

ribly comfortable. The obvious solution was to pad them, but that proved more difficult than one might have thought, because few craftsmen had all the skills necessary to make a good padded chair. Manufacturers struggled to get square edges where fabric met wood—piping and cording were originally brought in as a way of disguising these inadequacies—and were frequently out of their depth at producing padding that would maintain a permanent domed shape on the seat. Only saddlers could reliably provide the requisite durability, which is why so much early upholstered furniture was covered in leather. Fabric upholsterers also had the problem that many preindustrial fabrics could be produced only in widths of about twenty inches, creating a need for seams in awkward places. Only after the invention of the flying shuttle by John Kay in 1733 did it become possible to produce fabrics in widths of three feet or so.

Improvements in textile and printing technologies transformed decorative possibilities beyond furniture as well. This was the age that saw the widespread introduction of carpets, wallpapers, and bright fabrics. Paint, too, became available in a range of bright colors for the first time. The upshot is that, by late in the eighteenth century, households were full of features that would have been the wildest indulgences a century before. The modern house—a house such as we would recognize today—had begun to emerge. At last, some fourteen hundred years after the Romans withdrew, taking their hot baths, padded sofas, and central heating with them, the British were rediscovering the novel condition of being congenially situated. They hadn't entirely mastered comfort yet, but they had certainly discovered an alluring concept. Life, and the expectations that went with it, would never be the same again.

There was, however, one consequence in all this. The advent of comfort in the home, in particular the widespread use of soft furnishings, made furniture much more vulnerable to stains, burns, and other careless abuses. In an effort to save the most valuable furniture from the worst of the risks, a new type of room was created, and it is there, conveniently, that we go next.

• CHAPTER VIII •

THE DINING ROOM

I

By the time Mr. Marsham came to build his house, it would have been unthinkable for a man of his position not to have a formal dining room in which to entertain. But just how formal and how spacious and whether situated at the front of the house or the back are matters that would have required some reflection, since dining rooms were still novel enough that their dimensions and situation could not be assumed. In the end, as we have seen, Mr. Marsham decided to eliminate the proposed servants' hall and give himself a thirty-foot-long dining room—big enough to accommodate eighteen or twenty guests, a very large number for a country parson. Even if he entertained frequently, as would seem to be indicated, it must have been a lonely room on the nights he dined alone. At least the view across to the churchyard was a pleasant one.

We know almost nothing about how Mr. Marsham used this room, not simply because we know so little about Mr. Marsham but also because we know surprisingly little about certain aspects of dining rooms themselves. In the middle of the table was likely to have stood an object of costly elegance known as an *epergne* (pronounced "ay-pairn"), consisting of dishes connected by ornamental branches, each dish containing a selection of fruits or nuts. For a century or so, no table of discernment was without its *epergne*, but why it was called an *epergne* no one remotely knows. The word doesn't exist in French. It just seems to have popped into being from nowhere.

Around the epergne on Mr. Marsham's table are likely to have been cruet stands—elegant little racks, usually of silver, holding condiments—and these, too, have a mystery. Traditional cruet stands came with two glass bottles with stoppers, for oil and vinegar, and three matching casters—that is, bottles with perforated tops for sprinkling (or casting) flavorings onto food. Two of the casters contained salt and pepper, but what went into the third caster is unknown. It is generally presumed to have been dried mustard, but that is really because no one can think of anything more likely. “No satisfactory alternative has ever been suggested” is how the food historian Gerard Brett has put it. In fact, there is no evidence to suggest that mustard was ever desired or utilized in such ready fashion by diners at any time in history. Probably for this reason, by Mr. Marsham's day the third caster was rapidly disappearing from tables—as indeed were cruet stands themselves. Condiments now increasingly varied from meal to meal as certain ones became associated with particular foods—mint sauce with lamb, mustard with ham, horseradish with beef, and so on. Scores of other flavorings were applied in the kitchen. But just two were considered so indispensable that they never left the table at all. I refer of course to salt and pepper.

Why it is that these two, out of all the hundreds of spices and flavorings available, have such a durable venerability is one of the questions with which we began the book. The answer is a complicated, dramatic one. I can tell you at once that nothing you touch today will have more bloodshed, suffering, and woe attached to it than the innocuous twin pillars of your salt and pepper set.

Start with salt. Salt is a cherished part of our diet for a very fundamental reason. We need it. We would die without it. It is one of about forty tiny specks of incidental matter—odds and ends from the chemical world—that we must get into our bodies to give ourselves the necessary zip and balance to sustain daily life. Collectively, those specks are known as vitamins and minerals, and there is a great deal—a really quite surprising amount—that we don't know about them, including how many of them we need, what exactly some of them do, and in what amounts they are optimally consumed.

That they were needed at all was a piece of knowledge that was an

amazingly long time coming. Until well into the nineteenth century, the notion of a well-balanced diet had occurred to no one. All food was believed to contain a single vague but sustaining substance—“the universal aliment.” A pound of beef had the same value for the body as a pound of apples or parsnips or anything else, and all that was required of a human was to make sure that an ample amount was taken in. The idea that embedded within particular foods were vital elements that were central to one's well-being had not yet been thought of. That's not altogether surprising, because the symptoms of dietary deficiency—lethargy, aching joints, increased susceptibility to infection, blurred vision—seldom suggest dietary imbalance. Even today if your hair started to fall out or your ankles swelled alarmingly, it is unlikely your first thoughts would turn to what you had eaten lately. Still less would you think about what you *hadn't* eaten. So it was with bewildered Europeans who for a very long time died in often staggering numbers without knowing why.

Of scurvy alone it has been suggested that as many as two million sailors died between 1500 and 1850. Typically, scurvy killed about half the crew on any long voyage. Various desperate expedients were tried. Vasco da Gama on a cruise to India and back encouraged his men to rinse their mouths with urine, which did nothing for their scurvy and can't have done much for their spirits either. Sometimes the toll was truly shocking. On a three-year voyage in the 1740s, a British naval expedition under the command of Commodore George Anson lost fourteen hundred men out of two thousand who sailed. Four were killed by enemy action; virtually all the rest died of scurvy.

Over time, people noticed that sailors with scurvy tended to recover when they got to a port and received fresh foods, but nobody could agree what it was about those foods that helped them. Some thought it wasn't the foods at all, but just a change of air. In any case, it wasn't possible to keep foods fresh on long voyages, so simply identifying efficacious vegetables and the like was slightly pointless. What was needed was some kind of distilled essence—an antiscorbutic, as the medical men termed it—that would be effective against scurvy but portable, too. In the 1760s, a Scottish doctor named William Stark, evidently encouraged by Benjamin Franklin, conducted a series of patently foolhardy experiments in which he tried

to identify the active agent by, somewhat bizarrely, depriving himself of it. For weeks he lived on only the most basic of foods—bread and water chiefly—to see what would happen. What happened was that in just over six months he killed himself, from scurvy, without coming to any helpful conclusions at all.

In roughly the same period, James Lind, a naval surgeon, conducted a more scientifically rigorous (and personally less risky) experiment by finding twelve sailors who had scurvy already, dividing them into pairs, and giving each pair a different putative elixir—vinegar to one, garlic and mustard to another, oranges and lemons to a third, and so on. Five of the groups showed no improvement, but the pair given oranges and lemons made a swift and total recovery. Amazingly, Lind decided to ignore the significance of the result and doggedly stuck with his personal belief that scurvy was caused by incompletely digested food building up toxins within the body.

It fell to the great Captain James Cook to get matters onto the right course. On his circumnavigation of the globe in 1768–71, Captain Cook packed a range of antiscorbutics to experiment on, including thirty gallons of carrot marmalade and a hundred pounds of sauerkraut for every crew member. Not one person died from scurvy on his voyage—a miracle that made him as much a national hero as his discovery of Australia or any of his other many achievements on that epic undertaking. The Royal Society, Britain's premier scientific institution, was so impressed that it awarded him the Copley Medal, its highest distinction. The British navy itself was not so quick, alas. Even in the face of all the evidence, it procrastinated for another generation before finally providing citrus juice to sailors as a matter of routine.*

The realization that an inadequate diet caused not only scurvy but a range of common diseases was remarkably slow to become established. Not until 1897 did a Dutch physician named Christiaan Eijkman, working in Java, notice that people who ate whole-grain rice didn't get beriberi, a

*The Naval Board also used lime juice rather than lemon juice because it was cheaper, which is why British sailors became known as limeys. Lime juice wasn't nearly as effective as lemon juice. Incidentally, it was Americans, not Australians, who first applied the term *limey* to British sailors.

debilitating nerve disease, while people who ate polished rice very often did. Clearly some thing or things were present in some foods, and missing in others, and served as a determinant of well-being. It was the beginning of an understanding of "deficiency disease," as it was known, and it won Eijkman the Nobel Prize in medicine even though he had no idea what these active agents were. The real breakthrough came in 1912, when Casimir Funk, a Polish biochemist working at the Lister Institute in London, isolated thiamine, or vitamin B₁, as it is now more generally known. Realizing it was part of a family of molecules, he combined the terms *vital* and *amines* to make the new word *vitamines*. Although Funk was right about the vital part, it turned out that only some of the vitamins were amines (that is to say, nitrogen-bearing), and so the name was changed to *vitamins* to make it "less emphatically inaccurate," in Anthony Smith's nice phrase.

Funk also asserted that there was a direct correlation between a deficiency of specific amines and the onset of certain diseases—scurvy, pellagra, and rickets in particular. This was a huge insight and had the potential to save millions of shattered lives, but unfortunately it wasn't heeded. The leading medical textbook of the day continued to insist that scurvy was caused by any number of factors—"insanitary surroundings, overwork, mental depression and exposure to cold and damp" were the principal ones its authors thought worth listing—and only marginally by dietary deficiency. Worse still, in 1917 America's leading nutritionist, E. V. McCollum of the University of Wisconsin—the very man who coined the terms vitamin A and B—declared that scurvy was not in fact a dietary deficiency disease at all, but was caused by constipation.

Finally in 1939, a Harvard Medical School surgeon named John Crandon decided to settle matters once and for all by the age-old method of withholding vitamin C from his diet for as long as it took to make himself really ill. It took a surprisingly long time. For the first eighteen weeks, his only symptom was extreme fatigue. (Remarkably, he continued to operate on patients through this period.) But in the nineteenth week he took an abrupt turn for the worse—so much so that he would almost certainly have quickly died had he not been under close medical supervision. He was injected with 1,000 milligrams of vitamin C and was restored to life

almost at once. Interestingly, he had never acquired the one set of symptoms that everyone associates with scurvy: the falling out of teeth and bleeding of gums.

Meanwhile, it turned out that Funk's vitamins were not nearly as coherent a group as originally thought. Vitamin B proved to be not one vitamin but several, which is why we have B₁, B₂, and so on. To add to the confusion, vitamin K has nothing to do with an alphabetical sequence. It was called K because its Danish discoverer, Henrik Dam, dubbed it *Koagulations vitamin* for its role in blood clotting. Later, folic acid (sometimes called vitamin B₉) was added to the group. Two other vitamins—pantothenic acid and biotin—don't have numbers or, come to that, much profile, but that is largely because they never cause us problems. No human has yet been found with insufficient quantities of either.

The vitamins are, in short, a disorderly bunch. It is almost impossible to define them in a way that comfortably embraces them all. A standard textbook definition is that a vitamin is "an organic molecule not made in the human body which is required in small amounts to sustain normal metabolism," but in fact vitamin K is made in the body, by bacteria in the gut. Vitamin D, one of the most vital substances of all, is actually a hormone, and most of it comes to us not through diet but through the magical action of sunlight on skin.

Vitamins are curious things. It is odd, to begin with, that we cannot produce them ourselves when we are so very dependent on them for our well-being. If a potato can produce vitamin C, why can't we? Within the animal kingdom only humans and guinea pigs are unable to synthesize vitamin C in their own bodies. Why us and guinea pigs? No point asking. Nobody knows. The other remarkable thing about vitamins is the striking disproportion between dosage and effect. Put simply, we need vitamins a lot, but we don't need a lot of them. Three ounces of vitamin A, lightly but evenly distributed, will keep you purring for a lifetime. Your B₁ requirement is even less—just one ounce spread over seventy or eighty years. But just try doing without those energizing specks and see how long it is before you start to fall to pieces.

The same considerations exactly apply with the vitamins' fellow particles the minerals. The fundamental difference between vitamins and min-

erals is that vitamins come from the world of living things—from plants and bacteria and so on—and minerals do not. In a dietary context, *minerals* is simply another name for the chemical elements—calcium, iron, iodine, potassium, and the like—that sustain us. Ninety-two elements occur naturally on Earth, though some in only very tiny amounts. Francium, for instance, is so rare that it is thought that the whole planet may contain just twenty francium atoms at any given time. Of the rest, most pass through our bodies at some time or other, sometimes quite regularly, but whether they are important or not is still often unknown. You have a lot of bromine distributed through your tissues. It behaves as if it is there for a purpose, but nobody yet has worked out what that purpose might be. Remove zinc from your diet and you will get a condition known as hypogeusia, in which your taste buds stop working, making food boring or even revolting, but until as recently as 1977 zinc was thought to have no role in diet at all.

Several elements, like mercury, thallium, and lead, seem to do nothing good for us and are positively detrimental if consumed excessively.* Others are also unnecessary but far more benign, of which the most notable is gold. That is why gold can be used as a filling for teeth: it doesn't do you any harm. Of the rest, some twenty-two elements are known or thought to be of central importance to life, according to *Essentials of Medical Geology*. We are certain about sixteen of them; the other six we merely think are vital. Nutrition is a remarkably inexact science. Consider magnesium, which is necessary for the successful management of proteins within the cells. Magnesium abounds in beans, cereals, and leafy vegetables, but modern food processing reduces the magnesium content by up to 90 percent—effectively annihilates it. So most of us are not taking in anything like the recommended daily amount—not that anyone really knows what that amount should be. Nor can anybody specify the consequences of magnesium deficiency. We could be taking years off our lives, or points

*Mercury especially so. It has been estimated that as little as 1/25 of a teaspoon of mercury could poison a sixty-acre lake. It is fairly amazing that we don't get poisoned more often. According to one computation, no fewer than twenty thousand chemicals in common use are poisonous to humans if "touched, ingested or inhaled." Most are twentieth-century creations.

off our IQ, or the edge off our memory, or almost any other bad thing you care to suggest. We just don't know. Arsenic is similarly uncertain. Obviously, if you get too much in your system you will very quickly wish you hadn't. But we all get a *little* arsenic in our diets, and some authorities are absolutely certain it is vital to our well-being in these tiny amounts. Others are not so sure.

Which brings us back, in a very roundabout way, to salt. Of all the minerals, the most vital in dietary terms is sodium, which we mostly consume in the form of sodium chloride—table salt.* Here the problem is that we are getting not too little, but possibly way too much. We don't need all that much—200 milligrams a day, about what you would get with six or eight vigorous shakes of a salt cellar—but we take in about sixty times that amount on average. In a normal diet it is almost impossible not to overload on sodium, because there is so much salt in the processed foods we eat with such ravenous devotion. Often it is heaped into foods that don't seem salty at all—breakfast cereals, prepared soups, and ice cream, for instance. Who would guess that an ounce of cornflakes contains more salt than an ounce of salted peanuts? Or that the contents of one can of soup—almost any can at all—will considerably exceed the total daily recommended salt allowance for an adult?

Archaeological evidence shows that once people settled down in agricultural communities they began to suffer salt deficiencies—something that they had not experienced before—and so had to make a special effort to find salt and get it into their diet. One of the mysteries of history is how they knew they needed to do so, because the absence of salt in the diet awakes no craving. It makes you feel bad and eventually it kills you—without the chloride in salt, cells simply shut down like an engine

*Sodium chloride is strange stuff because it is made up of two extremely aggressive elements: sodium and chlorine. Sodium and chlorine are the Hell's Angels of the mineral kingdom. Drop a lump of pure sodium into a bucket of water and it will explode with enough force to kill. Chlorine is even more deadly. It was the active ingredient in the poison gases of the First World War and, as swimmers know, even in very dilute form it makes the eyes sting. Yet put these two aggressive elements together, and what you get is innocuous sodium chloride—common table salt.

without fuel—but at no point would a human being think: “Gosh, I could sure do with some salt.” So how they knew to go searching for it is an interesting question, particularly as in some places getting it required some ingenuity. Ancient Britons, for instance, heated sticks on a beach, then doused them in the sea and scraped the salt off. Aztecs, by contrast, acquired salt by evaporating their own urine. These are not intuitive acts, to put it mildly. Yet getting salt into the diet is one of the most profound urges in nature, and it is a universal one. Every society in the world in which salt is freely available consumes, on average, forty times the amount needed to sustain life. We just can't get enough of the stuff.

Salt is now so ubiquitous and cheap that we forget how intensely desirable it was once, but for much of history it drove men to the edges of the world. Salt was needed to preserve meats and other foods, and so was often required in vast quantities: Henry VIII had twenty-five thousand oxen slaughtered and salted for one military campaign in 1513. So salt was a hugely strategic resource. In the Middle Ages caravans of as many as forty thousand camels—enough to form a column seventy miles long—conveyed salt across the Sahara from Timbuktu to the lively markets of the Mediterranean.

People have fought wars over it and been sold into slavery for it. So salt has caused some suffering in its time. But that is nothing compared with the hardship and bloodshed and murderous avarice associated with a range of tiny foodstuffs that we don't need at all and could do perfectly well without. I refer to salt's complements in the condiment world: the spices. Nobody would die without spices, but plenty have died for them.

A very big part of the history of the modern world is the history of spices, and the story starts with an unprepossessing vine that once grew only on the Malabar coast of southwestern India. The vine is called *Piper nigrum*. If presented with it in its natural state, you would almost certainly struggle to guess its importance, but it is the source of all three “true” peppers—black, white, and green. The little round, hard peppercorns that we pour into our household pepper mills are actually the vine's tiny fruit, dried to pack a

gritty kick.* The difference between the varieties is simply a function of when they are picked and how they are processed.

Pepper has been appreciated since time immemorial in its native territory, but it was the Romans who made it an international commodity. Romans loved pepper. They even peppered their desserts. Their attachment to it kept the price high and gave it a lasting value. Spice traders from the distant East couldn't believe their luck. "They arrive with gold and depart with pepper," one Tamil trader remarked in wonder. When the Goths threatened to sack Rome in 408, the Romans bought them off with a tribute that included three thousand pounds of pepper. For his wedding meal in 1468, Duke Karl of Bourgogne ordered 380 pounds of black pepper—far more than even the largest wedding party could eat—and displayed it conspicuously so that people could see how fabulously wealthy he was.

Incidentally, the long-held idea that spices were used to mask rotting food doesn't stand up to much scrutiny. The only people who could afford most spices were the ones least likely to have bad meat, and anyway spices were too valuable to be used as a mask. So when people had spices they used them carefully and sparingly, and not as a sort of flavorsome cover-up.

Pepper accounted for some 70 percent of the spice trade by bulk, but other commodities from farther afield—nutmeg and mace, cinnamon, ginger, cloves, and turmeric, as well as several largely forgotten exotics such as calamus, asafoetida, ajowan, galangal, and zedoary—began to find their way to Europe, and these became even more valuable. For centuries spices were not just the world's most valued foodstuffs, they were the most treasured commodities of any type. The Spice Islands, hidden away in the Far East, remained so desirable and prestigious and exotic that when James I gained possession of two small islets, it was such a coup that for a time he was pleased to style himself "King of England, Scotland, Ireland, France, Puloway and Puloroon."

*The difference between herbs and spices is that herbs come from the leafy part of plants and spices from the wood, seed, fruit, or other nonleafy part.

Nutmeg and mace were the most valuable because of their extreme rarity.* Both came from a tree, *Myristica fragrans*, which was found on the lower slopes of just nine small volcanic islands rising sheer from the Banda Sea, amid a mass of other islands—none with quite the right soils and microclimates to support the nutmeg tree—between Borneo and New Guinea in what is now Indonesia. Cloves, the dried flowerbuds of a type of myrtle tree, grew on six similarly selective islands some two hundred miles to the north in the same chain, known to geography as the Moluccas but to history as the Spice Islands. Just to put this in perspective, the Indonesian archipelago consists of sixteen thousand islands scattered over 735,000 square miles of sea, so it is little wonder that the locations of fifteen of them remained a mystery to Europeans for so long.

All of these spices reached Europe through a complicated network of traders, each of whom naturally took a cut. By the time they reached European markets, nutmeg and mace fetched as much as sixty thousand times what they sold for in the Far East. Inevitably, it was only a matter of time before those at the end of the supply chain concluded it would be a lot more lucrative to cut out the intermediate stages and get all the profits at the front end.

So began the great age of exploration. Christopher Columbus is the best remembered of the early explorers, but he was not the first. In 1487, five years ahead of him, Fernão Dulmo and João Estreito set off from Portugal into the uncharted Atlantic, vowing to turn back after forty days if they hadn't found anything by then. That was the last anyone ever heard of them. It turned out that finding the right winds to bring one back to Europe wasn't at all easy.

Columbus's real achievement was managing to cross the ocean successfully in both directions. Though an accomplished enough mariner, he was not terribly good at a great deal else, especially geography, the skill

*Nutmeg is the seed of the tree; mace is part of the flesh that surrounds the seed. Mace was actually the rarer of the two. About a thousand tons of nutmeg were harvested annually, but only about a hundred tons of mace.

that would seem most vital in an explorer. It would be hard to name any figure in history who has achieved more lasting fame with less competence. He spent large parts of eight years bouncing around Caribbean islands and coastal South America convinced that he was in the heart of the Orient and that Japan and China were at the edge of every sunset. He never worked out that Cuba is an island and never once set foot on, or even suspected the existence of, the landmass to the north that everyone thinks he discovered: the United States. He filled his holds with valueless iron pyrite (thinking it was gold) and with what he confidently believed to be cinnamon and pepper. The first was actually a worthless tree bark, and the second were not true peppers but chili peppers—excellent when you have grasped the general idea of them, but a little eye-wateringly astonishing on first hearty chomp.

Everyone but Columbus could see that this was not the solution to the spice problem, and in 1497 Vasco da Gama, sailing for Portugal, decided to go the other way to the Orient, around the bottom of Africa. This was a much trickier proposition than it sounds. Contrary prevailing winds and currents wouldn't allow a southern-sailing vessel to simply follow the coastline, as logic would indicate. Instead it was necessary for Gama to sail far out into the Atlantic Ocean—almost to Brazil, in fact, though he didn't know it—to catch easterly breezes that would shoot his fleet around the southern cape. This made it a truly epic voyage. Europeans had never sailed this far before. Gama's ships were out of sight of land for as much as three months at a time. This was the voyage that effectively discovered scurvy. No earlier sea voyages had been long enough for the symptoms of scurvy to take hold.

It also brought two other unhappy traditions to the maritime world. One was the introduction of syphilis to Asia—just five years after Columbus's men conveyed it to Europe from the Americas—helping make it a truly international disease. The other was the casual infliction of extreme violence on innocent people. Vasco da Gama was a breathtakingly vicious man. On one occasion he captured a Muslim ship carrying hundreds of men, women, and children, locked the passengers and crew in the hold, carried off everything of value, and then—gratuitously, appallingly—set the ship ablaze. Almost everywhere he went, Gama abused or slaughtered people he encountered, and so set a tone of dis-

trust and brutish violence that would characterize and diminish the whole of the age of discovery.

Vasco da Gama never got to the Spice Islands. Like most others, he thought the East Indies were just a little east of India—hence their name, of course—but in fact they proved to be *way* beyond India, so far beyond that Europeans arriving there began to wonder if they had sailed most of the way around the world and were almost back to the Americas. If so, then a trip to the Indies for spices would be more simply carried out by sailing west, past the new lands lately discovered by Columbus, rather than going all the way around Africa and across the Indian Ocean.

In 1519, Ferdinand Magellan set off in five leaky ships, in a brave but seriously underfunded operation, to find a western route. What he discovered was that between the Americas and Asia was a greater emptiness than anyone had ever imagined Earth had room for: the Pacific Ocean. No one has ever suffered more in the quest to get rich than Ferdinand Magellan and his crew as they sailed in growing disbelief across the Pacific in 1521. Their provisions all but exhausted, they devised perhaps the least appetizing dish ever served: rat droppings mixed with wood shavings. "We ate biscuit which was no longer biscuit but powder of biscuits swarming with worms," recorded one crew member. "It stank strongly of the urine of rats. We drank yellow water that had been putrid for many days. We also ate some ox hides that covered the top of the mainyard . . . and often we ate sawdust from boards." They went three months and twenty days without fresh food or water before finding relief and a shoreline in Guam—and all in a quest to fill the ships' holds with dried flowerbuds, bits of tree bark, and other aromatic scrapings to sprinkle on food and make into pomanders.

In the end, only 18 of 260 men survived the voyage. Magellan himself was killed in a skirmish with natives in the Philippines. The survivors did very well out of the voyage, however. In the Spice Islands they loaded up with fifty-three thousand pounds of cloves, which they sold in Europe for a profit of 2,500 percent, and almost incidentally in the process became the first human beings to circle the globe. The real significance of Magellan's voyage was not that it was the first to circumnavigate the planet, but that it was the first to realize just how big that planet was.

Although Columbus had little idea of what he was doing, it was his voyages that ultimately proved the most important, and we can date the moment that that became so with precision. On November 5, 1492, on Cuba, two of his crewmen returned to the ship carrying something no one from their world had ever seen before: "a sort of grain [that the natives] call maiz which was well tasted, bak'd, dry'd and made into flour." In the same week, they saw some Taino Indians sticking cylinders of smoldering weed in their mouths, drawing smoke into their chests, and pronouncing the exercise satisfying. Columbus took some of this odd product home with him, too.

And so began the process known to anthropologists as the Columbian Exchange—the transfer of foods and other materials from the New World to the Old World and vice versa. By the time the first Europeans arrived in the New World, farmers there were harvesting more than a hundred kinds of edible plants—potatoes, tomatoes, sunflowers, eggplants, avocados, sweet potatoes, peanuts, cashews, pineapples, papaya, guava, yams, manioc (or cassava), pumpkins, vanilla, a whole slew of beans and squashes, four types of chili peppers, and chocolate, among rather a lot else—not a bad haul.

It has been estimated that 60 percent of all the crops grown in the world today originated in the Americas. These foods weren't just incorporated into foreign cuisines. They effectively *became* the foreign cuisines. Imagine Italian food without tomatoes, Greek food without eggplant, Thai and Indonesian foods without peanut sauce, curries without chilies, hamburgers without French fries or ketchup, African food without cassava. There was scarcely a dinner table in the world in any land east or west that wasn't drastically improved by the foods of the Americas.

No one foresaw this at the time, however. For the Europeans the irony is that the foods they found they mostly didn't want, while the ones they wanted they didn't find. Spices were what they were after, and the New World was dismayingly deficient in those, apart from chilies, which were too fiery and startling to be appreciated at first. Many promising New World foods failed to attract any interest at all. The indigenous people of Peru had 150 varieties of potato, and valued them all. An Incan of five hundred years ago would have been able to

identify varieties of potato in much the way that a modern wine snob identifies grapes. The Quechuan language of Peru still has a thousand words for different types or conditions of potatoes. *Hantha*, for instance, describes a potato that is distinctly on the old side but still has edible flesh. The conquistadores, however, brought home only a few varieties, and there are those who say they were by no means the most delicious. Farther north, the Aztecs had a great fondness for amaranth, a cereal that produces a nutritious and tasty grain. It was as popular a foodstuff in Mexico as maize, but the Spanish—offended by the way the Aztecs used it, mixed with blood, in rites involving human sacrifice—refused to touch it.

The Americas, it may be said, gained much from Europe in return. Before the Europeans stormed into their lives, people in Central America had only five domesticated creatures—the turkey, duck, dog, bee, and cochineal insect—and no dairy products. Without European meat and cheese, Mexican food as we know it could not exist. Wheat in Kansas, coffee in Brazil, beef in Argentina, and a great deal more would not be possible.

Less happily, the Columbian Exchange also involved disease. With no immunity to many European diseases, the natives sickened easily and "died in heaps." One epidemic, probably viral hepatitis, killed an estimated 90 percent of the natives in coastal Massachusetts. A once-mighty tribal group in the region of modern Texas and Arkansas, the Caddo, saw its population fall from an estimated 200,000 to just 1,400—a drop of nearly 96 percent. An equivalent outbreak in modern New York would reduce the population to 56,000—"not enough to fill Yankee Stadium," in the chilling phrase of Charles C. Mann. Altogether, disease and slaughter reduced the native population of Mesoamerica by an estimated 90 percent in the first century of European contact. In return, the natives gave Columbus's men syphilis.*

Over time the Columbian Exchange also of course involved the wholesale movement of peoples, the setting up of colonies, and the transfer—sometimes enforced—of language, religion, and culture. Almost no single

*Amerindians got syphilis, too, but suffered less from it, in much the way that Europeans suffered less from measles and mumps.

act in history has more profoundly changed the world than Columbus's blundering search for eastern spices.

There is another irony in all this. By the time the age of exploration was fully under way, the heyday of spices was coming to an end anyway. In 1545, just twenty years or so after Magellan's epic voyage, an English warship, the *Mary Rose*, sank in mysterious circumstances off the English coast near Portsmouth. More than four hundred men died. When the ship was recovered in the late twentieth century, marine archaeologists were surprised to find that almost every sailor owned a tiny bag of black pepper, which he kept attached to his waist. It would have been one of his most prized possessions. The fact that even a common sailor of 1545 could now afford a supply of pepper, however modest, meant that pepper's days of hyper-rarity were at an end. It was on its way to taking its place alongside salt as a standard and comparatively humble condiment.

People continued to fight over the more exotic spices for another century or so, and sometimes even over the more common ones. In 1599, eighty British merchants, exasperated by the rising cost of pepper, formed the British East India Company with a view to getting a piece of the market for themselves. This was the initiative that brought King James the treasured isles of Puloway and Puloroon, but in fact the British never had much success in the East Indies, and in 1667, in the Treaty of Breda, they ceded all claims to the region to the Dutch in return for a small piece of land of no great significance in North America. The piece of land was called Manhattan.

By now, however, there were new commodities that people wanted even more, and the quest for these was, in the most unexpected ways, about to change the world still further.

II

Two years before his unhappy adventure with "many worms creeping," Samuel Pepys recorded in his diary a rather more prosaic milestone in his life. On September 25, 1660, he tried a new hot beverage for the first time, recording in his diary: "And afterwards I did send for a cup of tee (a China drink), of which I never had drank before." Whether he liked it or

not Pepys didn't say, which is a shame, as it is the first mention we have in English of anyone's drinking a cup of tea.

A century and a half later, in 1812, a Scottish historian named David Macpherson, in a dry piece of work called *The History of the European Commerce with India*, quoted the tea-drinking passage from Pepys's diary. That was a very surprising thing to do, because in 1812 Pepys's diaries were supposedly still unknown. Although they resided in the Bodleian Library in Oxford, and so were available for inspection, no one had ever looked into them—so it was thought—because they were written in a private code that had yet to be deciphered. How Macpherson managed to find and translate the relevant passage in six volumes of dense and secret scribbles, not to mention what gave him the inspiration to look there in the first place, are mysteries that are some distance beyond being answerable.

By chance, an Oxford scholar, the Reverend George Neville, master of Magdalen College, saw Macpherson's passing reference to Pepys's diaries and grew intrigued to know what else might be in them. Pepys after all had lived through momentous times—through the restoration of the monarchy, the last great plague epidemic, the Great Fire of London of 1666—so their content was bound to be of interest. He commissioned a clever but penurious student named John Smith to see if he could crack the code and transcribe the diaries. The work took Smith three years. The result of course was the most celebrated diary in the English language. Had Pepys not had that cup of tea, Macpherson not mentioned it in a dull history, Neville been less curious, and young Smith less intelligent and dogged, the name Samuel Pepys would mean nothing to anyone but naval historians, and a very considerable part of what we know about how people lived in the second half of the seventeenth century would in fact be unknown. So it was a good thing that he had that cup of tea.

Normally, like most other people of his class and period, Pepys drank coffee, though coffee itself was still pretty novel in 1660. Britons had been vaguely familiar with coffee for decades but principally as a queer, dark beverage encountered abroad. A traveler named George Sandys in 1610 grimly described coffee as being "black as soot, and tasting not much unlike it." The word was spelled in any number of imaginative