ways. The weak stomachs, dropsy, and diarrhea "that afflict everyone and pardon no one" are brought on, in part, by "the little exercise and overindulgence of food and drink that in the Indies people are so accustomed to."⁴⁵ 40

This observation of creole habits was a common one throughout the centuries of Spanish rule, including well into the nineteenth century, when a foreign visitor noted of the upper classes that "the early fading beauty [in the women], the decay of teeth, and the overcorpulency so common amongst them, are no doubt the natural consequences of want of exercise and of injudicious food."⁴⁶ 41

How would *novohispanos* have defined a healthy diet? No easy answer emerges from historical documents; for one thing, unlike the classic ideas on the nature of climate and environment, which were fairly consistent across time and place, ideas on what constituted a proper diet were eclectic. Because diverse foods suited different constitutions and different ages, no standards emerged, except the Hippocratic dictate of moderation in everything. A food such as honey, for example, which was thought to be "choleric" and extremely "hot" in quality, could be harmful to people who were also choleric in temperament and to those who tended to have a lot of natural heat, like the young. In contrast, these same qualities were salubrious to those who were old, phlegmatic in temperament, and to those who were suffering from illnesses caused by an overabundance of phlegm.⁴⁷ Additionally, the characteristics of foods were not simply considered in their simple states, they needed to be 42

assessed after they were prepared as well, as different cooking methods—boiling, roasting, or stewing—altered the original qualities of the ingredients. For headaches, one medical guide suggested it was better to eat meats that were roasted, not stewed, whereas lettuce should only be consumed after it was cooked in vinegar and sugar.⁴⁸

Any discussion of diet, too, is complicated by the close connections between medicine and food; in contrast to attitudes today in which a sharp distinction is drawn between prescription drugs and food, early modern societies saw no dividing line between medicines and nourishment. Colonial remedy books are full of food-as-medicine recipes: for bloody diarrhea, Farfán claims that milk "is both medicine and sustenance" (a claim that would cause today's doctors to recoil as dairy products are known to make diarrhea worse!), and that cooked egg yolks "with a bit of mild vinegar" help stop the flow of this "dangerous disease."⁴⁹ And, finally, complicating ideas about diet even more is the question of how eating habits were related to social hierarchy—an issue made even murkier in a setting such as New Spain, with its clashing and blending of European and indigenous cultures. Historians have noted that the aristocracy in early modern Europe—consumers of a meat-rich diet—tended to look down on the culinary practices of the lower orders because they consumed foods, however nourishing, that were generally categorized as animal fodder.⁵⁰ Such attitudes took on new meaning in the Americas where Europeans saw much to be desired in the simple diets of the native inhabitants. A recent study noted that the first Spaniards to settle in the Indies "soon bent every effort to bring from Europe the 'civilized' food they longed for." Within a decade or two of the conquests of Mexico and Peru, the essential ingredients for a Mediterranean diet—wheat and barley, wine, eggs, meat, and fowl—were imported abundantly, and, by the end of the sixteenth century, their production, on wheat farms and cattle ranches, was firmly entrenched in the American countryside.⁵¹ Premodern attitudes to diet, therefore, were not as fixed as those people had about the environment; ideas about the consumption of food and drink, and their effect on health were shaped not only by general medical theory, but by cultural factors as well. 43

Let us begin our inquiry into attitudes about diet with contemporary medical theory. According to the professionals, what happened to food once it entered the body? Their supposition that it provided nourishment for growth and sustenance was not so different from our own, although the mechanics of how this happened do not correspond to modern notions of digestion and metabolism. The Spanish physician Christobal Méndez explained that once food was eaten it went through an elaborate process of digestion: 44

[Food] is digested and disposed of four times, and every time it has to be cleaned, modified, and cleared of superfluities. The first time is in the stomach, whence the superfluities go downward to the bowels; the second is in the liver, where the superfluities go to the bile and become what we call spleen; the third is in the veins, whence comes the urine which passes from the kidneys to the bladder; and the fourth is when nutriment is transformed into the substance of our

bodies, and from this fourth superfluity are made hair and nails and other superfluities that are disposed of in a sensible way convenient for other things.⁵²

Digestion is imagined as an involved and complicated sequence of cleansing and absorption. The "superfluities," however, appear to be a key factor of concern. Méndez explains this further:

When there are too many superfluities in the body, diseases of repletion appear and kill suddenly. If the superfluities are few and of severe putrefaction, they are followed by fevers, mortal ulcers, rheumatic pains, gout, kidney stones, and mortal indispositions, which although not fatal make life a living death. . . . [Therefore] there must be great regularity in the human body, not only in regard to a proper regime so that too many superfluities are not generated, but also in connection with great care and solicitude in expelling them.⁵³

Juan de Cárdenas uses the same kind of rationale in pointing out the dangers of overeating, although here "superfluities" become "excrements." The Spanish population of New Spain eats too much, he writes, and this is bad for them because it "generates a large amount of excrements, which suffocate the natural heat [of the body]."⁵⁴ Both writers repeatedly identified the excessive eating and drinking habits of their contemporaries as the source of many medical problems. **45**

Agustín Farfán illustrates one way superfluities can harm the body: they do so by thickening the blood so much that it cannot move swiftly through the veins. He singles out creole women who, in his opinion, seem especially prone to this condition because of their laziness and overindulgent habits. Farfán devotes a chapter to the menstruation problems of *criollas*, which according to the doctor was so common that "we see it everyday in maidens, married women, and widows." The main reason for these problems is "the blood, being too thick and too phlegmatic." This affliction was caused by: **46**

too much eating and too much idleness and too little exercise. These two things the women of New Spain do very well, because at all hours of the day and night one can see them eating delicacies [*golozinás*]. Usually [this is] cacao, eaten and drunk, and this is something they cannot do without. Others overindulge in Chocolate, which is a drink made of many things, among them contrary, thick, and hard to digest. They eat unripe fruit all year long. Others never tire of limes and salt and bitter and sweet oranges. . . . These things thicken the blood and obstruct the veins, as if with stones or mud . . . ⁵⁵

Contemporary experts thus believed that gluttony lay at the heart of many illnesses. Too much food and drink produced all sorts of harmful matter that the body simply could not absorb, setting the unsuspecting diner up for trouble later on. **47**

Viewed through the prism of humoral medicine—where bodily fluids, in the right quantity and balance, were of central importance—the human body might be described as a put-through system, absorbing food and expelling wastes. If modern science has persuaded us to see the **48**

heart and lungs as crucial organs, the corresponding equivalent for pre-moderns must have been the stomach. Edward Jenner called it the "grand Monarque of the Constitution," and, as a popular English proverb of the time put it: "the belly carries the legs and not the legs the belly."⁵⁶ Disorders in other parts of the body were closely connected to what happened in the stomach. Farfán noted that if people would only take care of their stomachs, they would suffer less from other disorders such as gout, *dolor de ijada*, and urinary track problems.⁵⁷ In this medical model, in which diseases were not seen as distinct entities but, rather, as temporary concentrations of humors, fluids, or "vapors," pain and malfunction in one area of the body could easily migrate elsewhere. It was essential then that wastes be eliminated efficiently.

Clearing away the superfluities could be done in four ways, wrote Méndez, by "provoking vomiting, bloodletting, purging, and [by giving] something to cause sweating and urination."⁵⁸ The idea behind these bedrock therapies of humoralism was that the removal of a bodily fluid—blood, bile, sweat—would release corrupt matter from the body. Among the four humors, the properties of blood were unique; the fluid contained in the veins and arteries was thought to be a mixture of pure blood with small amounts of the other three humors. If nutriment was not digested properly or if excess matter was not excreted in an efficient manner, the vessels of the body would become too full, creating the condition of *plethora*, or an overabundance of blood. The purpose of bloodletting was to diminish a plethora or to remove an excess of one of the other three humors which were present in the blood. Phlebotomy—surely one of the most oft-resorted-to therapies in the history of Western medicine—was employed both therapeutically and prophylactically. Although normally performed by venesection, or the cutting of a vein, in some cases other techniques, such as cupping, applying leeches, cauterization, or blistering might be called for.⁵⁹ 49

Vargas Machuca's extensive medical advice for military commanders on the campaign trail surprisingly does not include instructions on how to bleed, even though he recommends this for all fevers. "Where there are no doctors, everyone knows how to bleed," he writes.⁶⁰ After reading other manuals describing basic phlebotomy, one wonders how a layman could have managed such a complex, and potentially dangerous, procedure. Alonso López de Hinojosos's book on surgery for the layman includes a whole section on the techniques of bloodletting because it is "of great benefit and great necessity in many towns, mines, and ranches, for the lack of doctors, surgeons, and barbers they have there." His sixteenth-century methods are nearly indistinguishable from those systematized by Galen centuries earlier. His instructions include: how to identify the thirty-three veins—"thirteen in the head, ten in the arms, and eight in the legs"—commonly used for bleeding; how to apply a ligature correctly; and which veins to bleed for specific illnesses.⁶¹ Esteyneffer's *Florilegio medicinal* also contains a detailed tutorial on the art of *sangría*, including how to handle the "timid" patient, or those that tend to faint easily: "if this is from fear (as some are afraid of bleeding) lay them on a bed and wet their face with cold water or delight them by applying things of good odor to their noses . . . and if this is not enough, gently provoke vomiting by placing in the mouth or throat a feather (moistened with oil) . . . after they are feeling comfortable again, give them a bit of" 50

soup or a swallow of good wine."⁶² Bleeders had to know just how much blood to draw and what side of the body to bleed on. An important strategy in disease treatment was to conduct disturbances in vital parts of the body—the head, the lungs, the liver—to less important areas, a tactic paralleled in the idea of forcing corrupt humors "out" by bringing them to the surface and expelling them through bleeding, purging, or sweating. Similar to bleeding, Esteyneffer often recommended the use of *fuentes*, an opening on the skin made by cauterization or incision:

When the intention is revulsion [*reveler*], or to call the corrupt humor away, then one must open the *fuenta* on the opposite part . . . when there is headache caused by a sick liver, then in such a case one must open the fuente in the right leg; and when [the headache] is caused by an indisposition in the spleen, open the fuente in the left leg; and when the pain originates from a sick uterus [*mal de madre*], then it can be opened in any one of the legs.⁶³

What emerges from the pages of medical professionals then is that they had fairly elaborate ideas worked out about the processes taking place inside of the body: the constant flow and balance of the four humors, the put-through system needing continual refueling and efficient evacuation of wastes, the various functions of vital organs. But our concern here is with the sufferers themselves. Did lay conceptions about these physiological processes differ so much from medical opinion? Sources from colonial Mexico suggest they did not. This is not to imply that lay people consciously theorized about health and illness; rather that, on some basic level, the assumptions humoralism made about the inner workings of the body were accessible and convincing to people, at least to those whose cultural influences were primarily European. Nor should we suppose that other ideas about disease causation and treatment did not coexist in these same minds. As we have seen elsewhere in this study, empirics of all sorts commonly mixed rational healing strategies with magical and religious methods. But the humoral model was a strong one. Laypeople perfectly understood the need to expel corrupted matter from their bodies when they fell ill, something that is revealed in the countless number of references to the evacuant therapies in contemporary writings. Thus, a sixteenth-century letter writer matter-of-factly relates his experience with an illness that lasted two months in which "they bled me twenty-two times from the arch vein in my right arm, and they purged me four times."⁶⁴

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The letters of the Condesa de Miravalle are full of purging and bleeding, her own and of others around her: "I am sorry Maria Antonia still suffers from *reumatismo*," she writes to her son-in-law, "she should be bled"; on another occasion, "the leeches applied to [Maria Antonia's] ankle calmed her down a little"; and when an unnamed friend is ill, she reports: "it seems to be *la gota* [gout], day before yesterday and yesterday he was bled." The Condesa herself is a firm believer in the power of purges. She uses them both as remedy and prophylaxis—"day after tomorrow I will purge myself"—although she also was frequently bled: "On Tuesday they applied leeches . . . although I am still ailing"; and, on one occasion, her feet were so swollen from insect bites that "no blood would come out, so they had to bleed me from my arm."⁶⁵

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Were people taking great risks when they consented to undergo phlebotomy or drink a strong purge? At least one letter writer saw firsthand the perils of an overly aggressive treatment: "they bleed her six times and because of this she was put in great danger," Juan de Briguega writes about his wife, who, at the time, was seven months pregnant.⁶⁶ Although most of the evacuant treatments were probably harmless, the potential hazards of subjecting a patient to excessive bleeding or purging were real because dehydration and serious blood loss could be fatal. General advice cautioned against bleeding pregnant women, small children, the elderly, or the critically ill. It was also thought that venesection should be avoided in hot or cold weather and during a full moon, as the body tended to be at a weaker state during this time.⁶⁷ Esteyneffer warned his readers that "violent" purges and vomits, as well as copious bleedings, should always be approached with great prudence. He felt this was especially true in the area of Mexico where he worked in the missions, the far north: "on account of the temperament of these lands, as well as the foods eaten here which do not lend themselves to it, and especially because the Indians [here] are not generally able to stand the bleedings." There were cases, however, when hesitation to bleed should quickly be tossed aside, for example, the onset of a "violent" illness such as "bloody apoplexy, the croup, [the accretion of] phlegm which threatens to suffocate [the patient], and other similarities which clearly need for the blood to be evacuated without any delay whatsoever."⁶⁸

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Esteyneffer's intriguing observation that the Indians could not stand the bleedings also was mentioned in a few other sources. The *Relación de Guatulco* states that the Indians had such an aversion to the European practice of bleeding that "they look at it as if it were their death, because they are a weak and gaunt people that do not have the vigor to stand the bleedings." And the Spanish physician Francisco Hernández, in a critique of native doctors, derisively noted that they "never cut anyone's veins," relying instead on diet and simple medicines as their only effective recourse in treating disease.⁶⁹ Still, it is not as if Mesoamericans were unfamiliar with drawing blood; the deliberate bleeding of one's self for religious purposes—from the penis, tongue, or ears—was a common prehispanic practice, and Mesoamerican curers frequently relieved swellings by letting off some blood. Headache, for example, was thought to originate from an excess of blood in the head. Sahagún's informants list bleeding as one of the treatments for headache, either by getting the sufferer to sneeze violently enough to cause a nosebleed—through the inhalation of *ecuxo* ("sneeze-plant) or tobacco—or by making a small incision inside the nose with a sharp obsidian point. The making of a puncture wound to let blood also was listed as a remedy for swellings in the tongue, nursing women's breasts, and the swellings resulting from broken bones.⁷⁰

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But bleeding from the arm, especially for the purposes other than relieving swelling, was undoubtedly a Spanish import. "They did not know what bleeding was, they only used herbs," states the *Relación de Tepuztlan*, while the *Relación de Coatepec* declares that before the conquest the Indians "did not use *sangrías* in their arms; rather, the remedy that they found was to pierce the head, and through the body and chest and belly, with a thin bone, very sharp, or with a snake's fang." Another source says they "punctured themselves with sharp

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lion and tiger bones, which they believe to be medicinal."⁷¹ Consequently, although bleeding was used in Mesoamerican medicine for some practical purposes, the extensive Galenic practice of phlebotomy, with its rationale so firmly based in the theory of humors, must have been strange (and slightly terrifying!) to Indians in those first contacts with Western medicine, especially because the practice continued to have such strong religious associations for them.

For those colonial Mexicans who monitored their health through a European medical model, then, maintaining a balance of the body's fluids was clearly an important key to wellbeing. Superfluities threatened to upset the balance in numerous ways—by making the blood too thick to flow properly, creating a plethora of blood, or an excess of one of the other humors. As we have seen, overeating was one of the ways that superfluities were generated, and it was for this reason that moderation in diet was prescribed by those who gave medical advice. But what other ideas did people have about the connections between health and the foods they ate? Certainly there were widespread popular beliefs about certain foods and their effects on the body, notions so commonly accepted that they are rarely explained in the historical record. Take fruit, for example, a food that was repeatedly identified as the source of various illnesses and disorders. The *Relaciones Geográficas* mention several times that the cause of disease in Indian towns was the consumption of too much fruit. The *Relación de Cuicatlan*, for example, states that "the diseases they usually have [here] are, for the most part, fevers: because, as this is a hot land, there is much local fruit, and very good, certainly known as the best of New Spain, and because they generally eat these fruits, they tend to get fevers . . ." Another *relación*, says that "this is a town of few sick people and the ones that do fall sick come from eating the local fruit."

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We have already seen how the sixteenth-century doctor Farfán rebukes the women of New Spain for eating "green and unripe fruits all year long," including limes and oranges, both bitter and sweet. There also seems to have been similar notions about eating sweets. These same women—again, according to Farfán—"at all hours of the day and many hours of the night" are eating *golozinás*, that is, sweets and delicacies. Nearly two hundred years later, the Condesa de Miravalle is sounding the same kinds of warnings to her daughter's family in Pachuca. During the smallpox epidemic that swept through many parts of New Spain in 1763, she cautions that her grandchildren not be allowed to eat sweets while the threat of smallpox is present; another letter mentions that Maria Antonia's dizzy spells were probably caused by "the sweets she eats."⁷² The well-known Doctor Bartolache also cites "the abuse of sweets" as one of the major reasons for the "plague" of *mal histérico*, a condition of the nerves that disproportionately afflicted "people of high or middle category born and educated in a life of leisure [*en el regalo*]."⁷³

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None of these sources explicitly say why fruit and sweets could be so harmful; apparently, they didn't need to since these beliefs were so commonly accepted. In our own time, similar notions about certain foods and their physiological effects have been, and, in some places still

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are, accepted as common knowledge: most of us learned at some point in our lives that chocolate causes acne in adolescents and sugar makes small children hyperactive, although double-blinded studies have found no substance to either claim. And yet modern medicine certainly informs our ideas about what constitutes a healthy diet, just as early modern medicine helped shape the concepts people of the past held about their foods. Today's biochemist sees food as a combination of proteins, fats, carbohydrates, vitamins, and other nutrients working in various ways to sustain the body, information that the lay public interprets, in more or less informed ways, as a need to avoid too much fat, eat more fruits and vegetables, and increase their fiber intake. The humoral medical model, which viewed foods in terms of their "qualities," that is, their hot, cold, wet, or dry properties, likewise informed lay ideas about what foods, like fruit and sweets, should be eaten with caution.

Ideas of a proper diet also were closely entangled with the issue of food as an aspect of identity. Class, race, and culture have always influenced notions about eating and drinking, and these are clearly evident in the references both Spaniards and Indians made about each other's culinary practices during the colonial years in Mexico's history. Moreover, European assumptions about foreign lands caused many to question the suitability of New World foods. Because a person's constitution was partly determined by one's native land, a move to a place with different climates, soils, plants and animals could make the foreigner more vulnerable to falling ill. One observer noted that the quality of the food produced in the New World was inferior to that of Europe: "The little virtue and substance of the food in this land shortens one's life . . . a man can eat a variety of these foods, and of these as much as possible and more than normal, and after having eaten he seems to be left with less strength and vigor than before."⁷⁴ The Englishman, Thomas Gage, a Dominican friar who traveled through Mexico in the 1620s, makes a similar observation about the food he was served, although he finds it appetizing and delicious.

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. . . in our stomachs we found a great difference between Spain and that country. In Spain and other parts of Europe a man's stomach will hold out from meal to meal, . . . but in Mexico and other parts of America we found that two or three hours after a good meal of three or four several dishes of mutton, veal or beef, kid, turkeys, or other fowls, our stomachs would be ready to faint, and so we were fain to support them with either a cup of chocolate, or a bit of conserve or biscuit, which for that purpose was allowed us in great abundance.

Curious as to why this should be, the inquisitive Gage reports to have found the answer from a "doctor of physic" who told him that the meat lacked nutrition "by reason of the pasture, which is drier and hath not the change of springs" that European pastures have. In addition, the American climate—that ever-powerful force over human bodies—produced things that were "fair outward" but with little substance inside. This reasoning not only applied to meat, fowl, fruits, and vegetables, but to the people there as well.

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Secondly, he told me, the climate of those parts had this effect, to produce a fair shew but little matter or substance. As in the flesh we fed on, so likewise in all the fruits there. These are most fair and beautiful to behold, most sweet and

luscious to taste, but have little inward virtue or nourishment at all in them, not half that is in a Spanish *camuesa*, or English Kentish pippin [apple]. And as in meat and fruit there is this inward and hidden deceit, so likewise the same is to be found in the people that are born and bred there, who make fair outward shews, but are inwardly false and hollow-hearted. Which I have heard reported much among the Spaniards to have been the answer of our Queen Elizabeth of England to some that presented unto her of the fruits of America, that surely where those fruits grew, the women were light, and all the people hollow and false-hearted.⁷⁵

Gage's observations about the quality of the foods and peoples of the New World reflect an aspect of the emergent nationalism that was evolving at the time in Europe. Age-old Hippocratic theories about the connections between a peoples' food habits and its geographical location naturally feed into notions of food as a component of group-identity. And because what, and how much, one ate played such a significant role in the delicate balance between sickness and health, the staple diet of Indians—maize and chili, enhanced with a bit of squash, beans, sometimes meat—attracted much comment. The *Relación de Tlaxcala*, for example, states that the illnesses usually acquired by the Indians were caused by an "abundance of choler and phlegm, and other bad humors that they get from their bad diet and lack of proper clothing." A sparse diet was one of the reasons Indians could not tolerate bleedings, another *Relación* observed: the foods and the land did not produce in the local people "a sufficient amount of blood to be drawn."⁷⁶ But we should not draw too rigid a picture of European attitudes about the indigenous diet. Juan de Cárdenas praised, at least for health reasons, the way that native Mexicans ate. Because their diet was so healthful—Cárdenas thought chile and maize tortillas helped to cleanse and "dry out" the bad humors from the body—they rarely suffered from such maladies as "rheumatism, *de ijada*, urine or stomach [problems]." Furthermore, the Indian diet contained little meat, at least in comparison with the meat-rich diet of Spaniards, and, most important for Cárdenas, they did not use *manteca*, or lard in their cooking:

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. . . the Spaniards eat all their food or most of it cooked and prepared with *manteca* instead of oil, and since the *manteca* of pork is extremely phlegmatic, from there follows many rheumatisms, which the Indians will never suffer from because they will never allow food to be cooked with *manteca* in their house, nor with any other thing except chili or salt.⁷⁷

Although wheat was grown in New Spain, wine and olive oil—the other two essentials in the holy trinity of the Mediterranean diet—were never successfully produced in the colony. Although no universally accepted substitute for wine ever emerged, creoles readily adapted to the use of lard in their cuisine, a practice initially condemned by the Indians. In her book on the prehispanic culinary practices of the Aztec, Maya, and Inca cultures, Sophie Coe notes that native Americans found the idea of eating animal fat repulsive, so much so, in fact, that

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cooking with lard was noted by the Indians as one of the main horrors brought by the Spanish, ranking alongside beatings and prisons. (In time, however, they discovered that the addition of a bit of manteca to tamales made them fluffier and more delicate.)⁷⁸

Spaniards enthusiastically embraced one native Mexican food, however, and in doing so were key players in introducing the rest of the world to a culinary pleasure we all take for granted today. That food was chocolate, made from the seeds of the *cacao* tree, or *Theobroma cacao*, as it came to be called by the Swedish naturalist Linnaeus in the eighteenth century. Cacao was first domesticated by the Olmec and Maya peoples in that area of Mesoamerica that contains the natural habitat of cacao trees, the tropical rain forests. By the time that the Spanish conquered Mexico, cacao had become an esteemed product among the Nahuaspeaking peoples of central Mexico, serving both as currency and beverage, although its consumption appears to have been confined to the Aztec elite.⁷⁹ Both Native Americans and early modern Europeans believed that cacao had medicinal benefits. The *Florentine Codex* lists chocolate as an ingredient in cures for stomach pain, diarrhea, and "the spitting of blood." Among the treatments described in the *Badianus Manuscript* is the use of cacao flowers to perfume a bath recommended for curing fatigue. And Francisco Hernández, who, in consultation with native doctors, carried out the first thorough study of Mexican medicinal plants, noted that cacao was prescribed to patients suffering from fever and liver problems. The Nahuas also apparently believed that chocolate, especially in its green or unroasted form, could intoxicate its drinker: "when much drunk . . . [it] makes one drunk, takes effect on one, makes one dizzy, confuses one, makes one sick, deranges one." But when used with proper moderation, it "gladdens one, refreshes one, consoles one, invigorates one."⁸⁰

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That Europeans were crazy for this drink is clearly evident from the abundance of contemporary writing devoted to it. Undoubtedly this popularity stemmed from the perception that it provided nutrition, had great medicinal properties, and, at the same time, was extremely pleasurable to drink. In contrast to the social prohibitions that limited its availability in precontact times, colonial authorities did not affix any particular social meanings to its use, thus chocolate consumption in New Spain was a daily practice for most social groups. On his visit from Spain in the second half of the eighteenth century, the friar Francisco Ajofrín was amazed at the ubiquity and frequency of this Mexican ritual:

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The use of chocolate in all of America is very frequent; the most moderate person has it twice a day, in the morning and at three o'clock in the afternoon; many have it three times; not a few, four times, and some even more. In the morning and even in the afternoon the maids and servants, the coachmen, the attendants, blacks, and mulattos all drink it; it is so common that even the muleteers, shoemakers, officials and all classes of people use it in the afternoon and in the morning.⁸¹

The frequent use of chocolate had spread to native communities by the end of the sixteenth century, a fact verified by the native informants in the *Relación de Guatulco*, who lamented the ubiquity of this practice by linking it to contemporary afflictions. In their minds, the

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consumption of cacao and "other mixed brews" went hand-in-hand with eating the "heavy foods" of the Spaniards, a practice that "made their bodies heavy" and led to sickness and shortened lives.⁸²

The supposed medicinal qualities of cacao certainly excited the European imagination. Chocolate was not the only American product to do so—tobacco, sarsaparilla, and guaiacum were just a few of the other new plants to accumulate fantastic claims of curing power to their names. But because cacao, with its swelling popularity as a food and drink, was undoubtedly consumed by many more people than any other American elixir, it quickly sparked a vigorous debate about its effects on the human body. Of course, it was viewed from the start in the context of humoral pathology and therapeutics. Hernández wrote that the cacao seed had a "cool" nature; thus, drinks made from it were good in hot weather and helpful to patients suffering from fever and ailments of the liver. He also noted, as did other commentators later on, that chocolate had properties that made its drinker "extraordinarily fat" if drunk frequently; this made it useful in treating the "thin and weak" patient. Juan de Cárdenas, too, wrote extensively about chocolate in his treatise on New Spain. He argued that untoasted cacao was harmful when taken in its simple, raw form: among other things, it could constrict the belly, obstruct menstruation and urination, make one short of breath, and "cause and generate perpetual anxiety and melancholy." If toasted, ground, and mixed with *atole* (ground maize and water), however, it was extremely nourishing, and a potent remedy for all sorts of "obstructions," female problems (*mal de madre*), in addition to brightening one's mood.⁸³

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The Dominican friar Thomas Gage relished his chocolate, which he drank several times a day because, as we have already seen, his stomach often was "faint" from hunger. He attributed his good health during his stay in the Indies to this habit: "and with this custom I lived twelve years in those parts healthy, without any obstructions or oppilations, not knowing what either ague or fever was." During the seventeenth century, after its use had widely radiated throughout Spain, even more fantastical claims were made about chocolate's panacean qualities. Perhaps Antonio Colmenero de Ledesma's *Curioso tratado de la naturaleza y calidad del chocolate* best typifies the excessive optimism some Europeans had for cacao:

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. . . [chocolate] vehemently incites to Venus, and causeth conception in women, hastens and facilitates their delivery; it is an excellent help to digestion, it cures consumptions, and the cough of the lungs, the New Disease, or plague of the guts, and other fluxes, the green sickness, jaundice, and all manner of inflammations and obstructions. It quite takes away the morpheus, cleaneth the teeth and sweetneth the breath, provokes urine, cures the stone, and expels poison, and preserves from all infectious diseases.⁸⁴

Colmenero de Ledesma's claims that chocolate was some sort of miracle nostrum, curing everything from infertility to kidney stones and bad breath, may seem like nothing more than sensationalist hype. But when viewed in the context of the seventeenth century, an age when contemporary therapies had little efficacy, this almost naive optimism about a new medicine reminds us once again that the threat of disease and disability intruded into daily life in a way

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that would be hard to imagine in the age of modern medicine. Not everyone agreed that chocolate was a new panacea, however. Farfán, as already noted, found its frequent use deleterious and blamed all sorts of ills on its "abuse." Grounding his objections in classical medicine, he noted that it was made of many "contrary" things and was "thick and difficult to digest." In the eighteenth century, Bartolache made similar claims about the harmful consequences of chocolate drinking; "people of moderate circles and the poor" were especially prone to these ill effects, as they were forced to buy chocolate of questionable quality that contained "certain drugs and ingredients that are extremely damaging to their health." Gage also reports that he has "known some that have been the worse for it, either for drinking it with too much sugar, which hath relaxed their stomachs, or for drinking it too often."⁸⁵

European women quickly noticed the cosmetic properties of cacao. Over half the weight of the shelled and degermed cacao bean is made up of fat, or "cacao butter," a product, Gage noted, "I have seen drawn out . . . by the Creole women for to oint their faces."⁸⁶ But face cream was not the only cosmetic use women made of cacao. Several sources mention that women in New Spain ate cacao in its solid form because they believed that it altered the coloring of their faces. This strange practice was not limited to eating cacao, but also included eating "*barro*" or "*tierra*," that is, clay or earth, usually in the form of "earthenware, as pots or pieces of lime walls." Gage wrote that eating cacao in this manner, "as many Creole and Indian women eat it," made them "look of a broken, pale, and earthly color," a fashion that was much "used among the Spanish women" who believed that this facial coloring "well becomes them." This quest for "*color de damas*," or paleness in the face was vigorously condemned by Cárdenas, who claimed this caused menstrual problems in the women who practiced this "vice" by thickening the blood and causing obstructions.

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. . . this vice of eating *tierra*, *barro*, *cacao*, and other similar filth . . . which are made up of thick, terrestrial, and feculent things, causes terrible closures and blockages in the veins. But if asked why are the women of this land [New Spain] more given to eating earth and cacao than women in different provinces, I would respond that some do it for pure vice, pretending only to bring about a broken color [*traer quebrado el color*], (which they call ladies' color).⁸⁷

Along with the overindulgence of sweets, chocolate, and fruit, Farfán adds eating "*tierra de adobes*" to his list of vices committed by the Spanish women of New Spain. These women "do not leave a colored jar's lid, nor the jar itself, uneaten. And if this were only the young girls, I would not be so disturbed, but it's the ones with a head full of gray hair that are the most licentious and disorderly [*viciosas y desregladas*]."⁸⁸

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Today, this odd habit of clay-eating would certainly be diagnosed by the modern practitioner as pica, the term given to "the compulsive consumption of substances not generally considered food." Modern research has shown, both historically and cross-culturally, that those most prone to pica are young children, pregnant women, the mentally retarded, and people with mental disorders. The kinds of items usually consumed also seem to be consistent across time and cultures; these include, coal, ice, chalk, plaster, and various types of earth,

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especially clay. The consumption of the latter, sometimes called geophagy or geophagia, a Greek term meaning "earth-eating," is the most commonly noted type of pica, and some researchers today believe that it may be a response to fill a nutritional deficiency, such as low iron or calcium.⁸⁹ Clay consumption can lead to several health problems, however, such as liver and kidney damage, constipation, abdominal problems, mercury poisoning, and anemia.

This last complication may help explain the cosmetic reason women in New Spain took to eating their clay pots: people with anemia become quite pale. The ideal standards of feminine beauty at this time were fairly uniform across national borders in Europe and remained virtually unchanged throughout the sixteenth, seventeenth, and eighteenth centuries. For the face, the aesthetic canon dictated that the skin be creamy white, lips and cheeks painted red, black eyebrows, and blond hair. Just a causal glance at some of the portraits painted of elite families in eighteenth-century Mexico confirms that European standards of feminine beauty were vigorously adhered to on this side of the Atlantic. Topped with fair-haired wigs, these creole and Spanish women are heavily powdered and rouged, presenting faces of porcelain perfection to their observers. What a contrast to the images of women depicted in the *pinturas de castas*, where racial mixing has progressively darkened skin and hair as one moves further away from European blood "purity."⁹⁰ The colonial practice of eating *barro y tierra*, then, clearly reminds us that the culturally-bound connections between diet, fashion, and health are not only features of the modern era, but have been shaping human lives for a long time. 72

Although it did not create as much commentary as chocolate consumption, indigenous lifestyle was also a topic that generated questions about human health. Because the native population of Mexico suffered disproportionately from epidemics and general hardship during Spanish rule, anyone today delving into colonial Mexican sources comes across a range of contemporary opinion on Indians' daily-life habits. These opinions have been scrutinized by modern scholars to show how the Spanish attempted to make sense of the Mesoamerican world by using, not surprisingly, their own "European grids and vocabularies."⁹¹ For our purposes here these opinions likewise help to illuminate general conceptions the European (and the ever-expanding Europeanized) population had about health and lifestyle. This comes through especially on comments, not only about indigenous diet but also on the manner of dress, patterns of work, and other practices such as bathing. In many of the *Relaciones Geográficas*, which offer a mixture of indigenous statements and Spanish transcription (and interpretation), we hear a variety of explanations as to why inhabitants of Indian towns became ill. Geography and climate, as we have already seen, were critical factors in a locale's salubrity, but lifestyle—and especially the change from a precontact lifestyle to one modified by Spanish customs—is mentioned frequently as well. In this diversity of explanations, perhaps it is worthwhile to try to distinguish Spanish voices from those of the Indians. 73

One detects immediately a European view in the strong aversion to the idleness, laziness, and drunkenness that many observers saw in native towns. "The Indians here are extremely fond of the wine of Castile, which they buy for a high price . . . And because they spend so much on drink, they have very little money," states the *Relación de Cuahuítlan*. Another blames the "many pestilences" for the horrible decline in native population, but also "the idleness and laziness of the Indians, because they do not work as much as they used to."⁹² The priest Cayetano de Cabrera y Quintero, whose book, *Escudo de armas*, commemorated the end of the horrible epidemic of *matlazáhuatl* that ravaged New Spain between 1736 and 1738, cited four major reasons why so many Indians died of pestilence. In addition to the extreme temperature changes in Mexico City—"hot during the day, cold at night (and much more for those with insufficient clothing, and no other habits but drinking)"—was the abuse of alcohol, the poor diet (both quality and quantity of food) and "drinking cold water while sweating." For Cabrera y Quintero, however, drinking was the biggest culprit. The Indians were especially vulnerable to epidemic diseases because of their "abuse and excess of counterfeit *aguardientes*, *tepaches* [pulque mixed with sugar and other substances], and other fermented drinks. The same is true of *aguardiente de Castilla* [Spanish brandy], no matter how good it is . . . it should also be noted that [they often] get drunk on pulque contaminated with harmful twigs and herbs, which they use to fortify it."⁹³

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This Spanish preoccupation with native drinking, which has been skillfully explored by William Taylor, points to basic cultural differences in the way Indians and Spaniards viewed the consumption of alcoholic beverages. Inheritors of a Mediterranean culture that recognized wine as one of its most valued symbols of civilization and Catholic heritage, Spaniards considered wine an essential ingredient to a proper meal but outward signs of drunkenness as barbaric. With wine occupying such a central position in Spanish culture, not to mention the importance humoralism gave to moderation in general, it is not hard to see why Spaniards, desperate to explain the decline of the indigenous population, would attribute the (in their view) misuse of alcohol as a major cause of disease. The Indians, however, did not hold the same ideals of drinking; their colonial practices, as Taylor shows, were derived from centuries-long traditions of ritual drinking. Moderation—undoubtedly the most important ideal guiding personal behavior in precontact society—was defined in terms of how often, not how much. Periodic heavy drinking, according to occasion, was the norm, with no shame attached to showing intoxication; daily, solitary drinking, as that practiced by the Spaniards, was considered an inappropriate use of alcohol.⁹⁴ But there is little doubt that the breakdown of prehispanic social structure, which had limited access to alcohol with rigid social norms, and the opportunity to make money in the colonial economy, led to more drinking in Indian towns. While traveling in Guatemala, Thomas Gage noted that many of "the baser and poorer sort" of Spaniards there unduly exploited the Indians' love of drink by selling them watered-down wine for high prices and then robbing them once they were drunk.⁹⁵

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The native Mexicans who served as informants to the *Relaciones Geográficas* saw the causes of mortality in the same kinds of things as their Spanish transcribers, albeit with less inclination to moralize in European terms. But they were also more prone to see the state of native decline in terms of acculturation as a whole, a loss of a way of life, and the collapse of standards that had previously given structure and meaning to the community. What emerges as a theme in many of the *relaciones* is that austerity, frugality and demanding work are linked to a longer and healthier life. Precontact life was healthier, many reasoned, because then the Indians were "more accustomed to work than now . . . the greater convenience [*el regalo*] they have now is the cause of their illnesses."⁹⁶ The principle reason for so much illness today, states another *relación*:

is that before they made them work very hard, they never let them be idle for one moment, and they slept on a plank, and now they are often idle and they work little, and when they do work, it is by force and they are berated and threatened, and it is already mid-day when they go out to work.⁹⁷

One historian has noted the paradoxical element in this analysis: the hardships of a former existence seem to be associated with a better quality of life, whereas the supposed "benefits" of material acculturation under Spanish rule—the introduction of European clothing, more meat in the diet, raised beds, tables and chairs, and a lasting peace to Central Mexico, which ended the continual need for military recruits—are linked to the incomprehensible decline in native population. In these native sketches of precontact existence—the old way of life that by this time, the 1580s, was probably more stereotyped, even idealized, than real—and colonial life, one senses the word *trabajo*, much used in these accounts, has two different meanings for the native informants: a prehispanic notion of "work" as "a cluster of activities, regulated, organized by the traditional authority and even including war" compared to its colonial meaning as an oppressive task.⁹⁸ The informants in the *Relación de Epazoyuca* bring these distinct notions of work to life by juxtaposing activity in prehispanic times—the "running and jumping," clearly a reference to training for warfare—and the forced work in the mines under Spanish taskmasters. Epazoyuca is located in the present-day state of Hidalgo, a site of lucrative silver mines in colonial times:

Now they are becoming delicate, because, in former times they exercised in many tasks, slept in the streets, and went around nude to the cold and sun. They exercised in running and jumping, and they did not all leave the pueblo, only the great ones who went to war where the authorities sent them, even if it was to remote places. And now they do not live as long, because they are overworked as porters [*tamemes*] and occupied in many things, and in service to the mines; because they [are forced to leave] their natural place, to eat wet tortillas and to sleep on humid ground . . . For these reasons they are greatly suffering, and they are sick and they live a short time.⁹⁹

Many of the Indians that served as informants to the *Relaciones Geográficas*, then, sought explanations for the demographic loss by comparing life before and after the coming of the Spaniards. What was lost, in their view, was a way of life, a totality of customs and practices that kept them alert, agile, and healthy. 77

Another indigenous practice that generated a fair amount of Spanish commentary was bathing. To the sixteenth-century Iberian, frequent bathing, or the deliberate immersion of one's body in water, was to needlessly place one's health in peril. Native Mexicans, in contrast, had inherited very different notions about water's affect on the body and high standards of personal cleanliness were common in Mesoamerican society. With the exception of some individuals—certain priests, for instance, who for ritualistic reasons could not wash—most Nahuas bathed daily, and even used soap made from the fruit of the *copalxóctl* plant. In addition, bathing, as has already been noted, was an important therapeutic practice, especially the use of the *temazcal*, or steam bath. Bathing rituals also clearly held religious meanings for the Indians since divine intervention was such an inseparable part of native curing methods. Undoubtedly, Spaniards were troubled by this native practice, not only because they suspected it kept alive a significant part of native religious devotion but also because it fell outside their norms of civilized medicine. Several of the *Relaciones* mention it as a source of Indian illness. The *Relacion de Uexutla* states that "the natives bathe a lot, and because of this, many die." Likewise the Indians of *Citlaltomagua*, an *estancia* in the colonial jurisdiction of Acapulco, suffer from "many diseases," because they are "very disorderly, without any order in their illnesses, which causes many of them to die." This informant's critique of native medical practices centered on their therapeutic use of the bath: 78

[When] they have fever, which is the most common illness they have, they go to the river and bathe, which, having fever, they become sick from the chill [*pasmo*] or they suddenly get *dolor de costado*, from which they die without even knowing which disease they had; or if they have a contagious disease, like *bubas*, or smallpox or measles, right away they are headed for the river to bathe, because their cure is bathing . . . and after giving birth, the Indian women go to the river and bathe, even when they are menstruating, and for this reason they do not live as long as people in other *provincias*.

The author of this passage unequivocally links the "chilling" of the wet body to sickness, a linkage that the natives do not seem to share. The climate in *Citlaltomagua* is hot which intensifies the chill; the Indians do not understand this danger so that when "they bathe, they are chilled and many die of *pasmo* without understanding the *pasmo*."¹⁰⁰ 79

Why did Spaniards see such a health risk in bathing? Our earlier examination of climate and health revealed an early modern Europe anxious about the frailty of the bodily shell. Porous and permeable, the skin was easily breached by heat and water, allowing a myriad of harmful substances to slip into the body. The author of one sixteenth-century health manual listed some of the hazards of bathing: it depletes one's energy and overheats the body; it sometimes causes fainting and provokes vomiting; and it forces the bad humors to descend, disturbing 80

and moving them about. If one must bathe, certain rules had to be observed. No baths for at least three hours after eating, unless one wants to become fat, as some very "thin and dry" men do. Because excessive sweating during bathing could be harmful, adding small quantities of cold water and moistening the skin with oil is recommended. Above all, one should not remain in the water too long. The author of this book, who was writing specifically for the courtier class that attended the royal court of Charles V in the 1520s, believed that Spaniards were not well suited for frequent bathing. They were not used to it, he writes, therefore it would not be beneficial to them, except in times of illness. Consequently, the only appropriate way for Spaniards to bathe is "from the knees down."¹⁰¹

Immersion in water, therefore, involved a calculated risk; the bath had to be tailored to the season, time of day, the individual's temperament, sex, and state of health. These beliefs had implications for contemporary concepts of cleanliness. Our own insistence on bodily cleanliness—that is, a body without bodily smells—might lead us to believe that people of the early modern era did not have similar values. The French historian, Georges Vigarello, has shown this was not the case, at least not for court society in sixteenth- and seventeenth-century Europe. Cleanliness mattered, but it was attached almost exclusively to one's linen and outward appearance; the body, deeply hidden beneath layers of clothing, mattered less. Nor does it appear that early moderns were any less aware of the need to remove certain odors from their bodies than we are, but they assumed friction and perfume, not washing, was the way to do this. Personal daily grooming, at least for the elite classes, consisted of carefully cleansing the visible areas of the body, the hands and face, and the "dry wash" of those hidden regions of the body which generated offensive odors. Here is Christobal Mendez's version of a proper daily toilette:

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. . . the face should be washed with cold water, the eyes cleaned of the slimy humor which runs from the eyes, and with the little finger clean the nostrils and ears very clear, and move them very much inside, wash teeth and mouth very well with water, and if it is possible wash the eyes, if a youth with rosewater, and if an old man with wine. Both of them should take two swallows of water and gargle very gently. If there is sunshine look toward it and sneeze. Afterwards take a root of the walnut tree and clean the teeth with it and also with a little bit of myrrh, which brings great benefit to them. And before all this while still in bed ask for a little aromatic wine, wet a piece of wool in it, and rub under the arms with it, in the lower parts and between the toes which moreover is great cleanliness and a very beneficial medicine.

But what is a person to do after physical activity has left the body sweaty and sticky? For this Mendez recommends, "if it is not too cold," that the individual take off his shirt and "rub the body in every way possible with some rough cloth, rubbing the arms downward and the legs and all the rest." Afterward, he should anoint his face and wrists with aromatic water and then put on a clean shirt that has been "smoked with some good fragrance—the best and healthiest is rosemary."¹⁰² These older notions of cleanliness, which applied solely to the visible parts of the body, the hands and face, and to the linen peeping out from men's doublets and women's dresses, began changing at the very end of the eighteenth century, first in the upper classes

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and later in their imitators, the emerging middle classes. By the nineteenth century, a new understanding emerged about the body and the effects of water, and new texts on hygiene—now focused on the hazards of dirt—began to describe the benefits of cleaning with water and the use of soap.¹⁰³

What we learn from this brief examination of the ideas people had about the connections between the environment, daily lifestyle, and their health is that the body's internal workings were most easily affected by what one ate or drank, the quality of the air, and the temperatures one was exposed to. In the commentary of ordinary people and the advice of professionals, these were the issues which seemed to generate the most concern. But other aspects of the nonnaturals occasionally are mentioned as well. Common sense notions about sleeping patterns were explained within the humoral framework: too much sleep was unhealthy because "it increased the harmful humors, especially those in the head," but lack of sleep also had repercussions for health as it tended to deplete the good humors in the body. The most common fear about sleeping seemed to be its coming too soon after a meal. One should never sleep directly after eating, says one advice manual, "because from this comes much harm, such as gout, cough, headache, and many other diseases." Christobal Mendez thought that one should resist sleeping after the midday meal, as "many rheumatisms and even very persistent colds" come from this practice: "it occurs that as soon as one has eaten there comes a great tendency to sleep, but if you stand up, it is soon forgotten and that is beneficial."¹⁰⁴

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The importance of adequate exercise also was mentioned at times by early modern authors of health manuals. This is somewhat surprising, as the idea that exercise plays a key part in preventive medicine strikes most of us as an exclusively modern phenomenon, especially now that health clubs, exercise machines, and personal trainers have become such a routine part of everyday life. But a concern with the body's "movement and rest" was an important component of classical hygiene, one of the six non-naturals elaborated by the founders of Western medicine. As we have already noted many times in this chapter, idleness, that bane of the leisure classes, was cited as one of the reasons for ill health among the European population of New Spain. Both Farfán and Cárdenas, our sixteenth-century commentators on creole lifestyles, decried the *mucho ocio y poco ejercicio* they saw in their contemporaries.¹⁰⁵

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Today, we know that physical activity is beneficial because it burns excess calories, improves the cardiovascular system, and increases bone density. Given the prominent role that food and the stomach played in the humoral conception of the body, it is not surprising to find that the most common rationale early moderns had for exercising was as an aid to digestion. Christobal Mendez, the author of one of the first books written on exercise in early modern Europe, advocated exercising because it increased the "natural heat" of the body which made "digestion greater and more perfect and pour[ed] throughout the body that which is necessary to preserve health." It also helped rid the body of "superfluities," that dangerous build-up of bad humors that threatened to tip the balance toward sickness. Assuming that these authors did not envision exercise to include such things as swimming laps or aerobic classes, what

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exactly did they mean by the word *ejercicio*? Of all the medical advice perused here, only Mendez elaborates; for him, exercise includes walking, hunting, horseback riding, bowling, dancing, playing games such as horseshoes, quoits, throwing *barras* or spears, shooting arrows, fencing, or playing swords with both hands. Of course, some of these—the "games with arms, hunting, and breaking horses"—are only advisable "for strong men." More suitable for "delicate men" or "men of letters, religion, and other similar professions," was the moderate exercise of walking. For women, Mendez also recommends regular physical activity: "Since many ladies go hunting, why cannot a lady bowl with enjoyment in her hall, and with other ladies, or secluded (where no one sees them) or dance whenever the opportunity?"¹⁰⁶ Obviously, Mendez's advice was intended for the small elite classes of sixteenth-century Spain who enjoyed the leisure of being able to pursue these kinds of activities. We also must keep in mind that then, as today, advice books were prescriptive texts rather than accurate reflections of how people actually lived or thought. Nevertheless, this early treatise on the benefits of exercise, which links lifestyle and physical well-being in a way that, apart from its humoral interpretation, would make sense to today's reader, illustrates the importance a preventative health regime played in early modern medical theory, which, in turn, informed the commonsense notions of a lay public.

Another one of the six nonnaturals, the body's evacuations and retentions, was concerned not only with the quantity, quality, and regularity of the removal of bodily wastes but also with sexual intercourse because this involved (especially for men) the loss of a bodily fluid. Mendez likens both sex and defecating to an act of nature that "expels something superfluous" from the body. Just as the "sort of comfort" one has "when something is expelled in the lower pathways," so, too, "the pleasure found during the joining of male and female is in great part due to what is expelled which is superfluity not needed in the body." We have seen repeatedly throughout this chapter just how significant bodily evacuations were in early modern medicine, not only in terms of reading the body for signs of illness, but as mainstay therapies as well. It is not surprising, therefore, that the sexual act would generate a variety of medical opinion.

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Take, for example, Luis Lobera de Avila's advice to the gentlemen of the Spanish court in the sixteenth century, whose compendium of health advice includes a chapter on the potential "harms and benefits of coitus." One should never engage in coitus, he writes, if they are "phlegmatic, nor if they are replete with wine or drunk; nor when they emerge from the bath, nor if they have diarrhea, nor after a bleeding, nor after hard work." He recommends the use of certain foods to increase one's "vigor and semen," such as eggs, chicken livers, partridges, and a good, heavy red wine," and, as a further precaution, he urges men to always carry with them "things that smell good and are aromatic." As in all other aspects of the humoral framework, moderation here, too, was the key: too much sex could damage the nerves and the eyes, deplete one's strength, and "in a short time make men old," whereas a more moderate sex life "relieves the body, alleviates the head and understanding and cures some diseases." This humoral emphasis on sexual moderation is very reminiscent of the Nahuatl elders'

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exhortations that a too-vigorous carnal life will drain a man of his strength, causing him to become dry and shriveled before his time. Sex, of course, had to bear much more moral weight than other bodily practices and that comes through in some of the medical advice. Agustín Farfán, a doctor who later entered the Augustinian order, has strong words for those men who are so "unrestrained" in their sexual appetites that they must engage in sex right after a meal, since there "is nothing that damages and destroys the stomach and body more than these acts committed on a full stomach." He likens such men to "course brutes in the countryside" and warns that children produced in these matings are likely to be weak and sickly.¹⁰⁷

One of the central arguments to emerge from this study is that unless they lived in isolated indigenous villages—a condition that declined in the eighteenth century significantly—most laypeople in colonial Mexico held ideas about medicine that were not so different from those of the professionals. This is because the separation between learned and domestic medicine had not yet solidified into the two distinct spheres that were later to emerge in the nineteenth and twentieth centuries. The tenets of good hygiene, or as the medical books called them, the nonnaturals, formed the bedrock of humoralism, the medical framework introduced to Mexico by the Spanish Conquest, providing a means by which laypeople could conceptually gain access to medical ideas, especially because hygiene's concern was with everyday lifestyle and one's relationship to the environment. The argument here is not that the rules of hygiene were followed by everyone; on the contrary, we have seen from the colonial sources that have formed the basis of this chapter that they were not. But an examination of the commentary on preventive medicine offers us a glimpse of how people explained why they became ill or how they thought they might avoid disease. Furthermore, a look at this prosaic yet essential aspect of daily life through the particular historical lens of colonial Mexico, enhances our understanding of how Europeans made sense of the foreignness of America. For Spaniards and their cultural contemporaries, the creoles, the medical framework of humoralism—in its essence, a rational explanation of the relationship between the physicality of human beings and the material conditions in which they lived—provided them with a way to judge the new foods, climates, and peoples of their dominions across the Atlantic.

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Notes

Note 1: AMRT *Miravalles*, 21 de julio, 1757; RG, Vol. II, p.168; Antonio de Ciudad Real, *Tratado curioso y docto de las grandezas de la Nueva España*, ed. Josefina García Quintana and Victor M. Castillo Farreras (México: UNAM, 1993), Vol. II, pp. 389–90.

Note 2: Vivian Nutton, "Humoralism," in CEHM, Vol. I, p. 281; Roy Porter, *The Greatest Benefit to Mankind: A Medical History of Humanity* (New York: W.W. Norton & Company, 1997), pp. 56–7.

Note 3: Nancy G. Siraisi, *Medieval & Early Renaissance Medicine: An Introduction to Knowledge and Practice* (Chicago: University of Chicago Press, 1990), p. 106.

Note 4: Nutton, p. 283.

Note 5: Quoted in Andrew Wear, "The History of Personal Hygiene," in CEHM, Vol. I, p. 1288.

- Note 6:** Nutton, p. 289.
- Note 7:** Ibid., p. 286; Porter, *The Greatest Benefit to Mankind*, p. 60.
- Note 8:** Nutton, pp. 288–90.
- Note 9:** Ibid., p. 290.
- Note 10:** Juan de Esteyneffer, *Florilegio medicinal de todas las enfermedades*, 2 vols., ed. Ma. Del Carmen Anzures y Bolaños (México: Academia Nacional de Medicina, 1978), Vol. I, pp. 146–7.
- Note 11:** Wear, pp. 1283–4.
- Note 12:** Ibid., p. 1290.
- Note 13:** Christobal Mendez, *Book of Bodily Exercise* (New Haven, CT: Elizabeth Licht, 1960), pp. 64–7.
- Note 14:** Juan de Cárdenas, *Problemas y secretos maravillosos de las Indias* (Madrid: Alianza Editorial, 1988), p. 204.
- Note 15:** Ibid., pp. 205, 214–15.
- Note 16:** Caroline Hannaway, "Environment and Miasmata," in CEHM, Vol. I pp. 292–3.
- Note 17:** RG, Vol. II., p. 104.
- Note 18:** RG, Vol. VI, p. 240.
- Note 19:** PNE, pp. 245–6.
- Note 20:** Ibid., p. 76.
- Note 21:** "Antonio Mateos a su hijo Antonio Mateos, en Alcuéscar," Valle de Tlaxcala, miércoles de ceniza, 1561(?), in Enrique Otte, *Cartas privadas de emigrantes a Indias* (México: Fondo de Cultura Económica, 1996), pp. 144–5.
- Note 22:** "Bartolomé de Morales a su padre Antón Pérez, en Sevilla," México, 30.X.1573, in Otte, pp. 72–3.
- Note 23:** RG, Vol. I, p. 42.
- Note 24:** D. Bernardo de Vargas Machuca, *Milicia y descripción de Las Indias* (Madrid: Librería de Victoriano Suarez, 1892), Vol. I, p. 130.
- Note 25:** Juan de Cárdenas, p. 87.
- Note 26:** Ibid., p. 88.
- Note 27:** Ibid., pp. 37–42.
- Note 28:** Ibid., pp. 216 and 206.
- Note 29:** Ibid., p. 91.
- Note 30:** Ciudad Real, Vol. II, p. 314.
- Note 31:** Pedro Arias de Benavides, *Secretos de cirugía* (México: Academia Nacional de Medicina, 1992), p. 45.
- Note 32:** RG, Vol. V, p. 317.
- Note 33:** P. Fray Francisco de Ajofrín, *Diario del viaje . . .*, 2 vols. (Madrid: Archivo Documental Español, 1958), Vol. I, p. 36.
- Note 34:** Andrew Wear, p. 1291; see also Michael Worboys, "Tropical Diseases," in CEHM, Vol. I, pp. 512–36.
- Note 35:** *Las Gaceta de México*, miércoles 24 de marzo, Vol. I, no. 5, pp. 46, 55–6.
- Note 36:** Hannaway, pp. 296–300.
- Note 37:** Roy Porter and Dorothy Porter, *In Sickness and in Health: The British Experience* (London: Croom Helm, 1987), pp. 158–9.

- Note 38:** Martha Eugenia Rodríguez, *Contaminación e insalubridad en la ciudad de México en el siglo XVIII* (México: Departamento de Historia y Filosofía de la Medicina, Facultad de Medicina/UNAM, 2000), p. 26.
- Note 39:** Hannaway, p. 295.
- Note 40:** Rodríguez, p. 23.
- Note 41:** Cited in Rodríguez, pp. 27 and 34.
- Note 42:** Alain Corbin, *The Foul and the Fragrant: Odor and the French Social Imagination* (Leamington Spa, UK: Berg Publishers, 1986), pp. 22–3.
- Note 43:** José Ignacio Bartolache, *Mercurio Volante* (México: UNAM, 1983), p. 199; Esteyfener, Vol. I, pp. 502–03; Rodríguez, pp. 28–9; Mendez, p. 8; Luis Lobera de Avila, *Banquete de nobles caballeros* (Madrid: Reimpresiones Bibliograficas, 1952), p. 153, 149; Porter and Porter, p. 159.
- Note 44:** Fray Agustín Farfán, *Tractado breve de medicina* (Madrid: Ediciones Cultura Hispanica, 1944), p. 2.
- Note 45:** Cárdenas, p. 240–3.
- Note 46:** MME. Calderon de la Barca, *Life in Mexico, During a Residence of Two Years in that Country* (New York: E.P. Dutton and Co., 1946), p. 99.
- Note 47:** Cárdenas, p. 89.
- Note 48:** Esteyneffer, Vol. I, pp. 160–1.
- Note 49:** Farfán, pp. 16–17.
- Note 50:** Pelling, *The Common Lot*, p. 46.
- Note 51:** Arnold J. Bauer, *Goods, Power, History. Latin America's Material Culture*, (Cambridge: Cambridge University Press, 2001), pp. 63–9.
- Note 52:** Mendez, p. 21.
- Note 53:** Ibid.
- Note 54:** Cárdenas, p. 249.
- Note 55:** Farfán, p. 34.
- Note 56:** Both cited in Porter and Porter, p. 47.
- Note 57:** Farfán, p. 3.
- Note 58:** Mendez, p. 22.
- Note 59:** Harold J. Cook, "Physical Methods," in CEHM, Vol. II, pp. 941–3.
- Note 60:** Vargas Machuca, Vol. I, p. 130.
- Note 61:** Alonso López de Hinojosos, *Suma y recopilación de cirugía con un arte para sangrar muy útil y provechosa* (México: Academia Nacional de Medicina, 1977), pp. 95–107.
- Note 62:** Esteyneffer, Vol. II, p. 729.
- Note 63:** Esteyneffer, Vol. II, p. 716.
- Note 64:** "Hernán Ruiz a su mujer Mariana de Montedoca en Sevilla" México, 21.X. 1584, in Otte, pp. 108–9.
- Note 65:** AMRT Miravalles, 2 de junio, 1760; 19 de febrero, 1759; 9 de mayo, 1757; 4 de abril, 1757; 9 de agosto, 1762; 28 de agosto, 1759; 10 de julio, 1760.
- Note 66:** "Juan de Briguega a su hermano Pedro Garcia, en Brihuega," 16.1.1572, in Otte, p. 154.
- Note 67:** Linda E. Voigts and Michael R. McVaugh, eds., *A Latin Technical Phlebotomy and its Middle English Translation: Transactions of the American Philosophical Society*, 1984, Vol. 74, pt. 2, pp. 5 and 56.

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Note 69: RG, Vol. I., p. 205; Varey, ed., *The Mexican Treasury: The Writings of Dr. Francisco Hernández*, p. 77.

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Note 71: RG, Vol. VI, p.190 and 148, Vol. V, p. 247.

Note 72: RG, Vol. II, p. 168 and Vol. IV, p. 211; Farfán, p. 34; AMRT Miravalles, 27 de enero, 1763.

Note 73: Bartolache, pp. 58–61.

Note 74: Cárdenas, p. 249.

Note 75: Thomas Gage, *Thomas Gage's Travels in the New World*, ed. with intro. J. Eric S. Thompson (Norman: University of Oklahoma Press, 1958), pp. 59–60.

Note 76: RG, Vol. V, pp. 246–7 and Vol. II, p. 205.

Note 77: Cárdenas, p. 293.

Note 78: Sophie D. Coe, *America's First Cuisines* (Austin: University of Texas Press, 1994), p. 234; Jeffrey M. Pilcher, *¡Que vivan los tamales! Food and the Making of Mexican Identity* (Albuquerque: University of New Mexico Press, 1998), p. 34.

Note 79: Sophie D. Coe and Michael D. Coe, *The True History of Chocolate* (London: Thames and Hudson, 1996), chs. 1–4.

Note 80: Bernardino de Sahagún, *Florentine Codex: General History of the Things of New Spain*, 13 vols., ed. and trans. C. E. Dibble and A. J. O. Anderson (Salt Lake City: University of Utah Press, 1950–69, XI, pp. 154–5, XII, p. 119; Teresa L. Dillinger, et al., "Food of the Gods: Cure for Humanity? A Cultural History of the Medicinal and Ritual use of Chocolate, *Journal of Nutrition* 130 (2000), 2057S–2072S, pp. 7–9.

Note 81: Ajofrín, Vol. I, pp. 82–3.

Note 82: RG, Vol. II, p. 194.

Note 83: Coe and Coe, pp. 122–3; Varey, *The Mexican Treasury*, pp. 107–9; Cárdenas, pp. 136–7; Gage, p. 157.

Note 84: Quoted in Dillinger, et al., p. 10.

Note 85: Farfán, p. 33–4; Bartolache, pp. 61–2; Gage, p. 158.

Note 86: Coe and Coe, p. 28–9; Gage, p.152.

Note 87: Cárdenas, p. 248.

Note 88: Farfán, p. 34.

Note 89: Margret J. Weinberger, "Pica," in *The Cambridge World History of Food*, 2 vols., eds. Kenneth F. Kiple and Kriemhild Coneè (Cambridge: Cambridge University Press, 2000), pp. 967–68, 970.

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Note 91: Serge Gruzinski, *The Conquest of Mexico* (Cambridge, UK: Polity Press, 1993), p. 4.

Note 92: RG, Vol. II, p. 132; PNE, p. 202.

Note 93: Cayetano de Cabrera y Quintero, *Escudo de Armas de México* (México: Institute Mexican del Seguro Social, 1981), pp. 66–7.

Note 94: William B. Taylor, *Drinking, Homicide, and Rebellion in Colonial Mexican Villages* (Stanford: Stanford University Press, 1979), pp. 40–1.

Note 95: Gage, pp. 225–7.

Note 96: PNE, p. 224.

Note 97: *Ibid.*, pp. 245–6.

Note 98: Gruzinski, pp. 84–6.

Note 99: RG, Vol. VI, p. 88.

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Note 101: Lobera de Avila, pp. 35–6.

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Note 103: Georges Vigarello, *Concepts of Cleanliness: Changing attitudes in France since the Middle Ages*, trans. Jean Birrell (Cambridge: Cambridge University Press, 1988).

Note 104: Esteyneffer, Vol. I, p. 162; Lobera de Avila, p. 25; Mendez, p. 75.

Note 105: Farfan, p. 34; Cárdenas, p. 207.

Note 106: Mendez, pp. 52–3, 66.

Note 107: Mendez, p. 68; Lobera de Avila, p. 33; Farfan, p. 3.