CHAPTER 9

Taste and Distaste

Humans will swallow almost anything that does not swallow them first. The animals they relish range in size from termites to whales; the Chinese of Hunan Province eat shrimp that are still wriggling, while North Americans and Europeans eat live oysters; some Asians prefer food so putrefied that the stench carries for dozens of yards. At various times and places, strong preferences have been shown for the fetuses of rodents, the tongues of larks, the eyes of sheep, the spawn of eels, the stomach contents of whales, and the windpipes of pigs. Italians symbolically cannibalize the most respected figures in their culture by eating such things as “nun’s thighs,” “the Pope’s nose,” and “nipples of the Virgin.” Nor has there been a shortage of unusual combinations, such as the Scottish haggis—a cow’s lungs, intestines, pancreas, liver, and heart, seasoned with onions, beef suet, and oatmeal, all cooked together in a sheep’s stomach—or the favorite dish of the Roman emperor Vitellius whose ingredients were the tongues of flamingoes, the brains of peacocks, the livers of pikes, and the sex glands of lampreys.

People in every society regard their own preferences as sensible and all deviations from these as perverse or even loathsome. The witches in Macbeth boiled in their cauldron foods that outraged the sensibilities of the audience, thereby making clear the enormous gulf between the hags and proper Elizabethans:

Fillet of a fenny snake,
In the cauldron boil and bake;
Eye of newt and toe of frog,
Wool of bat and tongue of dog,
Adder’s fork and blindworm’s sting,
Lizard’s leg and howlet’s wing...
Most North Americans and Europeans are revolted by hearing that certain Mexicans eat fried grubs, that dog flesh has been esteemed in China since antiquity, and that the fox was once considered a delicacy in Russia. Yet our tastes are often regarded with equal repugnance by others. Perhaps a third of humankind would rather starve than consume the bacon, ham, and sausage that are relished in North America and Europe, and many would be nauseated by the milk that is drunk in such large quantities.

_De gustibus non est disputandum_ — "There is no arguing about taste" — runs the Latin proverb. But taste did not just happen. Cultural, historical, and ecological events have interacted to cause frogs, for example, to be esteemed as a delicacy in southern China but to be regarded with revulsion in northern China. Even though much remains unknown, tastes cannot be dismissed as inarguable or illogical; an attempt will be made here to discover why, as Lucretius put it, "What is food to one man may be fierce poison to others."

Among the approximately thirty million tribal people of India, a total of 250 animal species are avoided by one group or another. Most of these people will not eat meat from a tiger or any of various snakes, particularly the cobra. Although they say they feel a kinship with these animals, it is obvious that both are highly dangerous and that hunting them systematically would be foolish. Monkeys are avoided, probably because of their close resemblance to human beings; in these tribes, cannibalism is viewed with extreme horror. A reluctance to eat the females of edible species of animals has been attributed to veneration for the maternal role, but it could also be due to a policy of allowing the females to reproduce and provide more edible young. Many tribes avoid eating any animal that has died of unknown causes, an intelligent attitude in view of the possibility that the animal might have died from an infectious disease that could spread to humans. Animals that consume excrement or garbage are similarly avoided, an adaptive step that prevents contact with parasites, and that might explain why members of one tribe eat any of twenty-one different species of rats, but not the house rat.

Because of the wide variety of tastes and preferences displayed in societies around the world, it is extremely difficult to put together the menu for a meal that would please most people. One nutritionist posed the problem: What dinner could be served that would be acceptable to a cross section of all the peoples in the world? He finally came up with a menu of chicken, rice, squash with chili sauce, tea for a beverage, and a banana for desert. No society has ever been known to approach its food supply scientifically, by analyzing all the potential foods in the environment and then giving preference to those that were most nutritious. Even in the case of cultivated plants, little correlation can be found between nutritional value and the amount consumed. Broccoli, for example, has a greater concentration of nutrients — including ten vitamins and minerals — than any other plant used for food in the United States, but ranks twenty-first in the amount consumed: on the other hand, the tomato, the most commonly eaten vegetable or fruit, comes in sixteenth as a source of vitamins and minerals.

Even the San, who much depend on hunting and gathering for all of their food needs in the arid environment of the central Kalahari, regularly hunt only a dozen or so of the forty-eight wild animals they consider edible; and of the eighty-five kinds of plants they regard as food, they concentrate most of their efforts on only a handful because of abundance, reliability, ease of preparation, and cultural considerations. The same is true in more complex societies. Only certain cuts of meat from a very limited number of animal species are for sale in even a large supermarket in the United States. The reason for this is often economic: It would be expensive to collect and process large quantities of such animals as rattlesnakes and gophers for their meat. But the primary obstacle is still cultural prejudice. Californians do not harvest the snails that overrun their gardens, though these could be obtained with little effort and are of the same species that are imported from Europe as expensive escargots.

What has been said so far about food choices should make one thing clear: People in exotic societies are not necessarily starving when they eat what North Americans and Europeans would deem repulsive. The foods eaten today in some simple societies may have been resorted to as a result of poverty, but the situation would have been different under aboriginal conditions. Many such people have now become displaced persons, pushed into the least hospitable parts of the earth first by the spread of agriculture, later by colonialism, and most recently by industrialization. The San have been deprived of game by the expansion of the cattle-
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keeping Bantu into their lands; Eskimos no longer hunt all the various animals of the sea that used to sustain them; the forests that once yielded abundant pine nuts for the Shoshonean Indians have been cut for timber and their hunting grounds have been overgrazed by cattle. Even so, these people have shown a remarkable ability to put together a nutritious diet out of what was available.

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Instead of believing that indigenous peoples around the world are the victims of irrational food choices, North Americans and Europeans should look at some of their own prejudices, such as the taboo against eating meat from the sacred dog. Like the sacred cattle of India, dogs are given the freedom of the streets; there are so many of them that in places special sanitary ordinances have been passed to prohibit littering sidewalks with their excrement. Like the sacred cattle, dogs may be given affectionate names, are often decorated with bows, share the family meal, and sleep with their owners. Inoculated against diseases, cared for when ill, their eating preferences catered to, these pets live out their lives untroubled by any risk of being eaten by their owners or sacrificed to the gods. Unlike sacred cattle, though, these millions of dogs perform few services beyond barking at intruders, occasionally flushing game for sportsmen, and, in a few places, herding cattle and sheep.

The idea of keeping a large population of nearly useless animals, which compete with humans for protein yet are not themselves eaten, would appall traditional Chinese, Melanians, Hawaiians, American Indians, and Africans — many of whom not only use the labor of dogs but also eat them. The Chinese have bred dogs of certain kinds, such as the chow, primarily for culinary purposes; roasted puppy hams and suckling pups have been features of their cuisine. For many North Americans and Europeans, eating dogs is taboo as being equivalent to cannibalism, since dogs are part of the human household. The justification, though, is not really consistent. North Americans and Europeans often treat calves, rabbits, and pigs as pets, giving them affectionate names and even sometimes nursing them from a bottle — but are able to master their qualms about eating them eventually. In many other societies where dogs are also regarded as household pets, no distaste is connected with using them later for food. The fact is that the societies in which dogs are eaten, whether or not they are pets or are useful in providing security and aiding in the hunt, are those that lack other sources of meat from large herbivores. But where huge industries already exist to produce cattle, sheep, hogs, and poultry, all of which are herbivores, the carnivorous dog is almost useless as a source of meat, and instead must be treated as if sacred.

Even more surprising than the status of the dog is the repugnance felt toward eating horsemeat at many times and places throughout North America, Europe, the Near East, and southern Asia. Horseflesh is nutritionally as valuable as beef; in fact, an industry already exists to produce horsemeat — for dogs. Horses not only are easily raised, but also can provide ten to fifteen years' work before they are slaughtered for food, which is not true of swine or beef cattle. The eating of horsemeat goes back tens of thousands of years, and even continued down to historic times in the immense region stretching from eastern Europe to Mongolia. Pastoral economies there have been centered around the horse; it was used for transporting humans and for carrying loads, while the hide went into various manufactured items, the meat was eaten, and the milk was fermented into the liquor known as *kumiss*.

The practice of eating horseflesh spread from central Eurasia to many parts of the continent. It was favored in the court of the Emperor Tamerlane at Samarkand, and was once widespread among the Germanic tribes of northern Europe; the Japanese still eat horsemeat and it is often an ingredient in sukiyaki. Sooner or later, though, the major religions turned against the practice. The Jews declared the horse to be an abomination because it did not satisfy the requirements of chewing the cud and being cloven-hoofed; the Buddha specifically prohibited eating horseflesh; and the prophet Mohammed personally avoided horseflesh, although he did not forbid it to others. With the spread of Christianity, an attack was launched upon the consumption of horseflesh, ostensibly because of its association with the worship of pagan deities; in A.D. 732 the practice was finally forbidden to Christians by Pope Gregory III. Being forced to give up hippophagy made pagans such as those of Iceland reluctant to convert.

In declaring the horse to be an abomination, all of the faiths
were applying religious justification to what had become an ecological necessity. Horses are of value when extensive grazing lands are available, as they are in central Eurasia and even in Iceland, or so long as their usefulness for transportation, warfare, or agriculture is not outweighed by their consumption of domestic grain, as it came to be with industrialization in Europe and elsewhere. With the rapid growth of human numbers in the Mediterranean region, the scarcity of forage made raising horses for food an extravagance. The same thing was true in India, where the sacred cow was a much better choice for pulling plows and other transport, and for providing fuel in the form of dung and food in the form of milk. The attacks on hippophagy by most major religions were therefore ecologically rational positions that provided benefits for the followers of those faiths — and, of course, ultimately for the faiths themselves. The prohibitions against horseflesh consequently became ingrained as a repugnance in much of Europe and in some other parts of the world influenced by the colonial powers.

Hippophagy nevertheless persisted, and indeed horses were prized for food in places in Europe where forage was available. In Switzerland, Christian monks were eating horseflesh in the early 19th century, despite the ban placed on it four centuries earlier. The Irish likewise continued to eat it; horsemeat feasts took place in sixteenth-century Denmark; in Spain, young horses, known as “red deer,” were commonly eaten and the meat was used to feed the navy. Hippophagy was openly practiced around the time of the French Revolution, and by 1896 large quantities of horseflesh were being consumed in Paris. Toward the end of the nineteenth century its sale was legalized in France, Germany, Austria, and Scandinavia. The siege of Paris by German forces in 1870–71, during which time Parisians consumed at least 70,000 horses, had much to do with overcoming the prejudice against it. In France, around 1960 as many as 3500 butcher shops were specializing in horsemeat.

Since then the consumption of horsemeat has once again declined rapidly throughout western Europe. A new wave of revulsion against it has been blamed on an outbreak of salmonella in 1967, but much more probably the decline has to do with ecology and economics. When, over the past few decades, armies stopped purchasing horses for cavalry and for transport, they did away with a major incentive for the raising of horses, which were already becoming a luxury with the mechanization of farms. Virtually the only use for a horse in western Europe nowadays is recreation, and that is insufficient to justify breeding horses in large numbers. Most of the horsemeat eaten in western Europe in the past few decades has therefore had to be imported; but transportation and related costs have raised the price to about that for beef and veal, further discouraging a horse industry. Because horses compete for grass and grain with other herbivores, which are superior to them in fertility, tractability, and the amount of meat produced per pound of animal, horsemeat will probably not again become an important food in western Europe.

In North America, where horseflesh never was a major source of food, beef is now the most important meat. Each person in the United States consumes, on an average, nearly 125 pounds of it a year — twice the consumption of pork, the second most popular meat. A whole lexicon of beef cuts has developed, including such items as rib roast, rib eye, porterhouse, sirloin, filet, tenderloin, T-bone, shoulder cut, brisket, flank, and round. Among the world’s foods, beef in North America has been unusual in being at once widely eaten and prestigious. Roast chicken is esteemed less highly than roast beef and no cut of pork matches the prestige of the psoas muscle of a castrated bull, more commonly known by the elegant French name of filet mignon. Steaks, the most desirable and expensive cuts of beef, retain their prestige value even though they are more plentiful than the low-prestige organ meats (each animal, after all, has only one tongue, one liver, or one brain). Little difference in nutritional value can be discovered between the various cuts of steak, and the cheaper cuts cost less simply because they are less prized.

The preeminence of beef in North America is a cultural phenomenon arising out of peculiar ecological and technological conditions. Pork had been, year after year, more popular than beef in the United States until the beginning of this century, and in occasional years since then; ham in particular had long been esteemed, probably because the curing process had once been an art demanding time and skill. The long predominance of pork is still entrenched in the everyday vocabulary of the United States. People speak of “bringing home the bacon” rather than “bringing home the steak”; government appropriations that confer bene-
fits locally are known as "pork barrel"; affluence is described as "living high on the hog." The source of these expressions is easy to understand. The pig’s status for centuries as the primary food animal for much of the continent had been maintained because it is one of the most efficient converters of plant food into flesh in the entire animal kingdom, producing about twenty pounds of meat from each hundred pounds of feed — three times the average for cattle and twice that for poultry. Pigs bear more young than cattle, and their habit of rooting about for nuts and plants on the forest floor enabled them to forage for themselves as long as extensive tracts of woodland remained. Moreover, a surplus of maize grown in the United States every year was fed to the hog and thereby converted into meat — which is why the Corn Belt and the Hog Belt overlap from Ohio to Iowa.

One trait of cattle eventually made them more valuable than pigs. As cud-chewing ruminants, they can digest the tough cellulose of which grass is composed, whereas pigs cannot. As the boundaries of the United States shifted westward, an immense empire of grassland was opened, in which cattle but not pigs could be fed. Just as the eastern forests had once given free forage to pigs, the rangelands now gave forage to cattle. Before the market for western beef could be extended to the populated urban centers of the eastern states, however, three things had to occur. First came the development of railroad transportation; the second was refrigeration, with which railroad cars began to be equipped by the end of the nineteenth century; the third was the end of ecological competition from the once vast herds of bison, which was accomplished by their near extermination. Few obstacles then remained to providing the eastern markets with fresh beef at a price lower even than pork.

The reign of beef cattle, though, is fated to be short. With urbanization, highway development, and the degradation of rangelands because of overgrazing, the open land available for raising cattle has decreased. As a result, cattle production is now an expensive operation that consists largely of force-feeding grain to penned calves, using up enormous amounts of fuel and petrochemicals in the process. Beef, as a result, has lost its cost advantage over pork and especially over poultry, fish, and milk products. Ecological and market conditions that brought beef to prominence several decades ago are now decreeing that it will no longer be a cheap, easy way to obtain animal protein. The chances are that people in North America will begin to lose their taste for big steaks just as they have begun to lose their attachment to big cars.

Humans everywhere use the same facial movements to express disgust as a reaction to certain foods — including closed eyes, narrowed nostrils, a downward curl of the lips, and extending the tongue. Probably such muscular contortions are inborn in the human species, having evolved as a warning to others about toxic substances. The cultural occasions for their use, though, appear to be learned; children do not exhibit such expressions until some time between the ages of two and four, when they have learned from their culture what foods are considered repugnant. In North America, the disgust reaction will be elicited by even the mention of eating human flesh, an ape or a monkey, a dog, a snake, a spider, or feces. Some people also respond in this way to the sight of raw or putrid meat, viscera, or a fish with the head and scales left on. In view of all this, the presence in the human diet of quite a number of unpalatable foods becomes difficult to explain. Among the most sought-after products in the world are such things as black pepper, chili peppers, ginger, coffee, and alcohol, which are either extremely bitter or irritating to the sensitive membranes of the mouth. In consuming foods that are unpalatable the first several times they are tried, humans are unique among omnivorous mammals.

The widespread use of chili peppers (which are botanically unrelated to black pepper) is particularly striking. This is the flavoring used most widely in almost all nonindustrialized societies, and it is frequently used in industrialized societies as well. About a quarter of the adult human population of the world is estimated to use it regularly. Its fiery taste is due to the irritating substance known as capsaicin. One cookbook published in the United States recommends putting on rubber gloves to handle chili peppers, and taking care not to touch the face or eyes with the gloves. South American Indians were able to repel Spanish invaders with the extremely irritating smoke from burning chilis. Nevertheless, archeological excavations in Mexico indicate that chili peppers were eaten at least nine thousand years ago and
were among the earliest plants domesticated in the New World. In the centuries since Columbus brought them back to Spain, they have been planted in most of the tropical and subtropical regions of the world.

Several reasons justify the widespread use of chili peppers, and many other strong spices as well. Chili peppers surpass almost all other plants as a source for vitamin A; they are also a rich source of vitamin C and the B vitamins. Although they cannot, of course, be eaten in large quantities, even a small amount is important to nutrition in certain tropical and subtropical societies where the intake of vitamins is often marginal. Chili peppers also have the advantage of lowering the body temperature, since capsaicin in even small quantities quickly produces sweating (and consequently evaporative cooling). Chili also facilitates the digestion of starches, increases gastric secretion, and stimulates the appetite—all of which are important because the staple plant foods eaten in the tropics and subtropics are often bland. Some evidence also exists that chili and certain other spices inhibit the growth of bacteria. A portion of Ethiopian chow, consisting primarily of chili but containing up to fifteen other spices, has been shown to inhibit almost completely staphylococcus, salmonella, and other microorganisms that cause intestinal disorders. The classic explanation for the use of spices, that they mask the taste and smell of spoiled food, is open to question, since so many people do not attempt to mask rotten foods but in fact pay a premium for such things as “high” venison and, in Southeast Asia, sauces made from fermented fish.

Coffee, like chili peppers, is initially unpalatable, and a taste for it must be acquired. Like chili also, it originated in a small geographical area (Ethiopia and Arabia), and contains at least one pharmacologically active substance, caffeine. One difference is that people do not become addicted to chili peppers. The wide acceptance of coffee in many places is particularly surprising in light of such adverse effects as difficulty in falling asleep, bad dreams, an increase in urination, and anxiety. Even so, wherever coffee is drunk, people go out of their way to train their offspring to accept it. Young people gradually become habituated to its bitter taste by drinking it diluted with milk and sweetened with sugar, and by encountering its flavor in candies, milkshakes, ice cream, and commercial yogurt.

In many places where drinking coffee is not a custom, people seek out other plants that contain caffeine. In parts of the Orient and Europe, people are addicted to tea (which is equally bitter and which, contrary to the usual belief, contains nearly the same amount of caffeine as coffee). South American Indians drink mate; East Africans chew kola nuts; and, of course, even in remote corners of the world people now drink cola beverages. It is remarkable that the human species now prizes such bitter substances that its physiological system evolved to reject—and that it will consume the caffeine which, if it were a newly synthesized pharmaceutical product, would no doubt be restricted by government regulation or have its use prohibited altogether. Caffeine is addictive: Habitual users eventually develop a tolerance to it and suffer withdrawal symptoms if they abruptly stop taking it. Contrary to the notion that coffee can sober up a drunk, for some people it hastens the loss of sensory and motor control. Recent experiments have shown that laboratory animals given coffee after imbibing large amounts of alcohol perform less well on tests than they did under the influence of alcohol alone. This indicates that many of the people who follow alcohol with coffee at a party may be further impairing, rather than improving, the ability to drive home safely—simply because coffee sometimes has a euphoric effect on those who have built up a tolerance to it.

In light of these facts about coffee, and also other substances containing caffeine, some explanation must exist for their incorporation into many of the world’s cuisines. Coffee was first used in Ethiopia, and even today the crushed beans, molded into a ball with fat, provide a day’s ration for nomads who need quick energy. This is obviously adaptive. Equally understandable is the use of coffee beans among the Moslems of Arabia, where it was quickly adopted as a consciousness-altering substitute for the alcohol that is forbidden by the Koran. Although it is difficult to account for the original acceptance of coffee and other bitter drinks, their continued use is understandable because they have become enmeshed in particular cultures.

Coffee plays a role in North America similar to that played by tea in Britain. People who move into a new neighborhood are usually invited over for a cup of coffee or tea, which presumably the newcomers are competent to brew for themselves. What they do need is the neighborliness that coffee and tea now symbolize,
and which were once symbolized by the breaking of bread. In North America, residents are presented with a quandary about how to behave toward newcomers. A high value is placed on social nearness between those residing physically close to one another, yet a distinction is made between a neighbor and a friend. One way out of this quandary is to initiate a new social relationship by offering coffee to newcomers. The offer stops short of extending the same relationship to the newcomer’s children, since coffee is the North American’s own nonalcoholic beverage that is acceptable to nearly all adults but almost never to the young children who must be taught how to drink it.

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Humans eat and drink a wide variety of substances that disorient the mind, interfere with the ability to walk upright that took millions of years to evolve, and produce personality changes counter to the sociality that has been a hallmark of human existence. Alcohol is the most widely used of these substances. Indigenous societies in nearly every part of the world, aside from the South Pacific and most areas of North America, developed their own alcoholic drinks. So pervasive is the use of alcohol that in some languages, including English, “to drink” also connotes the drinking of alcohol. In every society, the use of intoxicating beverages has its own etiquette and its own relation to the supernatural. (As A. E. Housman wrote in A Shropshire Lad, “malt does more than Milton can/ To justify God’s ways to man.”) The drinking of alcohol has also become the focus of symbolic behavior. The commuting worker mixes a cocktail at home to mark the transition from the work day in the city to the relaxation of suburban life. Similarly, an Orthodox Jew recites a blessing over the wine which is drunk at the end of the sabbath, as marking the passage from the holy day to the rest of the week.

For the Jívaro Indians in the headwaters of the Amazon, beer is a greater necessity than solid food. Adult males drink from three to four gallons of it a day, adult females from one to two gallons, and a nine-year-old child will down half a gallon. Even though almost all of the protein in their diet must be obtained by going out to hunt, Jívaro hunters will often abandon the pursuit of prey and return to the settlement because the supply of beer is about to run out. Since women produce the beer, a man finds it desirable to acquire at least two wives so as to be able to entertain many guests and thus become known for his generosity. The Bemba also regard beer as equivalent to our notion of solid food; on days when beer is drunk, very little other food is eaten. The Bemba’s high regard for beer as a major food is justified, because the sorghum from which it is made provides a number of B vitamins in which the rest of the diet is deficient, as well as a number of important minerals. A foreigner who sees Africans drinking beer, knowing that they are short of food, will usually condemn it— not realizing that beer is both a nutritional and a social necessity. If a man cannot give a beer party, even a small one, from time to time, he loses standing in his society. For the Bemba, providing beer is the most important way to repay social obligations, to honor kin, or to offer tribute to a chief. It rewards people who have given aid, and it is offered to deities. Tribal councils, marriages, and initiation ceremonies cannot take place without it. No wonder that the Bemba work hard at cultivating the land needed to produce enough grain for brewing.

Beer is similarly important in many modern societies; a pint of even a weak European beer provides nearly a tenth of the calcium and phosphorus needed daily, and about a fifth of the B vitamins, in addition to carbohydrates and several other vitamins and minerals—in effect serving as a liquid bread. In British villages and city neighborhoods, the pub is the focus for social life. It has long been the place for exchanging gossip, for the public airing and settlement of disputes, and for the reinforcement of friendships. A small village that loses its only pub loses much of what held the community together.

The alcoholic content of the beer made by the Bemba and in most other simple societies is usually less than four percent. This was probably true also of the beer made in antiquity. No one knows for certain how far back in history fermented liquors go, but Sumerian tablets dating to nearly five thousand years ago mention nineteen different kinds of beer. Although the brewing of beer could not have taken place until cereal grains had been domesticated and were being grown in quantity, intoxicating drinks must have been known long before the development of agriculture. Ways of preparing them probably were developed independently in many places, and might easily have been learned by accident.
Many of the wild fruits collected by modern hunter–gathers have a high enough sugar content to be fermented into an intoxicating drink, and presumably that was true in the past as well. Almost any culture would thus have been able to produce its own fermented drinks out of native plants. Canadian Indians made a liquor from maple syrup, Mexicans made pulque from the agave plant, South American Indians made beer from manioc, the Chinese and Japanese made wine from rice. One food which prehistoric cave paintings show to have been much sought after—honey—would probably have been collected and stored. Because it is nearly pure sugar, it ferments readily and probably formed the basis for intoxicating drinks in many societies. Mead, made from fermented honey and water, was considered an acceptable offering to the gods by the ancient peoples of the Mediterranean region. Wine from grapes, on the other hand, was made only in Europe for centuries after Moslems destroyed the vines of the Near East.

With the drinking of alcoholic beverages customary in so many societies throughout the world, it might be supposed that all human beings react to it in much the same way—but they do not. The Japanese, the Chinese, and the Indians of North America tend to become drunk on very little alcohol, whereas various other peoples around the world can consume enormous amounts of it without exhibiting signs of intoxication. The Japanese seem to radiate a drunken glow even before the sake has had time to reach the stomach. Anecdotal evidence ever since the pioneers has indicated that North American Indians respond to alcohol with more rapid behavioral changes than do people of European ancestry. Scientific evidence for possible genetic differences, though, is ambiguous. One study, comparing alcohol metabolism by Canadian Ojibway Indians and Canadians of European ancestry, showed significant differences between the two groups; another, comparing the Pima and Papago Indians of Arizona with whites, showed virtually no differences.

One obvious explanation for the conflicting results is that American Indians are not a single homogeneous population but consist of many groups, each with its own genetic makeup. Another complication is the difficulty of separating genetic predispositions concerned with alcohol from the matrix of social, economic, and psychological traits of the various American Indian populations. The Canadian Ojibway, for example, inhabit a cold and moist environment, have traditionally been hunter–gatherers, were nomadic, and have a history over the past several centuries intertwined with rivalries between the English and the French and with the rise and fall of the fur trade. On the other hand, the Arizona Indians inhabit a hot and dry environment, are horticulturists descended from sophisticated irrigation farmers; they are sedentary, and have a history connected with rivalries between Spain and the United States. Any of these and other variables might influence the Indians’ response to alcohol. Such differences aside, genetic differences do seem to exist in the way alcohol affects various human populations. Controlled experiments comparing subjects of Asiatic ancestry (Chinese, Japanese, and Korean) with those of European ancestry have shown that Asians respond to alcohol with an intense flushing of the face, an increased pulse rate, and a loss of coordination more rapid than in those of European ancestry, even when the latter were consuming more alcohol per unit of body weight than the Asiatrics.

Until recently the Camba Indians of eastern Bolivia, numbering about eighty thousand, probably consumed more alcohol than any other people on record. The undiluted distillate of sugar cane, containing 89 percent ethyl alcohol (making it 178 proof), which they took in such enormous quantities was probably the most potent alcoholic drink ever habitually used by any group of humans; it brings tears to the eyes of even a seasoned drinker. The Camba attributed no ill effects to it except an extreme burning sensation in the mouth and throat. Readily admitting a dislike of the taste, they profess to have enjoyed the drunkenness it produced. Camba males began drinking about the age of twelve, engaging in bouts that lasted an entire weekend. During that time a drinker generally passed out a few times, recovered, and drank himself back into a stupor.

Why did the Camba consume large quantities of a drink they disliked? The explanations usually given for alcoholism are anxiety, sexual dysfunction, and aggression—none of which is applicable to the Camba. That the Camba never got drunk alone and that a number of them usually shared a single glass make it clear that the drinking bouts had a social motivation for a people
virtually without any channels for the expression of community interests. Nuclear families were geographically dispersed and independent of one another; kinship ties were tenuous; the sense of identification with the neighborhood or the church was almost completely absent. Fiestas were held nearly every weekend, and became the occasion for the intense social interaction that was otherwise lacking. These things still do not explain why the Camba drank until they passed out. Part of the answer is simply miscalculation: The high concentration of alcohol in even a single toast could easily make the difference between exhilaration and stupor. Another is that it becomes hard to refuse one more drink, lest suspicion be aroused about a man’s willingness to be sociable.

The description given here of the bouts is in the past tense because the consumption of alcohol has decreased sharply since the early 1960s. About that time the Camba began enthusiastically joining sindicatos or “peasant leagues” aimed at land reform and a restructuring of the feudal order that had hitherto prevailed. United by social and economic ideals as they had not previously been by the Catholic Church or by any political organization, national or local, they now attended frequent meetings and demonstrations at which they referred to one another as compañeros (“companions”). The peasant leagues now serve as the unifying social mechanism that previously had been substituted for by heavy social drinking.

The former drinking habits of the Camba might appear unusual, but in fact those typical of North America and Europe are the exception. Even in those simpler societies characterized by the frequent consumption of large amounts of alcohol, drinking is rarely solitary, nor do the drinkers suffer withdrawal symptoms if they are deprived of alcohol. Striking differences can, of course, be seen between one Western society and another. Whenever people lift their glasses, much of what takes place has already been ordained by their culture: the kind of drink it is, the amount that will be consumed in a given unit of time, and the occasions on which the drink will be appropriate. Cultural expectations largely determine whether a drinker remains sober or passes into a stupor, behaves good-naturedly or aggressively, and whether the mood is one of guilt or good cheer. Cultural attitudes toward drinking differ markedly among the numerous ethnic groups of the United States, with those of Irish and of Scandinavian descent at one extreme, and at the other those of Jewish and of southern Italian origins, among whom alcoholism has traditionally been rare.

The causes of the differences between ethnic groups can be found in their European backgrounds. The long association of the Irish with alcohol has become a part of their social fabric. No one knows for certain when the distilled spirits originally called aqua vitae (“water of life”) were first used in Ireland, but they were in evidence when the English invaded Ireland under King Henry II in 1171. Since spirits were then administered as a treatment for various physical and mental disorders, their taste, which most people find unpalatable at first, gradually became acceptable. By the nineteenth century, when large numbers of the Irish began to migrate to the United States, drinking had been incorporated into all social events, from the baptism to the wake. At the rousing party following a christening, the family’s reputation was at stake and any stinginess in the amount or quality of the whiskey had to be avoided. Strong drink became synonymous with hospitality, and was almost never associated with the offering of food, as in virtually all other European cultures. The many religious fasts observed by the Irish throughout the year were from food and not from drink; anyone who felt hungry from fasting was permitted alcohol.

A long history of uncertain food supply and occasional severe famines has also contributed to heavy drinking in Ireland. Almost as a protective measure, the Irish developed a culture characterized by a tendency to eat irregularly, a willingness to fast, and feelings of shame about not having food good enough to offer as a form of hospitality. Alcohol, in these circumstances, provided the social and psychological satisfaction, as well as the caloric energy, that people elsewhere obtain from food. Most of the people of Ireland, far from condemning alcohol, have long considered it to be of genuine medicinal value and a protection against the chill and damp of their climate. It is thus no wonder that overconsumption of alcohol was looked upon with tolerance, and that even drunkenness was condemned only when it threatened the family’s resources.

Whereas in Ireland drinking has been largely convivial rather than for ritual purposes, the situation was just the reverse among Orthodox Jews. Wine was specified as a libation in the Temple
service (as in, among other places, Numbers 15:5–10 and 28:7–10), but drunkenness was depicted as shameful (as in the stories of Noah and Lot). Among the Jews, strictures were applied to drinking as well as to eating, so that, even though Jews may drink as frequently as the Irish or any ethnic group in the United States and Europe, they have an extremely low rate of alcoholism. These strictures were woven not only into everyday life, but also into the traditional Jewish rituals connected with the cycle of holy days and festivals, with rites of passage, and with the observance of the sabbath.

People in the United States who trace their ancestry to southern Italy also have a very low rate of alcoholism, even though it is somewhat higher than in Italy itself. The per capita consumption of alcohol in Italy is very large; indeed, drinking habits are nutritional habits, and wine is regarded almost as though it were a food. Italians are convinced that wine is good for adults, and in small quantities even for children, to drink along with a meal. They therefore use it as a substitute for milk, which is generally avoided because of the milk-borne epidemics that were common in the past. The drinking habits of fifteen hundred Italians were examined by the Yale University Center of Alcohol Studies; virtually none of them looked on wine as providing escape or relaxation, and only one out of the fifteen hundred expressed any real fear that drinking wine at meals might lead to alcoholism. Cultural attitudes clearly affect what, how much, when, and with whom people drink — and these cultural attitudes have been transported along with the Irish, Jews, and Italians when they migrated to other countries.

In any accounting for tastes, notice must be taken of differences in the inherited abilities of individuals to detect the tastes of foods. A chemical known as PTC (phenylthiocarbamide), for example, seems extremely bitter to certain people whereas for others it has no taste at all. Genetic studies have shown that these traits are inherited. Most American Indians are in the category of those able to taste PTC; in some groups nearly a hundred percent of the people can taste it. "Tasters" are also more numerous in many parts of Africa, in eastern Asia, and in the Near East, but very much less so in Europe and in India. (Tasters probably have more food aversions than nontasters, a trait that can be adaptive, since it prevents the consumption of possibly toxic foods.) Similarly, it appears that the tendency to taste the artificial sweetener saccharin as sweet is genetic. For many other people it tastes bitter because of two dominant genes that allow them to detect its bitter components. An experiment that determined the sensitivity of volunteers to the tastes of thirty-one different substances showed that no two volunteers had taste profiles that were very similar, except for pairs of "identical" twins — but even for them the profiles were not exactly alike. Differences of this sort are what make each human biochemically unique and could account for the food preferences peculiar to each person. But even though taste profiles might explain why one North American has different sensitivities from another's, they cannot explain why North Americans in general like hamburgers and apple pie.

Each species of animal chooses what it eats and drinks out of basic biological needs and the adaptation it has made over an immense stretch of evolutionary time. Yet the nutritional composition of one animal diet, from a biochemical standpoint, is very much the same as any other. All animals must obtain from their diet about forty or fifty substances needed by the cells to live and function. As a species evolved, it must have selected foods from what was available within its own niche that met its criteria for palatability in regard to taste, odor, texture, color, and shape. For humans, the two kinds of food that are most palatable are those having the texture and savory taste of meat, and those with the odor and the vivid colors typical of fruit. In addition to food from these two categories, neutral-tasting foods — leaves, roots, seeds, and shoots — provided the evolving humans with nutrients but did not supersede the special attractiveness of the other two. Combined, food from the three categories provided the ancestors of humans with all the protein, carbohydrates, fats, vitamins, and minerals they required. When proto-humans ate what they liked, they therefore must at the same time have been eating what they needed.

All this, though, does not explain why various groups of humans chose exactly as they did among these three categories, and among the particular kinds within each category. The differences
can account for the likes and dislikes typical of whole societies. Human children are not imprinted, as are many kinds of animals, with a permanent and irreversible attachment to certain foods. For humans, as omnivores who depend upon a changing array of foods from their environment, such imprinting would be mal-adaptive.

Nevertheless children become familiar from birth with certain flavors that are characteristic of their culture. The distinctive cuisines of the world are based not so much on the character of rice, maize, potatoes, bread, pasta, manioc, and other staples in themselves as on the “flavor principle” — a sensory experience produced by the mixtures of specific flavoring ingredients that are customarily added to a staple during its preparation. For example, a characteristic flavor in Mexican cooking is chili pepper and tomato; one in Chinese cooking is soy sauce and ginger root — and the same rice or chicken will taste Mexican or Chinese according to the flavors used. Some of the flavor principles to be found in the distinctive cuisines of the world are:

JAPANESE: soy sauce, saki, and sugar (sometimes also ginger root)
KOREAN: soy sauce, garlic, brown sugar, and sesame seeds
INDONESIAN: soy sauce, garlic, molasses, and peanuts
SZECHWAN: soy sauce, brandied wine, ginger root plus sugar for “sweet” dishes, vinegar for “sour” peppers for “hot”
CANTON CHINESE: soy sauce, brandied wine, ginger root, peanut oil (sometimes also sugar and garlic)
INDIAN: a basic curry mixture containing garlic, cumin, ginger, turmeric, coriander, cardamom, and pepper (plus mustard seed, saffron, cloves, coconut, or vinegar, depending upon whether the particular dish is “sweet,” “sour,” or “hot”)
IRANIAN: yogurt with dill or mint
MIDDLE EASTERN: lemon, parsley, and garlic
GREEK: lemon and oregano (plus sometimes dill or cinnamon)
SOUTHERN ITALIAN AND SOUTHERN FRENCH: olive oil, tomato, and a mixture of herbs (thyme, basil, oregano, often with garlic)
FRENCH: butter, cream, wine, chicken or meat stock (often with the addition of cheese, herbs, and mustard)
EAST EUROPEAN JEWISH: chicken or goose fat and onions
RUSSIAN AND SCANDINAVIAN: sour cream with dill or caraway
CENRAL AMERICAN: lime, chili peppers, and coriander (or garlic, scallion).
MEXICAN: tomato, chili peppers, and cumin.

A list like this reveals something about the traditions that people in each society maintain for the enhancement of taste. Nearly everywhere, foods that are high in fats (such as pork, lamb, goose, and duck) are almost never prepared with sauces that are also high in fats (cream, cheese, eggs), but rather with a sauce based on fruit-wine or sugar, as in duck à l'orange, glazed ham, or lamb with mint sauce. On the other hand, foods that are low in fat (chicken, veal, shellfish) are often flavored with cream or butter sauces. The combination of low-fat fish with low-fat fruit is rare (except in Holland, where the combination is sautéed in oil), as is the combination of two high-fat foods (an exception being the North American ham-and-cheese sandwich). The basis for such practices in combining flavors is apparently a chemical one: The acids in fruit or wine break down the high fat content of certain meats, whereas fatty sauces enhance the flavor of bland foods such as chicken.

Although cultural influences are paramount, taste and distaste may stem from inherited predispositions. Anthropologists and nutritionists alike were long perplexed by the strong preference for milk in some societies and the strict avoidance of it in others. In the aboriginal New World, only two domesticated mammals were suitable for milking — the llama and the alpaca of the South American Andes. Apparently no attempt was made to obtain milk from either; instead, they were used for transportation or as a source of wool, and sometimes for meat. Numerous domesticated mammals of the Old World — cattle, water buffalo, yak, goats, camels, reindeer, and horses — provided milk, yet people in many societies failed to milk them; those who did often transformed the raw milk into cheese, butter, ghee, and various forms of yogurt.

It might be supposed, out of ethnocentric prejudice, that people anywhere in the world would want to drink milk if they had it. But this is far from true. North American relief agencies have sent powdered milk to the starving of the world — only to have the people of Colombia and Guatemala use it as whitewash, and the people of Indonesia take it as a laxative. The Navajo Indians simply threw it away, and so did the Kanuri of West Africa, who were convinced that it was a food of evil spirits. Throughout large areas of the Old World, a belief is ingrained not simply that milk is to be avoided, but also that it should not be taken from the animals, since to do so is to steal an essential food from nursing young. Sizable numbers of the world's populations are nonmilkers, including all the Indians of the New World, along with the people of China, Japan, Korea, Burma, all the Indochinese countries, Malaysia, Indonesia, the aboriginal Australians, and others. In Africa, nonmilkers inhabit about a third of the continent, from the Guinea Coast and Congo River Basin on the west across East Africa to Mozambique and southward into Angola.

It used to be said that the reason for avoiding milk was simply ecological: that large areas in Africa, Asia, and elsewhere were unsuited to dairying. It is true that in many places good pasture lands are scarce, that tropical grasses are often deficient in nutrients, and that diseases are prevalent among domesticated animals in tropical environments. It is also true that dairying cannot be incorporated easily into many traditional economies. On the other hand, dairying has been successfully introduced into some such areas of Southeast Asia by migrants from Indian and Pakistan who are traditional users of milk products.

During the mid-1960s, scientists discovered significant differences among various populations of the world in the ability to digest lactose or milk sugar, a carbohydrate that is broken down into simple sugars by the enzyme lactase. Although the young of almost all mammals produce this enzyme at birth, around the time of weaning they gradually lose the ability to manufacture it. The same thing is true for many humans; after early childhood, drinking no more than a cup of raw milk may produce cramps, diarrhea, flatulence, and sometimes vomiting. The loss of the enzyme is obviously an evolutionary adaptation for mammals, humans included: Its absence prevents adults from competing with infants, who can digest only milk. All hunter-gatherers develop an intolerance of milk about the time of weaning, and the sharp decrease in the production of the enzyme prevails for the rest of their lives. The situation began to change just under ten thousand years ago, when domesticated animals made milk and its products available to adults as a new food source.
Studies of many milking and nonmilking cultures have revealed that a deficiency or a sufficiency of the enzyme in the population parallels the cultural acceptance or rejection of milk. Wherever milk is valued as a food, the adults are equipped to manufacture lactase, and the consumption of dairy products has a long history. This is true of northern Europe, of the pastoral regions of the Near East and Africa, and also of the Caucasus, Central Asia, Pakistan, and parts of India. Numerous individuals from lactose-intolerant populations who have migrated to areas in which milk-drinking is common (such as the Chinese now living in Australia or the United States) have gradually accustomed themselves to drinking small amounts of raw milk. They cannot, though, consume large amounts of it because of the genetic limitation upon their production of the enzyme.

When some human groups started to milk domesticated mammals, nine or ten thousand years ago, they were perhaps motivated by a desire to provide milk offerings to a mother goddess. Humans who sampled this milk themselves would have experienced the gastric distress connected with an inability to digest it. A genetic mutation in some individuals would have permitted the enzyme to be produced, enabling them to digest milk as adults. These individuals would have had an advantage in being better nourished than those who could not make use of a nutritious new food; they would have survived in greater numbers and have produced more surviving offspring, who would have inherited the same advantage. In time, according to the Darwinian theory of natural selection, the enzyme-producing individuals would have supplanted those who lacked this trait.

Calculations have shown that if adults capable of manufacturing the enzyme were able to produce only one percent more surviving offspring in a generation than those who did not, and did so over four hundred generations (approximately the number that have lived since milk-producing mammals were domesticated), the prevalence of the inability to digest milk would have declined from ninety percent to about sixteen percent of the population. This range of percentages is very close to the actual range of tolerance for milk now found throughout the populations of the world. And the theory of natural selection is supported by the correspondence of those cultures in which milk is regarded as a desirable food with low percentages of lactose-intolerant individuals. There are

a number of exceptions — notably the Greeks, Arabs, and Near Eastern Jews, among whom many individuals are intolerant of milk despite a long history of dairying. But dairying is not synonymous with drinking raw milk; in all of these societies, milk is mainly processed into cheese, yogurt, and butter, which are low in lactose. Everything that has been learned in recent years about lactose intolerance supports the conclusion that Asians do not avoid milk because they do not wish to deprive infant mammals of it, that Africans do not fear it because of evil spirits, and that the Chinese are not perverse in finding a thick milkshake repugnant. These attitudes were undoubtedly adopted as rationalizations to explain the already-existing intolerance of milk.

Other attitudes about food preferences that may seem contrary to reason might similarly have a biological component — such as the difficulty that certain peoples, notably in Britain and in western India, have in digesting wheat, because of an inherited sensitivity to its gluten. These areas mark the outer boundaries, west and east, of wheat culture in Eurasia, and possibly the inability to digest the cereal has a natural-selection explanation similar to that of milk. Genetics alone cannot explain tastes and distastes, but obviously it cannot be ignored. Together with ecology, cultural history, economics, and childhood experiences, it is one more contribution to the network of influences that go into explaining why various people eat what they do. All of these, plus still other variables, act together to form what is known as “cuisine” — the subject of the next chapter.