Praise for Maguelonne Toussaint-Samat and *A History of Food*

'For those of us virtually weaned on this monumental landmark when it was first published, the expanded, updated edition of *A History of Food* couldn't be a more welcomed and exciting suprise. While the hefty volume is an indispensable source of valuable facts and information for anyone interested in the worldwide development of numerous foods and the intriguing evolution of man's dietary habits over the centuries, the book also happens to be, quite simply, a wonderful and inspiring read – to be dipped into like a bowl of fresh wild strawberries.' *James Villas, author of* The Glory of Southern Cooking *and* Between Bites: Memoirs of a Hungry Hedonist

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'*A History of Food* is a monumental work, a prodigious feat of careful scholarship, patient research and attention to detail. Full of astonishing but insufficiently known facts.' *Times Higher Education Supplement*

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'Gorgeous and unusually thought-provoking. I loved it.' *The Age*

'This is a remarkable book, full of information culled from serious research.' *Nature*

'An important contribution to the history of food.' *The Journal of European Economic History*

'Anyone interest in food, its origins, and how skilled craftsmen and tradesmen held the key to the long evolution of the present day status of food, would enjoy this book.' *ATEA Journal*

'The book belongs to every public and academic library, and on the book shelves of all people with curious minds. It rightfully received the History Prize of the *Société des gens de lettres de France*.' *International Journal of World Peace*

A History of Food

New Expanded Edition

Maguelonne
Toussaint-Samat

Translated by Anthea Bell

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The genius of love and the genius of hunger, those twin brothers, are the two moving forces behind all living things. All living things set themselves in motion to feed and to reproduce. Love and hunger share the same purpose. Life must never cease; life must be sustained and must create.

Turgenev, *Little poems in prose*, XXIII.

L'angoisse de la faim qui
toujours hurle et gronde
Est le ressort puissant jouant
au coeur du monde,
Et celui qui dévore est l'élu
du destin.

The fear of hunger, ever
roaring and growling,
is the powerful spring quivering
at the heart of the world,
and he who eats is the
chosen one of Fate.

Daniel Lesueur, *Poésies*, 'La lutte pour l'existence'.

'After thirty years of war and occupation, our dietary customs are the only tangible signs that we still exist as a people,' a Vietnamese has said.

The family meal, provided by the father and prepared by the mother, remains the essential bond, a bond in which the child sees the realization of those images of mother and father without which human beings have no internal stability, and a society ceases to build a civilization. The proud and ancient history of those craft industries which created our cheeses, wines and charcuterie must not be forgotten in the name of a sometimes dubious and vacillating science . . .

J. Trémolière, *Encyclopaedia Universalis*, vol. I.

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Part V: Luxury Foods

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Foreword to the New Expanded Edition

Betty Fussell, author of *The Story of Corn* and *Raising Steaks*

When I first put on my bookshelf in 1987 Maguelonne Toussaint-Samat's epic and epoch-making world history of food, a hefty tome of 800 pages, it stood alone. In the 20 years since then, the study of food from every possible angle has taken off in both academic and popular culture, leaving in its wake everything from specialized monographs to triple-volumed encyclopedias – so many that they crowd my shelves and spill on to the floor. But Toussaint-Samat's work still stands alone, inviolate, a unique embodiment of the gastrobiography of humankind.

While all organisms hunger, she writes, only man thinks about it. In looking at the evolution of man's diet, from eating leaves to cooking meats and seeds by means of cave fires and eventually industrial furnaces, the author gives us less a narrative than a cinematic montage. She juxtaposes long shots with close-ups, cutting back and forth across timelines with a mixture of legend and myth, natural science, folklore, social and political history, poetry and economics – projecting in the process a singular mind, which is passionately opinionated, idiosyncratic, and humane.

Always her focus is on the singularity of foods and their peculiar relationships to men hungering for both sustenance and pleasure. Her categories are her own: 'The dietetics of apricots', 'The symbolism of liver', 'The lure of sugar', 'How to keep caviare happy'. No byway is too obscure, too distant in time or space, for minute investigation. During our 'long march of cereals' from Jericho in 10,000 BC to Australia in AD 1800, we learn of the importance of 'bee glue' in the history of honey, the origins of barrel making for wine and beer in ancient Gaul, the Neolithic mining of salt in Austria, tea fraud in Transylvania, freeze-dried potatoes in the highlands of Peru, an orange named by the Bey of Tunis after his Maltese mistress, a monk's smuggling of eggs in his underwear to save the life of Caterina Sforza in prison.

'I am a man,' the Roman playwright Terence once said, 'and nothing human is foreign to me.' Toussaint-Samat applies his dictum to food. 'Diet is a social signal', she writes, and nothing in man's food history is foreign to her. She dives deep into the ways in which diet shaped the explorations of discovery in the sixteenth and seventeenth centuries, the spice wars of the eighteenth and nineteenth centuries, the

pig wars between Serbia and Austria-Hungary in the nineteenth century, the fish wars in the twentieth century, the industrialized food wars in the twenty-first. Dipping into her volume at random, it's impossible not to keep turning the pages because you can't imagine what man will think up next. For once we move beyond the narrow reductive lens of diet as nutrition only, the sum of a food's biochemical parts, to look at the symbolic values our foods have accumulated over the millennia of man's journey on earth. Roasting a goose at Christmas echoes ancient Celtic ritual feasts of the midwinter solstice, when a sacrificial bird was eaten to ensure the return of spring. In a lowly beanfield, she hears footsteps of those ancient Egyptians and Greeks who saw the field as sacred ground because beans bore the souls of the dead. She recognizes that satisfying man's hunger for food is not a matter of nutrition alone, but of satisfying his appetite for meaning, for values, for quality in the way he lives his life each day. For mankind, sustenance is not just for the body he shares with other created organisms, but for the mind, heart and imagination that is his alone, the things that make and keep him human.

March 2008

Preface

Turgenev invoked the genius of hunger.

From time immemorial, the human race has explored the world in search of food. Hunger has been the force behind its onward march. Hunger is still the source of mankind's energies, good or bad, the reason for its advance, the origin of its conflicts, the justification of its conscience and the currency of its labours.

Empires have done battle for food, civilizations have been built around it, crimes committed, laws made and knowledge exchanged.

The rest is only literature.

The practice of hunting and gathering, the consumption of salt and cereals, the discovery of stock-breeding and wine, the use of spices, salt, sugar, potatoes, proteins, have all been stages along the way, each in turn shaking the known world to its foundations.

Preface to the New Expanded Edition

The new millennium gives me a chance to look at the latest scientific and technological discoveries to have opened up the current chapter in the story of the food we eat, a chapter that is still going on. Today, therefore, I set out to provide my readers with information about these new developments in a revised and expanded edition of the *History of Food*.

M.T.-S.

List of Illustrations

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634 Asparagus
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Above all, so many of my thoughts go to my mother Renée Vally-Samat, my first reader, who criticized me (not enough) and encouraged me (so much) in this work of long scholarship, and did not close her eyes until I had written the last line.

But of course, more than ever, these pages are a little of myself for you, Ted, and in your memory.

M.T.-S.

Introduction

Some 60 million years ago, at the beginning of the Tertiary period, a rather unimpressive tree-dwelling creature realized that it could feed itself more conveniently by using the ends of its front limbs to pick up anything that seemed edible and convey the food to its mouth. Thereafter this creature differed from other animals, which still plunged their muzzles into their food. It even ventured to take advantage of daylight to gather food more easily, instead of preferring the cover of darkness in its old way.

The subtlety of a mentally coordinated manipulation had come between the food to be eaten and the reflex of the open mouth. The animal, now able to adjust its gestures to the rhythm of its appetite, became aware of a chain of sensations: the stimulus of hunger, the excitement of gathering food, the satisfaction of appetite.

Eating, at first a purely visceral pleasure, became an intellectual process when the eyes, which had been laterally placed, moved towards the base of the forehead. Over the last few million years the forehead itself had been getting bigger, in line with the increased size of the skull. The brain, improving as it gained volume, was able to control vision in a larger, panoramic area, now seen in relief and in depth. Physically, the animal entered another dimension, and mentally too it stood erect. Its new possibilities of vision, together with the prehensile skill of its specialized hands, encouraged it to explore its environment more thoroughly in search of food.

The creature's memory had registered a large potential choice, but certain items turned out to taste better than others and give more pleasure. The pleasure was enjoyed and remembered. The creature wanted to experience it again. That unforgettable sensation stimulated curiosity and courage, impelled the creature to make further experiments, and eventually developed its intelligence, which itself was constantly being fed with new information.

The delightful sensation of satisfying hunger gave the biped such pleasure that after several million more years or generations it was moved to express it in a cry. Not just any cry: a special one. Not a mere grunt either, but an articulated sound, a smacking of the satisfied lips and tongue, accompanied by a sigh. Pre-dating the

concept of language, it came to mean a number of things in every idiom of the world: 'eat/drink'; 'the maternal breast'; 'mother'; 'survival'; 'life'; 'good'. The phoneme *mem* or *mam* was the first human discourse; the first word. Babies still utter it. Its message must of course be deciphered, having become weakened and modified as it echoed down the centuries. The phoneme *mem*, *ma*, becoming the root *bo* with its variations of pronunciation as *ouo*, *wo*, *pho*, *po*, *ba*, *pa*, *bi*, etc., implies not only the act of swallowing, eating or drinking, the sound of which is imitated by the smacking of the lips, but also the potential meanings of *food*, *plant*, and their corollary, *life*.

In the common heritage of the Indo-European languages, from which Sanskrit, the languages of India, Greek, the Germanic, Romance, Celtic, Slavonic and Iranian languages and their derivatives all arose, the ultimate sense of the vocable 'botany' is therefore 'those plants one must eat to live'.

A paleontologist can tell us what our ancestors of the Quaternary era ate from studying the traces of wear left by abrasive food particles on their dental enamel. The canines and incisors are very small by comparison with the large molars and premolars – the sign of adaptation to much mastication of vegetable matter which had to be well crushed before it was swallowed – and the traces of wear and tear on the teeth also show that vegetable fibres were eaten. However, atavistic and collective human memory, which we might usefully consult more often, itself tells us with all the clarity of language that plants were indeed our first food, the basic element of humanity: a memory, perhaps, of the abundant foliage of the primeval tree.

According to Heidegger's definition, it was in order to 'say' such things (*sagen*) that the ability to 'speak' (*sprechen*) was invented. The telling of the story of food had begun, in tones of gluttony.

Gluttony is a mutation: an aberration of a need which it ends up by controlling completely. We have to be very hungry indeed for all our conditioning to be negated by the sheer will to survive. Even the more highly evolved animals can be fussy over their food, and greedy, particularly when they are domesticated and have been corrupted by human company.

Scientific deductions, and methodical investigation of the debris left by our distant ancestors on their camp sites, have enabled us to discover by stages what they ate in as much detail as if they had invited us to dinner.

In pursuit of an increasingly carnivorous diet (consisting, in the interests of survival, of high-calorie animal proteins) humanity increased and multiplied, emigrated, and spread all over the world. Increasingly, it developed skills in order to acquire more and more such food, using methods which would help it to evolve towards civilization: weapons, tools, industry, social organization. As its diet became more varied, its intellectual capacity increased.

As soon as the biped *Homo erectus*, now *Homo sapiens* by virtue of centuries of ingenuity exercised in search of his favourite foods, could use fire without fear he decided his food would be better cooked, especially as his intellectual growth meant that his digestive faculties had been modified and were now more restricted. His jaw, too, had lost some of its efficiency as his brain gained in power. Food was easier to digest cooked than raw. He also realized that his stocks of food could be better managed if he cooked them.

Introduction

Organized civilization brought with it the idea of cookery: the intentional preparation of foods in the traditional manner of a particular social or ethnic group. Traditions derived both from local factors of climate, soil and fauna, and from religious taboos conveying ideas of cleanliness or of safeguarding the social structure.

As civilizations became more sophisticated all over the world, and commercial and cultural exchanges increased, the diet became ever more varied and complex. It has been said that civilization occurs when something we never missed before becomes a necessity. From now on food would be a social factor, sometimes even demonstrating social identity, as with the Lotophagi or lotus-eaters of Djerba in the tale of Odysseus. Tastes and culinary skills do in fact reflect a group mentality – 'Tell me what you eat and I will tell you what you are.' Despite progress, people with strict moral standards will tend to live on a sparse diet: examples are the famous black broth of Sparta, the frugal diet of even the richest Mormon communities in modern America, or the vigorous manner in which theologians tackled nutritional issues at the time of the Counter-Reformation.

While traditional recipes or festive rituals may relate to regional, national and religious characteristics, they also arise from a group's general liking for certain basic foods or certain aromatics. There are regions famous for wheat, rye, maize, potatoes, pasta, rice, wine, beer, oil, butter, dairy produce, garlic, onions, pork – tastes which have conditioned the local economy.

Curiously, the frontiers of these preferences generally coincide with dialectal frontiers. These cultural data fascinate ethnologists, particularly as such preferences are naturally more marked where a region has remained isolated. But deliberate choice sometimes seems to be involved too, and the local speciality is valued as an heirloom. There are also dietary aversions: if certain ethnic groups suffering from famine are given milk to drink, it will make them seriously ill.

It took the exploration, colonization and pollution of half the planet by the other half for a kind of nutritional standardization to be gradually imposed; in general, evolution has been in the direction of Western customs. (In those new African republics which have come to despise their local starchy foods, the new and expensive fashion is for white bread made with imported flour.) Invaders or emigrants have always brought their dietary customs with them, as if sentimentally importing a little soil from their native land. Conquered peoples, once they lose their own identity along with their desire to resist the invaders, end up adopting these new dietary standards, just as they accept new religious norms. Dietary adaptation is imposed on the entire population, from top to bottom of the social scale, as it evolves towards reflecting the image of the conquerors.

Diet, then, is a social signal. Since cannibalistic times, it has been associated with identification magic. The food of the strongest – like his religion, his spiritual food – is always regarded as the best. The strongest person is he who imposes his diet on others. 'Going native' in diet has usually been regarded as a lapse in a colonial – though sometimes as intellectual snobbery. On the other hand, the colonist always and unhesitatingly exports the exotic foodstuffs of the territories he has occupied. Some of these colonial products will become naturalized in the colonist's home country, either benefiting to a varying degree from people's curiosity or coming to satisfy real needs. They can then be exported to new colonies, where they become

so commonplace that their original home is eventually forgotten. Such has been the fate in modern times of the tomato, the turkey, the potato and the cassava. However, we should not forget that most of the traditional fruits of Western orchards, such as the apple, the peach, the grape and the apricot, not to mention the fowls in our poultry yards, have followed the paths of human migration since ancient times.

The slow assimilation or progressive commercialization of foreign foods did not have much influence on the evolution (or evolutions) of humanity until the end of the Middle Ages. It was as the Renaissance dawned that things changed. The modern period was to be one of large-scale imports and exports, not just of food but also, for reasons connected with food, of human flesh: live human flesh, at least if it survived the voyage. Not, of course, to be eaten – the exporters and importers were good Christians, after all – but human flesh on foot, with strong arms for manual labour.

At the time of the conquest of the American continent, the ordinary people of Europe as a whole were in greater need of basic soup, with or without bacon, than the luxury of a more varied diet. But the new lands on the other side of the world had to be intensively cultivated and show a profit which would pay for the expense of conquering them. The large-scale agricultural exploitation of the colonies meant that their produce could infiltrate European markets quite cheaply, creating out of nowhere appetites which soon became necessities. Gluttony, as I suggested above, is a mutation or aberration of a need and ends up by controlling it.

Just as tea was involved in the independence of the United States, slavery marks an episode in the saga of the history of food, which is only another way of looking at the history of mankind. That saga extends over thousands of years and is played out against the background of the entire planet. Its episodes are so interesting in themselves that one risks forgetting the scientific disciplines which have gone into reconstructing them. The study of food relates to the human sciences (ethnology, ethnography, sociology, medicine, history), to environmental analysis (geography, climatology, botany, agronomics), and to the economy, where nutritional requirements are both an initial and a final stage (as in the markets for sugar and potatoes). Once we enter the realms of gastronomy, it also has elements of philosophy and art – 'the art and science of delicate eating', according to a dictionary definition.

Gastronomy can become a kind of religion, although the more Rabelaisian 'gastrolaters', in their over-enthusiastic devotion to the cause of gastrology, may find themselves in the consulting room of their near-homonym the gastroenterologist, who specializes in curing the results of over-indulgence. But gastronomy has its own places of worship, at present given over to the rites of *nouvelle cuisine*, its pontiffs (such as Brillat-Savarin), its sacred scriptures (see the well-stocked cookery shelves of your local bookshop), choristers to sing its praises and merchants within its temple gates. In our own time new life-styles and technical advances (canning, freezing, freeze-drying), the standardization of exotic foods, and ecological fads have all contributed to a dietary revolution; there is no telling yet whether it will end in tablets taken twice a day, Chinese cuisine for all, black broth in the Spartan manner, or hydroponically grown cereals to be chewed 60 times before swallowing. All grist, one might say, to the internal mill.

As we become disillusioned with over-indulgence, our next major pleasure may be to fill the stomach scientifically. In an era of excess, there are some who pride themselves on adopting a new nutritional metaphysic: the fashionable diet. The conscientious consumption of diets as scientific as they are surprising gives psychological rather than physical satisfaction; people with access to too much good food eventually become obsessed with putting less and less on their plates.

We come, therefore, to a paradox: one part of the globe does not know what to do with its excess produce, but prices rise in proportion to surplus stocks, since so much has to be paid to a second part of the globe for the energy required to produce it. As for the remaining part of the globe, the Third World countries without either abundant harvests or oil, there is no saying yet whether its people will die of famine caused by drought, or because of bad luck, or through sheer incompetence. They urgently need help.

It would be sad if the history of food were to end with the word FAMINE.

PART I

During the Paleolithic age, hunger was satisfied by the methods of

COLLECTING GATHERING HUNTING

From Fire to the Pot

'There was a time', says a myth of the Chilouk people, 'when no one yet knew fire. People used to heat their food in the sun, and the men ate the upper part of the food, cooked in this way, while the women ate the underneath which was still uncooked.' The myth is not male chauvinism, but a kind of allegory of the sexual symbolism of fire.

Just as we do not know how, where or by whom fire was first domesticated, we cannot really tell anything about the way food was cooked in the most distant Paleolithic period. We can only base conjectures on the customs of existing primitive peoples. Bones and walnut or hazelnut shells have been found on excavated sites, but there is no means of knowing whether they are the remains of cooked meals, the debris of fires lit for heat, or even the remnants of incinerated raw waste matter. Professor Loon has studied the treatment of certain long bones cracked so that the marrow could be extracted, and believes they were sucked and gnawed raw. The Abbé Breuil and Dr Hulin are inclined to think the meat was roasted, from the evidence of Mousterian sites in Spain and the Dordogne. Similarly, we cannot be sure that the stones found around these hearths, some of them flat and some rounded, were really querns used for grinding grain. On the other hand, the discovery of organic ash in fossilized charcoal such as has been found at Hommersheim in Germany, together with the large number of cracked or broken bones in the immediate vicinity, does seem to constitute circumstantial evidence that these Aurignacian hearths were used for cooking food.

At any rate, the charred stones frequently found in the Dordogne appear to show that food was sometimes grilled. Again, the woolly mammoth tusks stuck, points down, on both sides of a Ukrainian hearth of the Upper Paleolithic period (the tenth millennium BC) clearly suggest roasting. The spit could have been green wood, as still used in Polynesia, or indeed in the West by Boy Scouts. Remains of a charred bird between two much reddened stones have been found in Ariège – a culinary method like the modern method of making waffles – the food in this case having been forgotten or burnt.

South American Indians still use hot stones for cooking. The ethnologist and prehistorian André Leroi-Gourhan succeeded in boiling water for two hours with hot stones, in an admittedly anachronistic rubber bucket. His aim was to support his theory that circular hollows around the fire on the Pincevent site may have held receptacles. The crucial question is: what were these receptacles made of? Wood hollowed out by fire, as in Amazonia? In fact, when we heat water for instant coffee with an electric mini-boiler in a hotel bedroom, we are using an age-old technique. The stilt-walking shepherds of the Landes area in France were still boiling sheep's milk with stones at the end of the last century.

The skin into which the Amazonians throw hot stones when making mead can also be put over the fire, so long as it is thick enough not to burst into flames. M. L. Ryder published an article in the journal *Antiquity* in 1966 entitled 'Can one cook in a skin?' It was illustrated by an engraving of 1581 showing a group of Irish people cooking soup in a 'pot' consisting of a sheepskin attached to three

posts. Some texts suggest that Scottish soldiers were doing the same thing in 1327. M. L. Ryder tried the experiment (not in any very expert fashion).

However, suppose you had no sheepskin or other likely receptacle to hand, how could you cook a piece of meat except by roasting or grilling it? According to Herodotus, the Scythians had a method. 'If they have no cauldron, they cast all the flesh into the victim's stomach, adding water thereto, and make a fire beneath of the bones, which burn finely; the stomach easily holds the flesh when it is stripped from the bones; thus an ox serves to cook itself.'

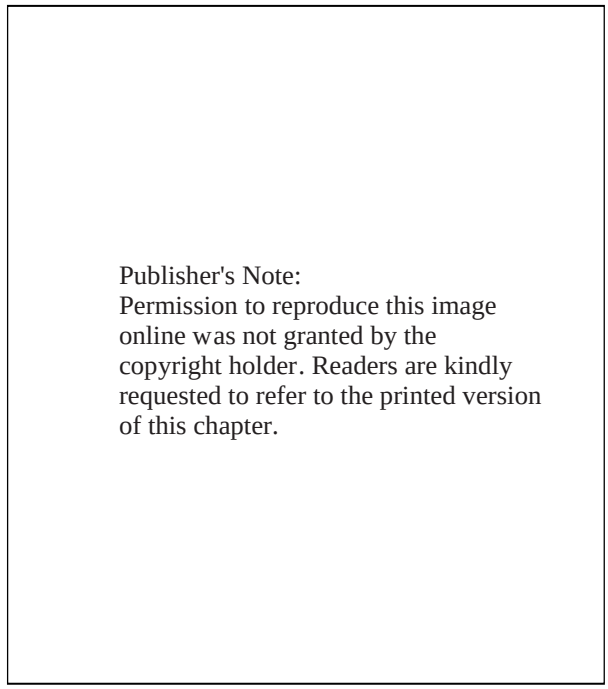
The Indians of the northern United States and Canada were familiar with this method. The Mongols combine cooking in a skin and cooking with stones: they behead a goat and bone it neatly, extracting the inside parts through the neck. Then they cut the meat up small and put it back in the skin with white-hot stones. You wait two hours and then serve.

The Baloubas of Zaïre use the bark of trees for cooking *au plat*. Many tropical peoples, for instance the Malays, stuff hollow green bamboo canes with rice and cook them in the glowing embers.

If the first people to work clay did not instantly hit upon the idea of making fired pottery vessels, it must have been because they were getting on perfectly well without them. The people who lived in what is now Czechoslovakia some 27,000 years ago baked a number of items in the kiln discovered at the Dolné Vestonice site, but the fragments found are of ceramic votive objects: human or animal figurines. The first pottery vessels known to us were made by the Japanese in the thirteenth millennium, and it cannot be claimed that the art spread from them. When a need was felt, or chance took a hand, the idea could have occurred in a number of places. There is a theory which holds that, at a given time, ideas for certain inventions are in the air.

After the end of the last great Ice Age, about 12,000 years ago, climatic conditions favoured the spread of wild cereal plants. Mortars and mills hollowed out of the living rock at the entrances of inhabited caves have been found in Nubia and Egypt. But the communities who devoted themselves entirely to the practice of farming and depended on the cereals then cultivated did not take to pottery vessels until around the seventh millennium, when their culture was at its height. Vessels made of fired clay have been found at the Mureybet site in northern Syria. As in Czechoslovakia 12,000 years earlier, however, the oldest of the items excavated cannot have been for cooking; they are too small to be any use. They are modelled in the form of female figures, and seem to have been pots for make-up or sacred perfumes.

It may well be that the Neolithic people of Mureybet, who lived in curious round, hump-backed houses made of *unfired* bricks, derived the idea of the possibilities of pottery from the sunken hearths in which they cooked their food. These ovens were just holes dug in the earth. If the soil was not naturally clayey, the sides were coated with smooth clay to make them more stable. Heaps of pebbles can still be seen at the bottom of such ovens, mingled with cinders; they are of great interest to scholars. The ovens were used to heat stones upon which food was then placed to grill (they still bear traces of their use for that purpose). The clay on the sides of the holes was baked at the same time. Such ovens are still used in the region for baking



Neolithic sandstone mill and grinder found in Algeria.

bread or mutton. The flat *naan* bread of northern India is cooked in a similar way, on the interior walls of clay ovens, although nowadays the ovens are portable.

Initially artistic or cultural, pottery did not become really utilitarian in that part of the world until the next millennium. But obviously the villagers of Mureybet, waiting for their soup to be cooked, perfected the original barbecue method as still practised from the Red Sea to the Caspian and through the whole of north Africa.

The Celts, particularly the Celts of Ireland, were cooking in holes in the ground 500 years before our own era, in the same way as the Mesopotamians. They used the method for boiling meat as well as spit-roasting it. The hole, lined with clay to make it watertight, was filled with water. Hot stones were plucked from a nearby fire with a bent stick of green wood and thrown into the water. It takes no more than half an hour to bring 454 litres of water to the boil by this method. The Irish scholar Professor O'Kelly tried it, and found that a nine-pound joint of meat cooked to perfection in three and a half hours, just as well and as quickly as on a modern gas stove.

At the same time soups or stews – the ancestors of Irish stew – were being made in large metal cauldrons hung over the fire from chains attached to the roof rafters in Celtic houses of the period, which usually had a central hearth with a surrounding structure. Conical clay ovens were also in use, particularly for baking bread.

The pot-bellied cauldron full of delicious things simmering away has a prominent place in folk memory. It appears in a number of legends. In the myths of the Celts,

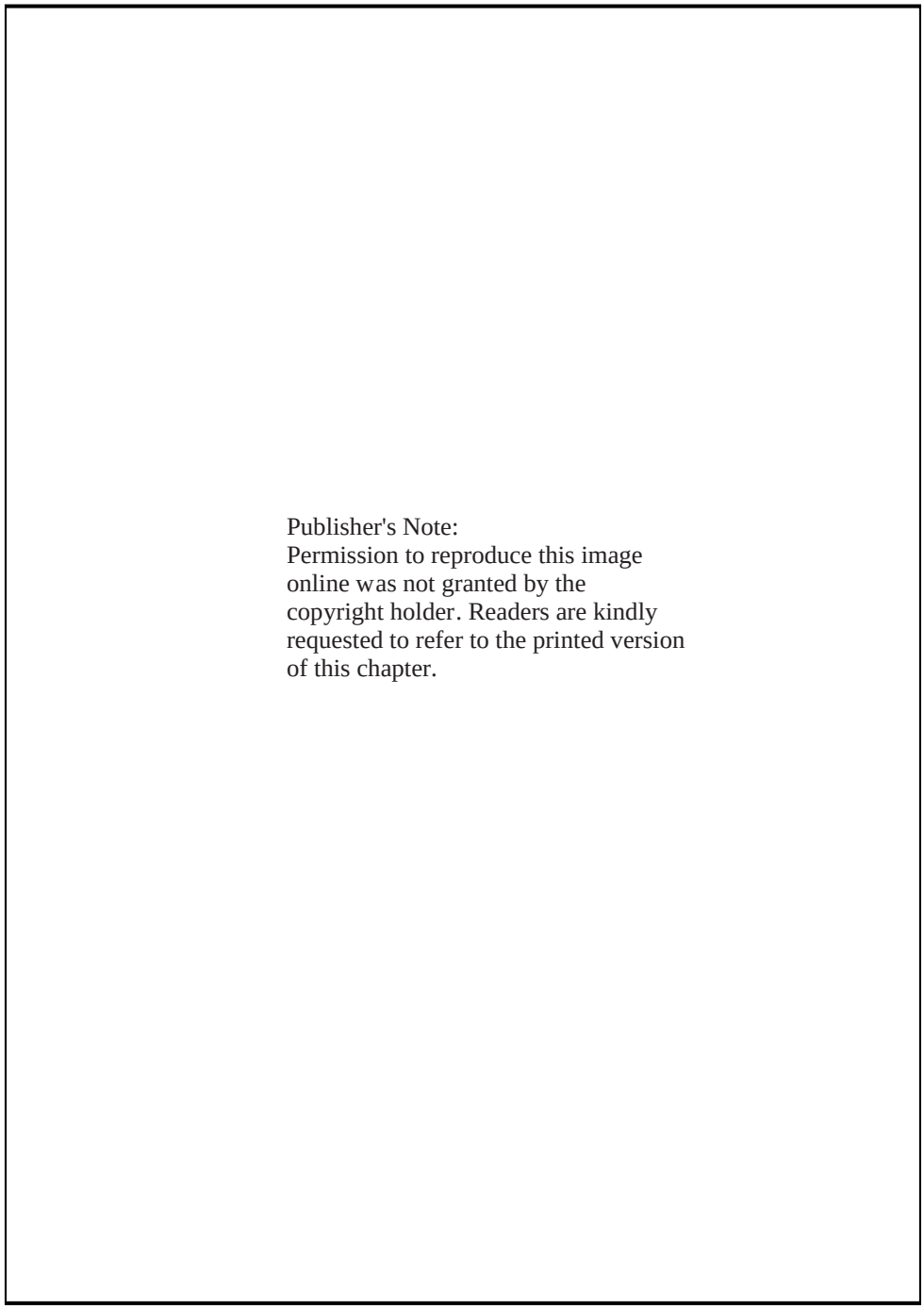
who had hearty appetites, the cauldron of abundance magically provides both inexhaustible food and inexhaustible knowledge. Sinister concoctions, on the other hand, bubble in the cauldrons of witches or malevolent goddesses. In Chinese legend, the elixir of immortality is made in a tripod cauldron – reminiscent of the Irish sheepskin fixed to its three posts. Immortality is often the end to be achieved by drinking the boiled liquids of Greek myth. Medea boiled old King Pelias himself, claiming that he would be rejuvenated.

However, it is the image of the steaming pot on the table that has remained the symbol of tranquil family pleasures in the Paradise Lost of childhood. Supper,[1] the communal evening meal symbolized by the serving of soup, is seen as embodying the modest but stable pleasures and touchingly old-fashioned peasant virtues of the past. In France, a good mother who stays at home and is there when her family needs her is said to be 'pot-au-feu'.

Quand on se gorge d'un potage	When we fill ourselves with a soup as
Succulent comme un consommé	delicious as a consommé,
Si notre corps en est charmé	it delights our bodies,
Notre âme l'est bien davantage . . .	and yet more our souls . . .

wrote Paul Scarron, cynic though he was.

Opposite: An open-air kitchen: engraving from *Dell'arte del cucinare, con il maestro di casa*, by Bartolomeo Scappi, Venice, 1570. The artist set out to show all the equipment necessary in a country kitchen (cauldrons, spits, covered pot, two-handled casserole, set of plates and bowls) as well as the two main methods of cooking food, by roasting (quarters of meat and poultry) and by boiling (soups and vegetables).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1

Collecting Honey

Honey in the Golden Age

> Next I come to the manna, the heavenly gift of honey . . . A featherweight theme: but one that can load me with fame . . .

writes Virgil in his own honeyed words, at the beginning of Book IV of the *Georgics*.

According to an Amazonian legend,[1] in the old days the animals were men who fed on nothing but the honey of bees. And indeed, from the dawn of time mankind has enjoyed honey, a food both miraculous and natural. After all, nature itself is a miracle. Though honey was not really the first food but only one of the first, collecting it was particularly gratifying, being very much a matter of luck and entailing just enough risk to stimulate the appetite. Delicious nourishment for travellers, hidden away like treasure, it has an element of reward about it. It was immediately associated with the most lofty and beneficent of symbolism, and I have chosen to open this history of food with honey.

> O Asvins, lords of brightness, anoint me with the honey of the bee, that I may speak forceful speech among men! (*Atharva Veda*, 91–258)

Fossilized 'bees' have been found in Baltic amber, trapped in resin of the Upper Eocene period some 50 million years ago, at the same time as the first primates were appearing in Africa and South America. However, this insect, *Electrapis* (the amber bee), differs less from bees of the present day than the primates of the Tertiary period do from ourselves. Many other fossil specimens descended from them tell the tale of their evolution to the modern *Apis mellifera* which, like so many other species around the world, seems to have originated in Asia. Coming by way of the Middle East, like almost everyone else, the various races of that social and industrious insect, the present-day bee, arrived in Europe and Africa to gather nectar from the flowers.

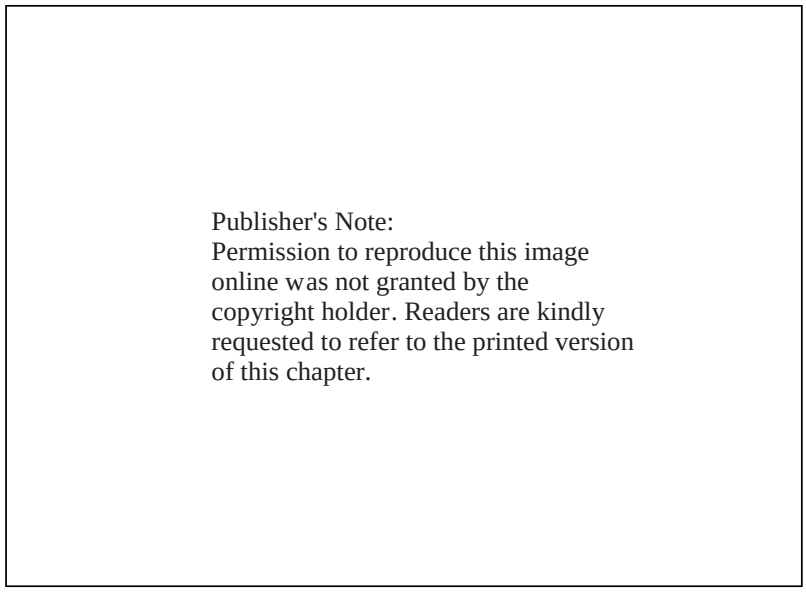
Tropical America also has social bees among its native hymenoptera. They can produce sufficient quantities of honey to provide man with a useful nutritional supplement. They are not, like the European honey-bee, Apidae but Meliponinae, and are known as *lambe olhos*, 'lick-eyes'. Although they lack stings and venom they have the unpleasant habit, as their name suggests, of attacking any two-legged or four-legged raider by trying to penetrate its mouth, eyes or ears to get at their secretions, which they find intoxicating. It is a very painful experience for their victims.

The American Meliponinae, who will feed on carrion as well as gathering honey (our own honey-bees also like meat juices), produce a runnier honey than their Old World counterparts. It is very dark and very sweet, and does not keep well unless it is boiled. It is seldom eaten straight, but is diluted in water, and is regarded as an aphrodisiac. The Indians enjoy it very much. 'O Indio e fanatico pelo mel de pau', Claude Lévi-Strauss quotes – 'wood-honey' because the bees' nests are usually found in trees – but the unclean habits of the worker bees can sometimes make it toxic.

In North America, a Cheyenne creation myth tells that 'the first men lived on honey and wild fruits and were never hungry.'[2] This may be considered a particularly apocryphal myth, although legends themselves are timeless, since tropical bees did not migrate north until quite a late date. According to Châteaubriand, the European bees now found in North America, whether they are domesticated or have reverted to the wild, were 'foreign to America, arriving in the wake of Columbus and his ships', and he adds that 'those peaceful conquerors have stolen from a New World of flowers only those treasures which the natives did not know how to use'. True enough, except that over the years the 'peaceful conquerors' have almost succeeded in annihilating their sisters, who may not have been actually natives but were certainly there first.

Le gouvernement admirable ou La république des abeilles, the 'admirable government or the republic of bees' (a title given to a treatise on apiculture by J. Simon in 1740), was thus socially and economically organized well before man had risen to his feet. The treasure stored by the provident insects was coveted by primates, and its appeal to bears is a byword. Both bears and primates will risk putting a greedy paw into a bees' nest when they smell its appetizing fragrance. Some monkeys, cleverer than others and tired of getting stung, have discovered how to stick a branch in and then suck the honey as we might suck it off a spoon.[3] Philippe Marcheray tells us that chimpanzees have been seen holding the palms of their large hands over their faces to protect themselves from the angry bees.

Spanish honey, which takes up quite a lot of space on the supermarket shelves of the European Community countries, being so reasonably priced, can claim what might be described as the oldest advertisement in the world, a rock painting in the Cave of the Spider near Valencia. The artist, working about 12,000 years ago, has made ingenious use of a cavity in the rock wall itself. A man clinging to creepers or ropes is putting one hand into the hole, and holding a basket to take the honey with the other. The bees are flying around him, determined not to lose their treasure. Similar rock paintings are found in South Africa and Zimbabwe. In one of them the honey hunter, decked with feathers in the Zulu manner, is perched on what looks like a ladder and holds a lighted torch up to the whirling cloud of insects as they fly away, in front of clearly depicted honeycombs.



Collecting honey: rock painting from the end of the Neolithic period, Pachamadhi, Central India

'So powerful is its gastronomic appeal that, were it too easily obtained, mankind would partake of it too freely until the supply was exhausted', says Lévi-Strauss of honey, with particular reference to the Indians, but the reflection is applicable to human behaviour in general. 'Through the medium of myth, honey is saying to man: "You would not find me, if you had not first looked for me."' Lévi-Strauss also recalls a creation myth of the Caduveo people: 'When the caracara (a species of falcon) saw the honey forming in the huge gourds where it was to be had for the taking, he said to Go-noeno-hodi the demiurge: "No, this is not right, this is not the way it should be, no! Put the honey in the middle of the tree so that men are forced to dig it out, otherwise the lazy creatures will not work."'

A Taste of Honey

Certain people famous for their wisdom are said to have been fed on honey in childhood, like the god Zeus, or at important turning points in their lives: they include Pythagoras and the first Celtic Christian mystic Erthne.

The poor of the past, like primitive peoples, regarded honey in its natural state as an occasional windfall, and were duly thankful. But as soon as cooking methods of any sophistication were developed – not that everyone could take advantage of them – honey featured as an important ingredient, and was to retain that importance throughout the Middle Ages. Besides having energy-giving properties, it was the only sweetener available in a pure and natural state, although the pulp of very sweet

fruits such as figs or dates might sometimes be used if it was available.[4] Cane sugar, originally and logically enough known as 'reed honey', was to be a fabulous luxury for the Old World of the West until after the Crusades, as we shall see below.

Besides being primarily a sweetener, honey was an important condiment. Condiments were not solely substances with strong, sharp or very scented flavours, as they are today. From the days of classical antiquity to the height of the Renaissance – with some falling off in the late Middle Ages[5] – most foods had honey added to them, or later sugar, whether or not we would now classify them as sweet dishes or confectionery. Spices and salt were added at the same time and in the same proportions. Was this because of the sometimes dubious quality of the food? Or was it simply the taste of the times? It is a question that has often been asked, and Jean-Louis Flandrin comments:[6] 'In the dietary habits of peoples as in those of individuals, we have to distinguish between taste and necessity.'

There was and always will be a suggestion of luxury and of medicinal practices in the culinary use of honey, for in folk memory medicine derives from a kind of magic. Sweet things are perceived *a priori* as doing you good. This attitude of approval was passed on to sugar. Cooking with honey and then with sugar, a mark of privilege, was bound to be the best people's cookery. Herodotus, writing on Egypt, tells us that the beasts offered in sacrifice were stuffed before roasting with a mixture of flour, figs, raisins and aromatics mingled with honey – to enhance the pleasure of those taking part in the ceremony and feasting in the name of the gods.

The favourite honey stuffing of Greek banquets was indubitably *hyma*. It also contained chopped cheese, offal, vinegar, onions and small quantities of other ingredients, according to a recipe given by Epaenetes. Honey provided Democritus with a simpler satisfaction, in fact the final satisfaction in the life of the philosopher who advocated the pursuit of happiness through moderation in pleasure (he also invented the theory of the atom). The story goes that when the old man, who had always lived frugally, felt his end approaching after 109 well-spent years, he decided to omit some item from his diet every day. When there was nothing left to omit, the celebration of the festival of Demeter was in progress, and he did not want to commit the solecism of dying. He had a pot of honey brought to him, and absorbed only its fragrance by raising it to his nostrils. Once the festival was over, the pot of honey was taken away and he died.

The cook Erasistratus gave his guests a kind of honey pudding called *hyposphagma*. There is one delicious and very simple dish we can still make: curds with honey, or *hypotrides*. Boil milk and immediately add some slightly fermented honey. Stir to make the milk curdle. Pour it into a bowl to set, drain it and serve it with fruit. Another natural and authentic sweet dish comes from the Mohawks and the Algonquins of Canada. Since time immemorial, these tribes have baked small pumpkins in the embers of their fires, first removing the seeds and stuffing them with honey, cider and butter (in former times, with some form of vegetable fat or with beaver fat instead of butter). This dish, *ogwissiman*, was not their only recipe using honey.

Apicius' honey sauce for fish was a great Roman classic. The author of the *Ars Magirica* also gives the recipe for ham in a honey crust, quite a different dish from the famous honey-roast Virginia ham of the American pioneers. The North American

Indians claim to have invented another early American dish, beans with honey, but others believe it came from the Chinese coolies who laid the railroad tracks of the American West.

Both the Greeks and the Romans also used honey as a cooking liquid. Julius Pollux, the Graeco-Egyptian rhetorician, evidently enjoyed stuffed leaves cooked in honey – not vine leaves but tender fig leaves. He gives the recipe in his second-century lexicographical work, the *Onomasticon*: make a stuffing of wheat flour, lard, eggs and brains. Divide it into small pieces and wrap in leaves. The stuffed leaves are first cooked in chicken or kid broth, then drained and cooked a second time in boiling honey. For centuries, until it disappeared from medieval hutches to return to the forests, a favourite way of eating the edible dormouse was preserved in a honey sauce or baked in honey. Guinea fowl with honey vinegar is still a speciality of the Périgord.

Honey was long used for preserving fruits, whole or as jam. *Oenanthe* was a preserve of wild vine flowers in honey. Even more delicious was rose petal paste. A similar exquisite paste was *miskwimin amo sisi bakwat*, strawberries crushed in pure honey, traditionally made in summer by the Amerindian tribes of Canada for their winter provisions. It is also delicious freshly made. In India, meat was kept from one year to the next coated in honey.

For the moment I will leave aside the pastries drenched in honey made by the people of the East and the Balkans and by the Arabs. Few if any innovations were made in the cookery of medieval Europe, but, as time passed and sugar gained ground, the use of honey was confined to sweetmeats and such delicacies, not forgetting its medicinal uses. Sweet and savoury dishes were more strictly segregated than before at this point. Today, nutritional ideas about natural foods and medical dietetics recommend the wider use of honey, but it is hardly used in cookery at all except for exotic effect. Since the 1970s, pollen and royal jelly have been highly regarded in nutritional laboratories and health food shops, much to the profit of beekeepers.

Honey in Legend

There is such a wealth of symbolism connected with honey that the facts of its story can hardly be told without mentioning all it represents in the human mind. Legendary traditions explain the customs which surround it and of which it is part.

The treatment of bees and the way in which their honey was collected and eaten had the character of religious ritual. We may almost have lost our sense of that significance, but we retain a certain respect for bees, as if they still fulfilled their initiatory and liturgical role. At both Ephesus and Eleusis, the priestesses were known as 'bees'.

The Hebrew for bee is *dbure*, from the root *dbr*, meaning 'word', whence the pretty first name Deborah, indicating the bee's mission to reveal the Divine Word, the Truth. Honey, miraculously made by the bees, signifies truth because it needs no treatment to transform it after it has been collected. It does not deteriorate, and until the discovery of sugar there was no substitute. What but the bee can actually create honey by settling on the centres of God's own flowers? Or the gods' own flowers; it came to the same thing.

This 'truth', a message from above, was thought to be passed on by bees in their honey so that the elect could express the truth in scholarship and poetry.[7] Accordingly, bees were supposed to have settled on the lips of Plato, Pindar and the well-named St Ambrose of Milan as children. Not every new-born baby can grow up to be a genius, but at least one hopes for its happiness: this is the idea of the women of the Ivory Coast and Senegal who still rub a baby's lips with honey as soon as it has uttered its first cry of fury at being born. Such a baptism of honey was part of ancient Achaean and Germanic custom, and came from the primordial steppes. There is still an Eastern custom whereby a spoonful of honey is poured into the palms of a newly married couple's hands. They must lick it off for each other as a sign that they will now take all their food together, and it is said to ensure that the husband will not lift his hand to his wife except to caress her, and none but loving words will spring to the wife's lips – not just during the aptly named honeymoon but for ever after. At the moment of initiation during the Eleusinian and Mithraic mysteries, the *mystes* (initiates) anointed their hands and tongues with honey. They were purifying themselves from evil, and the good was revealed to them. Philippe Marcheray adds that the Egyptians ate honey 'at the festival of Thoth, uttering the words "Sweet is the truth" '.

A perfect food, of the most sacred colour – golden yellow – honey features as a god in the Vedas, and as divine nourishment in the Graeco-Latin tradition. During the Golden Age, say the Orphic texts, honey ran from the oak trees and the Titan Kronos was sleeping, intoxicated with honey – the first sleep in the world – when his son Zeus chained him and took him away to the Islands of the Blest at the end of the world, where it was said that the ancient god and the Age of Gold could still be found. The implication is that honey, the first food, dates from the creation of the world, and existed even before the bees brought it to mankind.

This first food must obviously have been the food of the chief god. Greek legend situates the childhood of Zeus on Mount Lycaeus, or on Mount Ida, in Crete, where his mother Rhea hid him, and the bees supplemented the future god's diet of goat's milk with their honey. The Cretans claimed that his nurses Amalthea and Melissa were really princesses, daughters of King Melissus, who shared the care of the divine baby, Amalthea with the milk of her goat, Melissa with the honey of her bees; the name Melissa means 'she who makes honey'.

There is also a myth of a sacred cavern, a place of immortality where time did not exist, guarded by fiery bees. In the legend, Rhea gave birth to Zeus here, handing him over at once to the care of the insects. But four rash intruders wearing bronze armour for protection made their way into the cave to steal honey, which was still forbidden to humans. They were about to bear off their sacrilegious loot when the new-born child began to cry. Seeing him in his blood-stained swaddling clothes, the intruders were so frightened that their armour dropped off and the bees attacked them. But no one could die in that cave, particularly after touching the honey. To maintain the order of things, Zeus saved the robbers from the bees' venom by instantly changing them into birds which flew away. In gratitude to the bees for their devotion to duty, the god gave them bronze armour to hide their fiery nature in future, and having a good command of language for a new-born baby, he added that their courage would always remain a byword.

To turn to the legendary origin of bees themselves, in the *Popul Vuh*, the sacred tradition of the Maya Indians, the bee was born of the Universal Hive at the centre of the earth. Golden to the sight, burning to the touch, like the sparks of volcanoes, it was sent here to awaken man from apathy and ignorance; this is the general sense behind those rural Amazonian folk-tales which deal with honey and mead. Honey and bees are universally found associated with the generative, creative fire, and also with the cave, underground cavern, grotto or hollow tree which is part of the symbolism of the female principle in agrarian myths. Proserpina, the Roman goddess of spring, the season when the bees begin collecting honey from the flowers every year, was also Queen of the Underworld. Another of her titles was Mellita. The Romans offered sacrifices of honey to appease the god of the underworld so that he would not appear in the form of a fiery serpent, i.e., as volcanic lava. The people of Pompeii cannot have offered enough honey.

Ovid says that honey was a gift of the god of wine, Bacchus (Dionysus in Greek); on his way back from an expedition he was gambolling with his attendant satyrs, who struck their sistra to mark time. At the sound of the jingling instruments, a swarm of unknown insects flew out of the wood, and Bacchus guided them to a tree; they shut themselves up in it and filled it with honey.

The Greeks and Romans mingled wine and honey together in drinking bowls. A cousin of Dionysus was called Melicertes, 'he who mingles honey', by analogy with *melidraton*, water mingled with honey, the first stage in the fermentation of that other intoxicating drink, mead. Melicertes was drowned when his mother, the wine god's aunt and nurse, went mad and jumped into the sea with him. The ocean swallowed up his corpse, but he was resuscitated, riding a dolphin, as the sea god Palaemon, and thereafter, although properly a marine deity, formed part of the train of Dionysus with the satyrs and Sileni. The foaming waves suggest the foaming of mead fermenting in a vat or poured into cups. Possibly sailors took amphorae of mead with them to keep their courage up at sea.

The most famous myth about the origin of bees is the legend of Aristaeus. It concerns the (definitely mythical) spontaneous generation of bees, a notion that proved very tenacious, lasting into the seventeenth century. The spontaneous generation of bees was an article of faith in apicultural treatises, until the microscope revealed that the 'king' bee was actually a queen, in fact a queen mother whose sole function was to lay millions of eggs from which her young would hatch. But, to quote Virgil:[8]

> It is time to detail the famous invention of an Arcadian
> Bee-master, the process by which he often made
> A culture of bees from the putrid blood of slaughtered bullocks.

The Arcadian shepherd Aristaeus, son of Apollo and the nymph Cyrene, had pursued Eurydice with his attentions, and was guilty of her death; because he was also regarded as responsible for the death of her husband Orpheus, he was deprived of his beloved bees. On his mother's advice, he sacrificed to the shades of Orpheus and Eurydice: a poppy to Orpheus, to appease his anger, and to Eurydice 'four bulls of excellent body . . . and as many heifers'. When the ninth day has dawned:

> . . . a miracle sudden and strange to tell of
> They behold: from the oxen's bellies all over their rotting flesh
> Creatures are humming, swarming through the wreckage of their ribs –
> Huge and trailing clouds of bees, that now in the treetops
> Unite and hang like a bunch of grapes from the pliant branches.

The bees here are obviously seen as related to blowflies, whose maggots in fact have no connection with them at all.

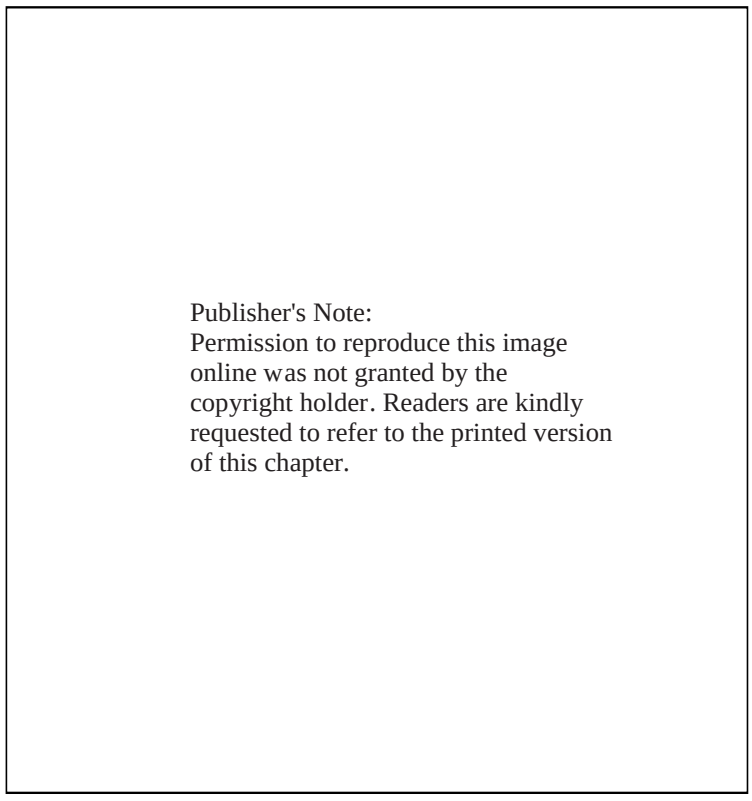
The myth of Aristaeus also shows the tenacity of a sexual taboo which features in the beekeeping manuals of antiquity. The shepherd's first bees were taken from him because he had desired a woman, and someone else's woman at that; you had to abstain from carnal intercourse before trying to recover a swarm of bees (reputed to be virgins) or to collect honey (a pure substance).

Honey, like wax, was much used in ancient ritual. In funeral rites, the dead were given a supply of honey to enjoy in the afterlife, since honey denoted immortality. From Neolithic times onwards, the Aryans, Babylonians, Sumerians and Cretans buried their great men in honey. There are echoes of the custom in Herodotus and Strabo. Alexander the Great revived it when he was embalmed in honey on his own death, but there is no evidence to show that it was a common custom in the Balkans. Embalming was generally with wax, as in ancient Egypt, whence the word mummy, from Persian *mum*, wax. Finally, at the festival of the winter solstice, the Hopi Indians of Arizona symbolically buried the dead year, in a spirit similar to that of the Celtic celebration of Samhain, but with a communal meal consisting of honey and flour. The same foods are associated in the Russian Jewish celebrations of Rosh Hashanah, when the head of the household gives his children bread and honey as a good omen.

Honey in Nature and History

Nectar is a sweet substance, 75 per cent water with certain mineral elements, extracted from flowers by the bee as it flies from one to another. It has been called nature's bait for attracting insects, whose feet become laden with pollen as they work. Plant pollination is often necessary for fertilization and subsequent fruit. The more fragrance a flower has, the more it attracts visiting bees.

Bees fill their honey sacs with nectar, in which change begins to occur even on the way back to the hive, caused by the enzymes in the insect's saliva and gastric juices. The nectar becomes a mixture of invert sugars (glucose and laevulose). Back in the hive, the bees regurgitate this still very liquid honey and deposit it in the wax cells of the combs. To concentrate it further by inverting the proportions of sugar and water, the worker bees ingest and regurgitate it again, beating their wings to ventilate the atmosphere in the hive. After 20 minutes, when the process is completed, they seal the cell with a capping secreted from the abdominal glands of wax-making bees. As Philippe Marcheray points out, a kilo of honey represents a vast amount of labour; it takes the bees between 20,000 and 100,000 journeys to



Engraving illustrating a sixteenth-century work on apiculture: the words *Non nobis* indicate that the bees themselves do not profit from the honey they make.

bring a single litre of nectar back to the hive, and five litres of nectar make one litre of honey.

The quality of the honey depends on the flowers visited by the bees, since it retains their fragrance and other properties, whether beneficial or (very rarely) toxic. The bee is particular in its choice of flowers, and a methodical worker. If it visits only a single species of flower in a day, it has to ingest nectar from 10,000 calices for a single drop of honey to be deposited in a cell. The beekeeper who wants to be selective in making his honey will therefore observe the main flowering seasons within range of his hives (bees have a range of several kilometres). He takes a partial honey harvest at the end of each of these flowering seasons, so that he can offer honey derived from a single floral species, which is considered the best kind. If it comes from the nectar of several species of flower, the honey will be simply called 'floral' or 'country' honey.

From ancient times, migratory beekeeping has also been practised; the hives are 'moved with the seasons, sometimes over a great distance'.[9] In Scotland, bees were traditionally taken to the moorland heather in summer.

Honey may be thick or runny, clear or opaque. In France, the most usual sort is acacia honey, which is very sweet, liquid, and pale gold in colour. Sainfoin used to make the excellent white Gâtinais honey; this is still produced, but there is almost no sainfoin left. The thick, pale honey of Provence owes its intoxicating fragrance to lavender.

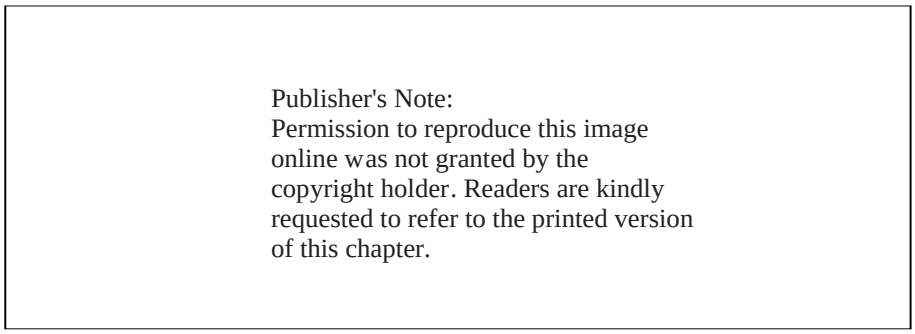
In Roman times, the ivory honey of Narbonne was the most famous honey in Gaul because of the rosemary which gives it its special flavour, as well as the plant's medicinal and in particular its digestive properties. Roman legions recruited in Tunisia are said to have started beekeeping in the Aude region as a spare-time hobby. At first, only consuls were allowed to eat the honey. Thyme honey, very dark and very strong, is made in Provence. But the occupying Roman forces liked Greek honey even better than the honey of Narbonne. This Greek honey was the famous honey of Mount Hymettus, beloved of the gods. In a way, it was divine honey, and was sold in the Via Sacra in Rome by shops stocking luxury foods. In spite of the many rules and regulations of the Eternal City, there were innumerable cases of fraud. Cunning beekeepers would place their hives in the thyme fields of the Iberian peninsula, or use concentrated infusions. Virgil, advocating this practice, recommended feeding the bees on plant decoctions in wine (*Georgics*, Book IV).

Brown, strong heather honey is produced in the Landes area of France. Buckwheat honey, another full-bodied variety, used to be made in Brittany, but is hardly ever found there now, since no more buckwheat is grown. This was the kind of honey that was formerly used in the traditional French spice-bread or gingerbread. Pine honey is unusual in that it is not entirely the work of bees. Bees, like ants and ladybirds, 'milk' the aphids which live on the sap of resinous trees, consuming so much that they regurgitate it in the form of *honeydew*. Honeydew can inundate oaks, elders, limes or cornfields in warm years when aphids abound. In 1976, for instance, the trees along the avenues of Paris and in the Bois de Boulogne dripped a kind of green syrup on car roofs and the heads of passers-by.

All the kinds of honey mentioned above, besides Spanish honey, Hungarian acacia honey and of course Greek honey, are subject to stringent legislation within the European Community.[10] As with wine, there are trade descriptions guaranteeing the quality of the product. A good honey is likely to be expensive. Its label should mention its floral origin and geographical provenance, and indicate the way in which it was harvested and the absence of any further treatment after extraction from the combs. Hives which have a natural environment, still rich in wild flowers and well away from industrial areas and busy main roads, will give honey of much better quality than the honey from plants grown with fertilizers and polluted by dust and petrol fumes.

Honey is taken in the summer months. The first harvest, which produces the finest honey, is taken between May and July, when the bees have had a chance to finish the nectar flow from the first flowering seasons. The second harvest is taken at the end of summer. The hives are opened when the sun is at its height; a particularly fine day will encourage the worker bees to go out to the fields, and 'sweet is their strange delight', as Virgil put it, adding:

> If rain threatens, be sure they'll not roam too far afield
> From their hives: they mistrust the sky, should an east wind be due.



Engraving from a plate in Diderot's *Encyclopédie* devoted to bees: it shows different kinds of bees, the structure of their cells, and the instruments used for extracting honey.

Modern hives have movable frames hung inside the hive-box, to augment output and respect the timing of the bees' work. The lower part of the hive contains the larvae, or *brood*, and reserves of honey which must not be touched except to check that they are sufficient. This is the domain of the nurses who look after the young and the queen, the bees who make and repair the wax cells, and the bees who clean the hive; worker bees pass in and out. When honey is taken, the hive is fumigated through its entrance and removable top to make the bees inside lethargic and discourage angry workers returning with nectar. Modern beekeepers wear a kind of space suit with a helmet, veil and gloves, to protect themselves from stings. The bee knows its own hive, and there is no point in painting hives different colours, since bees can hardly distinguish colour at all.

The frames are carefully removed, one by one, and any bees still heroically clinging to them are brushed off. To save time, they are replaced by fresh frames already equipped with wax 'foundations' imprinted with hexagon shapes. This foundation makes it easier for the bees to reconstruct their combs. The beekeeper now checks to see that there is no brood in the cells of the frames which have been removed, and opens them with a large knife. Next, usually in a special shed, several combs at a time are placed vertically in a centrifugal extractor which removes the honey from the comb. The empty combs will be replaced later. In a good year, each can give two kilos of honey. To filter out any residue of wax or dead bees, the honey is strained into a tank with a spout from which it is poured into jars. Modern technology has made the whole process easier, but this in broad outline has been the method of taking honey for thousands of years. As a French proverb says, honey is one thing, the price of honey another.

Collecting wild honey is not for the lazy, and greed alone is no guarantee of success. Skill is also called for, and courage to face the bees' stings: in fact, the traditional qualities of the hunter. Consequently, collecting honey was regarded as a man's job relating to hunting, while the gathering or harvesting of vegetable crops was seen as women's work both culturally and in ritual. When honey-hunting became beekeeping it was still a masculine occupation, or so the naturalist Buffon evidently thought, expressing his opinion in verse: 'L'abeille est implacable en son inimitié/Attaque

sans frayeur, se venge sans pitié/Sur l'ennemi blessé, s'élance avec furie/Et laisse dans la plaie et son dard et sa vie.'

[The bee is implacable in its hostility, attacks fearlessly, takes merciless revenge on the wounded enemy, hurls itself furiously forward, and leaves both its sting and its life in the wound.]

Taking honey becomes a battle with its established rules, man against the bee's weapon, its sting. (However, the Meliponinae of South America, although dangerous because they will infiltrate every orifice in the body, have no stings. The Indians therefore regard honey as a vegetable product – i.e., feminine – like the 'original sin' of gluttony.) Determined to view the central power of the hive as a worthy adversary, the entire Western world believed that the solitary mother insect, the queen bee, was really a king, until the discoveries of the Dutch doctor Jan Swammer-dam set them right at the end of the seventeenth century. The queen bee is still described as the 'king' or 'father' of the bees in a number of rural European dialects.

Wild bees will make their nest in any cavity large enough for a colony which may contain 60,000 individuals: a hole in the rock, or most commonly a hollow tree, where they build their combs. It is interesting to read the Biblical account of an episode after a battle against the Philistines (I Samuel 14):

> 'And the men of Israel were distressed that day . . . none of the people tasted any food. And all they of the land came to a wood: and there was honey upon the ground. And when the people were come into the wood, behold, the honey dropped. . . . But Jonathan . . . put forth the end of the rod that was in his hand, and dipped it in an honeycomb, and put his hand to his mouth; and his eyes were enlightened . . .'

Had the swarm chosen a shelter low enough to form an angle with the ground, so that honey flowed out on it? Be that as it may, Saul's son Jonathan was instinctively using the technique employed by chimpanzees.

There is nothing surprising about the fact that the honey was found in a wood, since wild bees prefer woodland areas, where they can easily find flowers from which to take nectar and pollen, and buds to provide resin. They use the first two for provisions, turning the nectar into honey, their everyday food, while the pollen feeds their larvae. 'Bee glue' or propolis (Greek: *pro*, in front, and *polis*, city) is made from resin, and the bees use it to construct the stout defensive wall at the entrance to the hive, and for all repair work. Bees also secrete wax to make their combs, and royal jelly, the remarkable substance which enables a larva to reach sexual maturity when necessary and become the queen, the fertile mother of the colony.

Until our own times the only product of the hive which seemed to be of nutritional interest was honey. Today, particularly in alternative medicine, pollen and royal jelly are regarded as miraculous substances, elixirs of youth. Beeswax was and still is used for religious, domestic, cosmetic and medical purposes. Bee glue, besides its value in the making of a durable varnish,[11] has similar uses. We may note all these non-nutritional functions in passing.

The civilization of ancient Egypt was the first to exploit honey by breeding bees to make it. Although the Egyptians practised apiculture, as we can see from the frescoes

in a Theban tomb of the seventh century BC, showing pottery hives similar to wine jars, a great deal of wild honey was still collected over the centuries. It is quite surprising that bees were not entirely wiped out, for they were ruthlessly plundered until medieval regulations intervened. Whole colonies were cheerfully slaughtered for a single harvest of their honey. But bees are resourceful insects, as their reproductive capacity proves. (The Japanese, moreover, have always liked eating the brood or larvae, a fashion which has spread to America today.)

The practice of smoking bees out, current as early as the date of the rock paintings, cannot have seemed to the Egyptians enough protection against the angry insects, even if the job was swiftly and efficiently done. Rameses III had his honey-gatherers escorted by archers (Philippe Marcheray). Presumably their arrows were supposed to ward off the bees' stings.

One of the first methods of setting up an apiary was simply to carry off the shelter in which wild bees had nested. If they had settled in a hollow tree, you merely had to chop off a suitable length of its trunk on both sides of the bees' entrance to get a hive ready to be taken away. You would first put the occupants to sleep, whether you did as Virgil suggests – 'release a smoke to chivvy them out' – or used an earthenware pot with a funnel containing a burning mixture of cow's dung (regarded as a courtesy to the insect), resinous substances and aromatic plants. A vessel of this kind has been found at Carthage. You then sawed off the tree trunk at suitable places, took the hive home, and as soon as they woke up the bees would go about their daily business to your own advantage. All you then had to do was empty the hive of its honey twice a year, in early and late summer, and you could go on taking honey for years.

The bees' favourite natural habitat of a hollow tree was an inspiration to beekeepers all over Southern Europe and Germany from the Middle Ages onwards. They burned out the insides of tree trunks, using red-hot iron for the purpose, to make homes for the swarms they took, and gave the bees rudimentary combs to help them settle in.

There have been hives made of cork oak, in imitation of tree trunks, in the south of France from Gaulish times to the present day; they are perfect for keeping the bees warm in winter and cool in summer. The French word *ruche* ('hive') is derived from this practice; it comes from Ligurian *rusca*, bark. The *chêne-rusc* is the cork oak of the Aude and eastern Pyrenees. (English *hive* comes from a probable Germanic root *húf-*, related to Latin *cupa*, a tub or cask, which gave rise to modern English 'cup'.) It is said that, for lack of trees and so as to transport their bees more easily, the plaited wicker hive or skep was invented by the nomads of the steppes; it was then adopted by the Celts. The idea of fixing hives to the most sheltered wall of the house was subsequently introduced. Then came frame hives and hives in several readily accessible sections.

After the great invasions of the Dark Ages, apiculture, like many branches of agriculture, developed no further for some time. People made do with honey-hunting in the forests, usually thanking the bees for their pains by suffocating them to death. But Charlemagne, wishing to restore his lands to a state of organized prosperity, laid down regulations for beekeeping at the same time as he introduced a general policy of agrarian economy. Farms were obliged to keep bees and, most important

of all, to pay the emperor dues in kind: two-thirds of all honey and one-third of all beeswax produced. As we shall see in the course of this history of food, Charlemagne was a great manager of general stores.

As early as the era of the Pharaohs, taxes were levied for the benefit not only of the sovereign but of the priests too. Even better, they alone had the right to the best quality honey and beeswax; the common people had to collect wild honey for themselves or make do with the left-over products of domestic bees. Another industrious civilization with an orderly system of government was that of the Maya Indians, who domesticated the native bees of Central America, the stingless Meliponinae, at about the same time as Charlemagne ruled in Europe. Here again, of course, the civil and religious authorities reaped most of the profits.

Still on the subject of religious authorities, abbeys all over Europe possessed great estates over a long period of time. The monks displayed great expertise in apiculture, as well as in making wine and cheese; this may have been the origin of the proverbial beekeeping skills of country clergymen.

Charlemagne died, but *abeillage*, 'bee dues', remained a duly regulated feudal right. Every vassal owed his sovereign a proportion of what his hives produced. Since forests belonged to the lord of the manor, any of the villagers who took a wild swarm nesting in a tree for his own use was regarded as a poacher and punished under the game laws. In France of the fourteenth and fifteenth centuries, there were sworn feudal officials, called *aviléors* or *bigres*, a kind of beekeeping gamekeepers, who alone had the right and duty to take swarms and settle them in clearings or on the outskirts of woods, in hives known as *bigreries* or *hostels aux mouches*, 'houses for the insects'. Laws also controlled beekeeping in various parts of the British Isles at the same time.

Similarly, the times when one might take honey were codified if not actually laid down by law. So were the amounts to be taken from the bees, to prevent any danger of starving them. These arrangements derived from empirical tradition as much as from apicultural treatises and the whole classical literature of natural science, from the Greek philosopher Aristotle to the Hispano-Roman Columella, and including works by Cato, Virgil and a number of others. Although these writers often incorrectly used mythological fables as scientific explanation, their works bear witness to genuine observation and have great literary charm. The Renaissance brought what may be regarded as serious apicultural treatises by Charles Estienne and Jean Liébault (*L'apiculture et la maison rustique*) and in particular the work of Olivier de Serres on the management of rural property, *Le théâtre d'agriculture et mesnage des champs.*

The ancient methods, however, displayed that common sense and wisdom which contact with nature was bound to arouse. In Greece, where every agricultural process was also a ritual, the first honey harvest formed part of a cycle of propitiatory ceremonies at the time when the figs ripened. This coincided with the fading of the wild flowers in late June and July. But, in addition, all the symbolism attached to honey made it even more precious. In ancient agrarian cults, the fig was regarded as a sacred tree by all Indo-European traditions of the Mediterranean area. It was universally associated with fertility rites and with rites of passage and initiation, just like honey.

The junior priests whose duty it was to 'reveal the fig' were known in Ancient Greece as *sykophantes*, the word for fig being *suke*. To 'reveal the fig' meant announcing the official date of its ripening and the picking season. At this fortunate time of year one might eat fruits and honey, sweet and long-coveted delicacies. The ritual opening of the season is not so far from the opening of the hunting and fishing seasons we still observe, or the opening of the vintage and coffee seasons in wine-growing and coffee-growing countries. In the time of Solon, who forbade the export of figs from Attica, people who denounced smugglers were derisively called 'sycophants', and thus the term came to denote all informers.

That is another story, but it does show how, in Philippe Marcheray's words, the bee, an 'insect omnipresent in human societies, is closely linked to human thought. The great number of folk names for the bee and its products shows how it has become part of man's daily life and those of the animal and vegetable kingdoms; it is situated at the meeting place of those three worlds.' I would be inclined, myself, to say four worlds, including the invisible world of the mind in which it was believed that, when our eyes and lips were rubbed with honey, what we saw and what we said would never be quite the same again.

Honey-Cakes, Spice-Bread, Gingerbread

In 1694, the first edition of the *Dictionnaire de l'Académie française* defined *pain d'épice*, 'spice-bread', a word now very frequently rendered into English as 'gingerbread', as 'a kind of cake made with rye flour, honey and spices'. An early English mention of a confection of this kind occurs in Chaucer: 'roial spicerye and Gyngebreed'.

People had been enjoying honey-cakes for centuries. The Chinese of the tenth century, under the T'ang dynasty which encouraged the arts, are thought to have invented the original recipe: their *mi-king* (honey bread) was a mixture of flour (wheat flour, since they did not grow rye) and honey. Aromatic plants were not essential. As a concentrated, energy-giving food, it was carried in the thirteenth-century saddlebags of Genghiz Khan's Mongol horsemen. The Mongols passed the taste on to the Turks and the Arabs. Pilgrims to the Holy Land enjoyed it, and Arnold of Lübeck reports that certain Crusaders who got lost in the Romanian marshes owed their survival to it.[12] The chronicler gives this valuable item of the wayfarer's diet a Latin name: *panis mellitus*. The *panis mellitus* of the Romans and the *melipecton* of the Greeks were both actually quite a different dish: a cake made of flour, usually sesame flour, which was not soaked in honey until after it had been cooked, and sometimes then sliced and fried. In the form of *panis nauticus*, this was sailors' biscuit.

We have to remember that all sweet dishes of the ancient world were made with honey, whether for domestic or sacrificial use. Thus the famous traditional birthday cakes of Rome, particularly for people reaching their fiftieth year, were made with honey, hence their name of *quinquagesima liba* (Varro, Cato, Martial). These *liba*, made of wheat flour, grated cheese, honey and olive oil, were eaten with *mulsum*, a honeyed wine, after the gods had been given their share on the family altar. A cup

of honey, the 'libation', was also poured on the ground to rejoice the souls of dead ancestors. This custom is still practised in Romania when a dead friend is missing from the usual company of guests at a party.

The Middle Ages were not particularly inventive in their confectionery and sweet dishes, but in the thirteenth century we hear of a Flemish cake consisting simply of wheat flour and honey, like the Chinese *mi-king*. This cake is mentioned in the next century as a favourite food of Marguerite de Môle, wife of Philip the Bold, Duke of Burgundy. The people of Coutray therefore presented such a cake to the couple's grandson, Philip the Good, who was delighted and took both the cake and its maker to his city of Dijon with him.

A hundred years later, again in Dijon, we hear of *pain de gaulderye*. *Gaude* was a kind of traditional mush or gruel made with honey, and in this case was based on millet. To be made into a loaf, the *gaude* was put in a mould to solidify and cooked a second time in the oven or under the embers. This was a kind of Burgundian reincarnation of the Byzantine wheaten *grouta*. The *hassidat b'el âcel* of Tunisia, similarly, is a mixture of fine boiled semolina with the same volume of honey, and, if you are rich, with melted butter, chopped dates and raisins. It is not cooked again but chilled to make it set.

Pain de gaulderye was made in Dijon until the beginning of the reign of Louis XV. This was about the time when Bonnaventure Pellerin advertised himself as a 'seller of spice-bread and tavern-keeper'. Others followed his example, but it was not until the Empire that Dijon could claim a distinction boasted by the city of Reims since the time of the Hundred Years' War, when it began the commercial production of *pain d'espices* made to the recipe of a pastrycook of Bourges. He had invented it around the 1420s in honour of Charles VII, nicknamed 'the king of Bourges' because of his retreat to the region when hard-pressed by the English. The spice-bread consisted of black rye flour, dark, strong buckwheat honey from Brittany, and spices in the fashion of the times. The King's mistress Agnès Sorel, called la Dame de Beauté from the name of the estate he gave her, graciously let it be known that she could never tire of this spice-bread. A dish enjoyed at the best people's tables was savoury spice-bread cut into cubes and dipped in the sauce of meat dishes.

Spice-bread was also, of course, made in Paris, but it was not until 1596 that Henry of Navarre, a lover of good food, granted the Corporation of Spice-bread Makers its own statutes, making it a separate body from the Pastrycooks. To qualify as a Master Spice-bread Maker you had to produce a 'masterpiece . . . the mixture weighing 200 pounds, flavoured with cinnamon, nutmeg and cloves, of which there shall be made three cakes each weighing 20 pounds . . .' The corporation's coat of arms showed a large gilded spice-bread cake on an azure ground, accompanied by four wafers of the same placed in a cross (these spice wafers were very popular, and were sold in the streets of Paris until the First World War).

The Corporation of Spice-bread Makers of Reims had broken with the Pastrycooks (or Wafer Makers) in 1571, and its coat of arms remained innocent of wafers to mark the fact. The spice-bread makers of Dijon, whose products did not really become well known until the Napoleonic period, neither became a corporation nor had a coat of arms, but they successfully caught up with and even drew ahead of Reims in marketing their wares.

Ever since the time of Louis XIII, Reims could point to a flattering mention in the *Encyclopédie méthodique des arts et métiers*: 'The city of Rheims makes the best spice-bread, because of the care taken by the shopkeepers of that city in making their dough.' And indeed the Académie Française completed its definition of spice-bread with one brief and proud example: *pain d'épice de Rheims*.

At first spices were added with a heavy hand, typically for the time. Catherine de Medici is said to have added certain poisons of her own to rid herself of enemies, since the whole court had an attack of colic one day after eating spice-bread. With the Renaissance, a craze for sugar came in too. The only spices some modern recipes will allow are a dessert-spoon of aniseed or, in Alsace, where there is a considerable spice-bread tradition, a pinch of cinnamon. Lemon is another ingredient, green in the Reims tradition.

But part of the secret of traditional French spice-bread, in Dijon, Reims and Paris alike, was in its making. It consisted of letting the dough rest – like the Sleeping Beauty – for several months, a year, or several years for the very finest kind. The 'mother' dough, as it was called, was kept cool in wooden tubs, while the honey in it brought about a delicious fermentation. Until the end of the Second World War, all that was required for traditional French spice-bread was honey, from Brittany if possible, the same amount of flour (wheat flour in Dijon, rye flour in Reims), spices or a small amount of green lemon; the dough underwent an alchemical process in wooden tubs and was then cooked in wooden moulds, shaped either into slabs or into the figures of little pigs. But in this iconoclastic age, chemistry replaces alchemy: not only is baking powder now added to the ancient formulas to make the dough rise faster, but honey is replaced by golden syrup. Some labels now specify that the product is '*pain d'épice au miel*', which should be an entirely superfluous description, but is offered as a guarantee.

Up to about the seventeenth century, English gingerbread was very similar to the traditional French spice-bread, and consisted of equal quantities of breadcrumbs and honey, with colourings such as saffron for yellow or 'sanders', made from sandalwood, for red. Spice was also used for flavouring – not always or solely ginger; a fifteenth-century recipe for 'gingerbread' contains only pepper and cinnamon. This was the kind of stiff dough hardened in moulds and traditionally sold at fairs. ('An I had but one penny in the world, thou shouldst have it to buy gingerbread', says Costard in *Love's Labour's Lost*.) However, molasses or black treacle began to replace honey around the Restoration period, and gingerbread gradually became more like the ginger cake of today.

Mead and Sacramental Intoxication

The child of honey, the drink of the gods, mead was universal. It can be regarded as the ancestor of all fermented drinks, antedating the cultivation of the soil. In any case it is the simplest. Water was mixed with honey, was perhaps left standing and forgotten, and produced an alcoholic fermentation. The people of the tropical

countries, as we have seen, seldom ate pure honey anyway, and an unfermented mixture of honey and water (hydromel) could have been common.

Claude Lévi-Strauss[13] makes out a good case for the invention of mead as a passage from 'nature to culture', a process defining human behaviour, as implied in the coded message at the end of the Amazonian myth of the origin of mead he cites; it reads like a kind of postscript, as if it belonged to some quite different story, but it is not there by chance. The most important part of a message may be contained in a postscript, and it is up to the audience to attend and draw conclusions.

The myth is told by the Matako people, who are still in the Stone Age period of cultural development. 'In ancient times there was no mead. An old man tried to make it with some honey. He mixed the honey with water and left the mixture to ferment for one night. The next day he tasted it and found it very good. The other people did not want to taste the drink, as they thought it might be poisonous. The old man said, "I will drink, because I am very old and if I died it would not matter." The old man drank much of the mixture, and he fell down as if dead. That night he awoke and told the people that the mead was not a poison. The men carved a larger trough and drank all the beer they made. It was a bird who carved the first drum, and he beat it all night, and at dawn he was changed into a man.' This mixture, the simplest of all, does not need cooking or fire, but it is still a culinary act, inviting us to praise the gods for the miracle of fermentation and the magic of intoxication induced by drinking the fermented liquor.

On this basis of water sweetened with honey – the *melikraton* of the Greeks, the *aquamulsa* of the Romans, which became the *meda* of medieval Prussia and the *tschemiga* of Russia – Columella, the Hispano-Roman naturalist, gives the classic recipe for mead in his *De re rustica*, an agricultural treatise written around AD 60. He recommends using perfectly pure demineralized or sterilized water. 'Take rainwater kept for several years, and mix a sextarius [about half a litre] of this water with a pound of honey. For a weaker mead, mix a sextarius of water with nine ounces [250 grams] of honey. The whole is exposed to the sun for 40 days, and then left on a shelf near the fire. If you have no rain water, then boil spring water.' Notice the 40 days: 40 is a number signifying a period of waiting and preparation, part of a cycle leading to resurrection or purification. The making of mead is a ritual act.

It is interesting, for several reasons, to look back at southern Brazil, where the Mocovi people make ritual use of mead as a 'sacred, shared beverage' at festivals and 'the natives lived in a constant state of intoxication'.[14] It was being made in this way in 1943, and the recipe – for there is only one recipe, and it goes back to the dawn of time – conforms to that of the Matako myth and to Columella's. No fire is needed, nor even in this case a wooden trough or a cooking pot, which shows that it predates any form of industry. 'The dried skin of a jaguar or deer was hung up by the corners to form a pouch, into which the honey was poured along with its wax, and then water was added. In the space of three or four days the mixture ferments naturally in the sun.'

The leather pouch, also used over a hearth by the Fuegians and Eskimos, is certainly the ancestor of the cauldron. It will not burn as quickly as wood, even the hardest wood, and here it is not even exposed to fire. When hot water is required

for a more elaborate kind of mead, related to beer since it contains a decoction of plants, 'honey is poured into the water and the water is heated by hot stones'. The mixture is then left to ferment under a covering of bark. I shall return to the use of hot stones later.

The brewing of these liquors and its incidental aspects – cutting down trees to make troughs, flaying of animals, the laborious process of moving hot stones – make up the sequences of a communal, social act, like the sharing of the drink itself at a later stage. Hunting became a group activity when beating for game was introduced, but there is something more here than the fever of the chase and the satisfaction of hunger: an experience of shared intoxication which, in very many festivals, takes a group of people out of their normal state of mind, out of time, freeing them from the conditioning of the outside world. It is not far from this condition to the belief that one is in direct contact with the other world. Sacramental drunkenness – a communal experience which seals alliances – was part of the Celtic festivals of Samhain, the New Year which began on 1st November,[15] particularly in Ireland. The Irish are still great beer-drinkers, and James Joyce's *Ulysses* contains a paean in praise of drinking.

The rite, for such it is, of intoxication is linked to fertility, harvest, success, just as they are expressed in the symbolism of honey. Drunkenness was not condemned in the ancient world. It makes men feel like gods, and the Greeks, Romans, Celts, Germanic, Slav and Scandinavian peoples not only felt (like the Amerindians) that they were part of a group of friends and allies in that state, but also that mead was the drink of immortality. No god in any of their pantheons denied himself that liquor. In final homage to the fallen kings whom the ancient Irish sent to their fathers, they were drowned in a vat of mead and their palaces set alight. (If the Celtic mead-maker, particularly in Wales, was not really a seer and healer, he was credited with those powers. Healing, like fermentation, was a magical operation, both of them graciously granted by the gods to the specialists who mediated between them and mankind.)

The Bambaras of Mali regard mead in a much more serene light, although they too consider it divine. To them it is the drink of wisdom, knowledge and truth, by virtue of the honey and the bees who made that honey. Like the honeycomb itself, truth has neither a wrong side nor a right side, and is the sweetest thing in the world. Another curious fact is that, while the Koran condemns the consumption of fermented drinks, mead is quite kindly regarded by the very pious Muslims of Mali, although their version of Islam is much tinged by animism. It is true that they do not get drunk on it, or not very drunk – it is so hot in Mali that one might drink just a little too much so as to feel better. African mead also contains chilli as a stimulant. When two friends drink together, they use the same gourd, placing their lips side by side as a sign of shared friendship. The Bambaras descend from an ancient and noble civilization.

Here I should note that ethnographers and historians in the first half of this century, and the upright German scholars cited by Dr Maurizio,[16] claim that 'uncivilized' peoples did not have fermented drinks. Dr Maurizio, whose work is both important and fascinating in some respects, unequivocally stated that 'savages still at the gathering stage did not have alcoholic liquors . . . [nor] did peoples still in

the early stages of cultivation of the soil . . . this coincides with the view of Hahn, who thought that alcoholic drinks dated from the first period of cultivation with the hoe. But it is my view that they appeared in the latter period of this stage of civilization, and perhaps not until the time of cultivation with the plough.'

The myth of the Golden Age and the Noble Savage was regarded as gospel truth by missionaries and ethnologists alike, and the idea that the invention of alcohol was linked to the widespread growing of cereals suitable for bread-making (not cereals suitable only for boiling, like millet) and grapes for wine requires correction. Later in this book, we shall see how the revolutionary progress from porridge to beer and bread was made. The pot of beer and the glass of wine have been so important in the daily life of Judaeo-Christian civilizations that we tend to overlook anything else, but before their day mead, still a part of Graeco-Roman mythology, had been around for thousands of years. It was then forgotten or at least neglected. 'It is true that we do not know of any savage people of the present day making a fermented drink with honey', said Dr Maurizio in 1927. But such examples are now coming to light, and are a source of great interest.

In the Middle Ages, the availability of beer and wine did not preclude the enjoyment of mead. Indeed, the three got on so well together for so long that no feast in the ancient world was complete without large amounts of honeyed wine, *oenomelites* or *mulsum*. Northern Germans partook of *Lantetrank*, and still added honey to their favourite barley beer or brewed a type of honey beer; from the sixteenth century onwards it was usual to add hops. The people of the Vosges had a special method of their own: they enriched their mead with mashed bees to obtain a *miessaude*, a good ferment. The addition of nitrogenous matter facilitated and accelerated fermentation, a process which requires impurities; very fresh and very pure honey, on the contrary, is almost antiseptic. Some kind of contamination is necessary for liquid to ferment, whether caused by contact or by atmospheric pollution.

Mead is even made with crushed fruits. The Indians of both North and South America brewed it from that base, and the Romans gave such drinks the charming name of *meloneli*. Milk meads have been made. Mead can be distilled, and will also make vinegar.

Practically no mead is brewed today; try looking for it in the off-licence or on the supermarket shelves. Despite some efforts by farmers to popularize it, it remains a small folk industry, perhaps drunk occasionally at an ecological gathering, or as a conscious celebration of the past, or out of amused curiosity. One enjoys it and then forgets it, which is a pity, when it used to signify so much that is also now forgotten. Perhaps the gods really are dead.

BOCHET

(This is a recipe given by the Ménagier de Paris, written about 1393. It is for a household mead rather similar to beer.)

To make six sesters of *bochet,* take six pints of very soft honey, and set it in a cauldron on the fire, and boil it and stir it for as long as it goes on rising and as long as you see it throwing up liquid in little bubbles which burst and in bursting give off a little blackish steam; and then move it, and put in seven sesters of water and boil them until it is reduced to six sesters, always stirring. And then put it in a tub to cool until it be just warm, and then run it through a sieve, and afterwards put it in a cask and add half a pint of leaven of beer, for it is this which makes it piquant (and if you put in leaven of bread, it is as good for the taste, but the colour will be duller), and cover it warmly and well when you prepare it. And if you would make it very good, add thereto an ounce of ginger, long pepper, grain of Paradise and cloves, as much of the one as of the other, save that there shall be less of the cloves, and put them in a linen bag and cast them therein. And when it hath been therein for two or three days, and the *bochet* tastes enough of the spices and is sufficiently piquant, take out the bag and squeeze it, and put it in the other barrel you are making. And thus the powder will serve you well two or three times over.

(Translated by Eileen Power, *The Goodman of Paris*)

2

The History of Gathering

The Ancient Pulses

In the beginning there was gathering, the picking of plants. Starving people still instinctively put their hands out towards vegetation, like the baby with its eyes closed searching for the maternal breast.

Was it women who first gathered nutritious and sometimes medicinal plants in their wisdom – just as another and magical wisdom enabled them to grow children in their bellies to perpetuate the race? Is Nature herself to be seen as a Great Mother with a fertile womb, regular cycles and a capricious disposition? And if so many slow, secret creative processes depend on the female principle, is action a male prerogative by virtue of men's strength, speed and availability? For the hunters did not have to carry the future in their bellies or at their breasts, and were therefore available to hunt animals and make the gesture of sacrifice. Hunting implies danger, and can indeed be a risky business. Gathering denotes security, a modest but stable existence. Are we to regard meat-eating, with its connotations of heat and violence, as dependent on masculine skill, and fresh, soothing plant foods as the gift of feminine wisdom?[1] Simplified patterns of this kind are imprinted on our minds.

In fact there are no good grounds for supposing that the division of labour involved in getting food in the early days of the human race was inevitably along these gender-determined lines, other than by reference to various primitive societies of the present day. But do we know whether or not appearances of immutability are deceptive? Things may have changed. It is possible that such a dichotomy is the result of 'culture rather than nature, with the division of labour arising from a previously induced submissive attitude in women, not from supposedly distinct capabilities'.[2] Thus, if gathering food calls for the exploration of terrain extensive and rugged enough to conceal dangers, the whole group will have to be deployed to do the work and keep watch. The animal kingdom provides countless examples of such arrangements.

The many kinds of plant food which are within easy reach of the gatherer's hand, and require no tree-climbing or digging with hands or sticks, include those extremely nourishing fruits which make up in number for their small size: seeds contained in pod-like structures. These seeds of small plants are less refreshing than tree fruits but a better substitute for meat than leaves. Chewed and swallowed, they give the stomach a sense of satisfaction and, best of all, they will keep in store for a long time.

The Romans gave the name of *legumen* 'to all edible seeds which form in pods and can be eaten as a porridge or made into a purée' (E. Benoist and H. Goëzler). The noun derives from the verb *lego*, to collect, gather, and also to choose or select, to take.

Until the eighteenth century, French *légume*, which has now come to mean vegetables of other kinds as well, was applied only to those plants we still call *leguminous*, the seeds of which were and still are often eaten dried. The word derives from *legumen*, by way of a form *léum*. In English, *legume* (in botanical rather than everyday use) still denotes solely 'the fruit or the edible portion of a leguminous plant, e.g., beans, peas, pulse', as the OED defines it. (*Pulse* is from Latin *puls*, a porridge made of meal or a similar substance.) 'As for legumes, they are seeds which abound in more varieties than any other vegetables: broad beans, peas, beans', wrote Olivier de Serres in 1600 in his *Théâtre d'agriculture et mesnage des champs*. Edible vegetables other than seeds are usually divided into *leaves* and *roots*. Leafy vegetables include lettuce, spinach, all the cabbages, etc., while root vegetables include turnip, radish and carrots. Leguminous vegetables are very nutritious because of the starch, proteins and mineral salts they contain, and have been described as 'the poor man's meat'.

If you go out for a country walk you may well come back with tendrils or hairy little seed-pods like flat matchsticks clinging tenaciously to your legs. The flowers of these plants, which look like little butterflies, belong to the botanical family of Papilionaceae. Only some of them, the most useful to us, have become cultivated plants.

Vetches, climbing plants found in hedgerows and as sweet peas in gardens, were probably the first to be gathered because of their natural abundance in the basin of the Eastern Mediterranean and in Eurasia. Often growing as weeds among cultivated cereal plants, they featured in the frugal diet of the poor until the eighteenth century, and even reappeared on the black market in the South of France during the Second World War; people will revert to such foods in times of hardship. Vetches had been considered fit only for pigs in previous years, and were not as good as lentils, but would do in the absence of anything better. St Bernard, in the famine of 1135, is said to have eaten bread made of vetch meal with his monks.

The broad bean, when picked in the wild state, as it was gathered tens of thousands of years ago in south-eastern Afghanistan, Central Asia and the Himalayan foothills, has seeds the size of a little fingernail. It was cultivated in Kashmir in very ancient times, and was quickly improved. Chester Gorman, a student from Hawaii, made a discovery in South-East Asia which may well reopen the whole question of the origins of farming. As early as the seventh millennium BC, a thousand years before any plants were domesticated in the Middle East, which is generally held to be the cradle of agriculture, the inhabitants of the 'Cave of the Spirit' in north-east Thailand were growing two kinds of broad bean which were already considerable

improvements on the wild species, and also a variety of pea. And at about the same time as farming began in the Middle East, other cave-dwellers on the other side of the world, in the cave of Taumalipas in Mexico, were storing broad beans which had certainly been cultivated. The beans that have been found are seven thousand years old. Large seeds of gourds were discovered on the same site.

A happy accident of nature lent these first farmers a helping hand; something similar happened with corn, as we shall see. The wild broad bean like corn, has an extremely efficient reproductive system. When ripe the pod opens, rolls itself into a spiral and ejects its small seeds, which are scattered on the ground. But some abnormal pods never manage to open, and it was these that people picked to shell their seeds at home. Seeds collected in this way were sown to make it easier to gather beans from around the home camp-site. Accordingly, the plants they produced were the ancestors of cultivated broad beans which do not burst their pods. The 30 broad beans from a slightly earlier period found in a cave in northern Peru were harvested in their pods. Two of the pods have been retrieved – the pure, dry air of the Andes preserves substances very well – and it is possible to confirm that these pods, less fibrous than those of wild species, could not burst.

There is no reason to suppose that the same thing did not happen in other parts of the world. From the moment it began to be cultivated the broad bean, already remarkable among seeds for its size, improved even further, and improved quite fast. Its size and the nutritional value of the starch it contains soon made it one of the first foods to be stored. King Priam himself may have had sacks of broad beans among his treasures, like the cave-dwellers of Thailand and America; traces of such beans have been found on sites excavated at Troy.

The Greeks, who used broad beans as ballot papers in their election procedures, liked to eat them green, in their pods. Some people, incidentally, are extremely allergic to them. They are said to have caused the death of Pythagoras[3] at Metapontum – not by poisoning him, but because he so disliked broad beans either fresh or dried that he preferred capture and death at the hands of his enemies to escape across a beanfield. In fact there were philosophical and symbolic reasons behind the story of the sage's dislike of beans, although it seems to deal only with food. As a vegetarian, he would not let his followers eat them, apparently on the grounds that they were stimulating and indigestible.

The Romans, not being particularly Pythagorean,[4] used to make cakes of meal from dried beans, or *lomentum*, when there was a cereals shortage. The custom lived on at times of European crisis: Louis XV of France ate a roll of bean bread from a silver plate to show that he was sharing his subjects' privations.

From the time of Charlemagne and his collection of ordinances *De Villis*, making it compulsory for several rows to be grown in all gardens on his farms (the chick-peas described as Italian had to be grown as well), broad beans were very popular in the Middle Ages, particularly eaten early in the season, when they were called 'Lendict' beans in France, referring to the name of a fair held near Paris in June. They were sautéd with onions, saffron and a small piece of herring or porpoise.

Chick-peas, dear to the heart of Charlemagne, came from Western Asia. They soon became very popular from the Mediterranean to India, as the culinary traditions of those regions still show. The Phoenicians are said to have introduced them into Spain,

where *garbanza* has been the poor man's staple dish ever since, but excavations of sites in Languedoc show that wild chick-peas were gathered in the seventh millennium, and were then followed by improved, cultivated chick-peas.

The word 'chick' has nothing to do with chickens, but derives from the plant's Latin name, *cicer*, whence modern Italian *cece* and French *chiche*. Roman vendors used to sell roast chick-peas at theatrical performances, just as peanuts or popcorn are sold today, and there are still fairground stalls in the South of France which sell enormous fritters known as *chichi fregi*, supposed to be made entirely of meal from chick-peas, like the *panisses* of Provence.

Grown in gardens, or spreading wild on the sunny hillsides of Mediterranean Europe and Asia Minor, lupins provide a magnificent show of pink, mauve and blue flowers, and a wealth of very nourishing seeds. They were simply gathered for a long time; the Greeks and Romans then took to cultivating them. They disappeared from culinary use around the time of the Renaissance. In modern times the Italians and some Eastern peoples preserve a kind of very large lupin seed in brine, using a recipe famous even in Byzantium, to be eaten as a cocktail snack like olives. The ancient Egyptians added lupin seeds to the barley from which they brewed beer, to give it a bitter flavour.

Lentils are another of the pulses of ancient tradition. Long before Esau came in from his fields so weary and hungry that he sold his twin brother his birthright for 'red pottage . . . of lentiles', the Neolithic peoples of India, Egypt, the Middle East and Europe had begun sowing lentils, which grew wild in the Middle East and Central Asia, so that they could be harvested in quantity. The Greeks and Romans ate large amounts of lentils; they were the food of the poor, and the poor made up the majority of the population. The Egyptians were the main exporters of lentils in ancient times,[5] and, as the Romans imported them on a large scale, it is not altogether surprising that someone thought of making the little dried seeds into a useful packing material, one which would not be subsequently wasted. In the reign of the Emperor Caligula, the obelisk which now stands in St Peter's Square in the Vatican was brought by ship from the banks of the Nile, nestling among 120,000 measures of lentils. The Athenians made a fortifying lentil broth called a *ptisane*, and the lentil soup provided for the Roman legions by the consuls sustained their iron morale: dried lentils are rich in iron and phosphorus. Later, in the seventeenth century, people came to despise them, and eventually declared them fit only for horse fodder. It took the hard times of the French Revolution and the Continental blockade to bring them back from the stables to French saucepans, although Alexandre Dumas does not make much of them in his *Dictionnaire de cuisine*. Nowadays pickled pork and lentils is a trendy item on the menus of certain fashionable cafés. But, as far as I know, no wealthy Greek shipowner or oil-rich sheikh of our own time has emulated the Roman emperor Heliogabalus and mixed precious stones into his lentils.

Peas were a great standby of the Egyptians, Greeks and Romans, who grew them with some expertise. From the dawn of agriculture, constant selection improved the small round seeds, which were very common in the Mediterranean basin, the valley of the Nile and the mountainous regions of Asia. Peas have never lost their popularity since someone first gleaned and ate a handful. At l'Abeurador in the Hérault area of France, peas have been found among the debris left by the people who

inhabited Languedoc in the seventh millennium, as well as chick-peas, vetches, broad beans and lentils improved enough to make it seem likely that they were cultivated. Such legumes may well have been the staple of these people's vegetarian diet, together with certain fruits. Alternatively, the place could have been occupied only seasonally, at the time for harvesting the seeds.

The Roman legions gathered peas from the sands around their camps in Numidia and Palestine to supplement the rations they received, consisting of flour, oil and salt meat, when not actually on service in the field. Our word *pea* is from Latin *pisum*, itself derived from Greek *pison*. The Old English term *pise*, becoming *pease* a little later, was misunderstood as a plural, and so the singular *pea* was coined.

Cultivated peas were mainly eaten dried in Roman and medieval times. Rabelais enjoyed dried peas cooked with a good piece of bacon – 'cum commentato' (with a gloss), as he explained. Split peas did not become part of the diet until the end of the nineteenth century, when the idea of rubbing off the indigestible skins occurred. The only dried peas now widely eaten in Western countries are split peas.

Green peas, or *petits pois*, made their entrance into French gastronomy some 60 years after the *mange-tout* or sugar pea, which had come from Dutch market gardens in the time of King Henri IV. In January 1660, on his return from Italy where he had been on a confidential mission (learning how to make liqueurs), the Sieur Audiger brought a hamper of green peas back from Genoa and presented it to Louis XIV in front of all his eminent courtiers. 'All declared with one voice', Audiger reported proudly, 'that nothing could be better or more of a novelty, and that nothing like them, in that season, had ever been seen in France before.'[6]

The Comte de Soissons (a name of good omen for leguminous vegetables, since the Soissons area is particularly famous for its French or haricot beans) shelled the peas, to universal acclaim. On the King's orders, Audiger entrusted the cooking of this wonderful new Italian vegetable in the French manner to the Sieur Baudoin, whose office it was to attend to such matters. 'There was a little dish of them for the Queen, another for the Cardinal, and the rest were shared between his Majesty and Monsieur' [the King's brother]. No sooner had news of the green peas spread than they became a positive craze: everyone wanted to eat them, at Versailles, in the outlying districts, in the worlds of finance and the Church. Mme de Sévigné hurried to her writing desk to tell her daughter all about them – while the King indulged himself in indigestion on a royal scale, and his head gardener, La Quintinie, worked miracles to raise young green peas in the glasshouses of Versailles.

But you can never please everyone, and in the next century *petits pois à la française* were accused of toxicity by Oliver Goldsmith in his letters.[7] The French way of cooking green peas, according to Goldsmith, made them practically inedible. Mere traveller's chauvinism, or a faithful reflection of contemporary British opinion? French cookery was a favourite target of English satirists, but it was still fashionable to have a French cook in London. The English method of cooking green peas flavoured only with mint leaves, instead of the onion and lettuce of the French tradition, is certainly delicious, perhaps because green peas are good enough to be eaten entirely on their own.

The French today are not particularly fond of canned vegetables except – goodness knows why – for special occasions; they buy an annual 9 kilos of canned

vegetables per head, as compared with the 38 kilos a head bought by Americans. However, canned peas, considered a rather superior sort of vegetable garnish, are the most popular in France, and indeed are preferred to fresh peas: three-quarters of the French pea crop goes straight to the canning factory. The British preference is for frozen peas. Peas are no longer picked by hand for either canning or freezing: the pea bines are reaped and the peas shelled in two almost simultaneous labour-saving operations.

Dried pulses left a special mark on Roman history: the famous names of several ancient Roman families proudly conveyed the information either (as one theory has it) that the founder of the *gens* was a man of those frugal habits on which the strength of Rome depended in the early days of the Republic, or (according to another theory) that he tilled the soil like Cato the Elder. Hence several Roman names referring to the chick-pea (*cicero*) the broad bean (*fabius*), the lentil (*lentulus*) and the pea (*pisolus*).

Finally, peas had the distinction of being used by the Austrian monk Gregor Mendel in his research when he laid the foundations of genetics. His experiments of 1865 enabled scientists to make great advances in botanical knowledge, and indeed, without Mendel and his peas genetics might not yet exist as a science at all.

The Symbolism of Beans

The traditional Twelfth Night cake contains a bean, often replaced by a small china fish or doll: these are allusions to classic Christian iconography. The parallel is not mere chance. Since time immemorial, the bean has been a symbol of the embryo and of growth in most societies.

The ancient Egyptians called the place in which the *Ka*, the souls of the dead, awaited reincarnation 'the beanfield'. In the sixth century BC, as we saw above, Pythagoras, the originator among other things of the word 'philosophy', who used various religious themes to illuminate his teachings, refused to escape his murderers by crossing a beanfield. He was acting in conformity with a major taboo. To his disciples, as to those who adhered to Orphic beliefs, eating beans denoted devouring one's own parents, and thus causing serious interruption in the cycle of reincarnation (whereas in many 'primitive' systems of thought the practice of cannibalism permitted assimilation, and was a kind of reincarnation).

Outside these communities of cult initiates, beans still symbolized the dead to the ancient Greeks and Romans, but they also saw them, being the first fruits of the soil, as representing blessings,[8] the bounty of those below the ground. Other seeds and cereals were viewed in the same way, but there was a deeper meaning to broad beans. Pliny, although dissociating himself from the Pythagoreans, conceded that there was indeed something of the souls of the dead in beans. When offered in sacrifice, they thus allowed communication with the invisible world, particularly at the spring and seedtime festivals. Spring itself can be seen as perpetual reincarnation. Beans were also a ritual offering in marriage ceremonies, each bean representing a male child in whom an ancestor would return to ensure the continuation of the family line.

The Etymology (and Entomology) of Haricot Beans

The Comte de Soissons figured briefly above, in connection with the arrival of green peas at the court of the Sun King, and so famous is Soissons for its haricot beans that it may seem strange I have not yet mentioned them. These New World beans, of the genus *Phaseolus*, are referred to in French as *haricots* whether they are eaten fresh, pods and all, or dried, whereas in English 'haricot' is usually reserved for the dried beans, and the fresh pods are known as French, kidney or green beans. You might have supposed I was saving them until last as a particular delicacy. The fact is that they did not reach Western tables until quite a late date. That date was 1528, when Canon Piero Valeriano was given some large, kidney-shaped beans by Pope Clement VII. In a spirit of respectful curiosity, he sowed them in pots. The Pope himself had received them from the New World of the West Indies. The canon noted down the progress of germination as meticulously as Gregor Mendel later recorded the progress of his peas. He marvelled at their great fertility, and added that the dish prepared from his crop had been delicious. The seeds, known as *fagioli* by association with the traditional broad bean (*fava*) had soon conquered northern Italy.

At this time, Catherine de Medici, betrothed to the Dauphin of France, was packing before taking ship for Marseilles. Canon Valeriano, remembering that the way to a man's heart is through his stomach, persuaded the Medici family to add a bag of these *fagioli* to the future princess's dowry, tucked among the pearls and lace. Thus the famous bean dish of Languedoc, the cassoulet, originated in the landing of the haricot bean – not yet known by that name – on the shores of the Gulf of Lions.

The people of Provence, the first to eat these new beans, liked them very much and made them part of their *aïoli*. They featured in the Sunday version of the dish, the *grand aïoli*, since the new vegetable's price made it a luxury. Then it became less of a novelty, and once anyone could afford to get indigestion at a reasonable price from eating these *fayoun* (the Provençal name for the beans) the people of the Marseilles district, and elsewhere, realized that they were indeed inclined to cause flatulence. The jovial Provençals accordingly nicknamed them *gounflo-gus*, 'swell the poor man', and, with a play on words, 'swell the belly', since *gus*, related to standard French *gueux*, beggar, also meant 'stomach' (and a beggar may be seen as nothing but a stomach that needs filling). The *fayoun* or *fayot* made a good solid dish, and its reputation as a cheap stomach-filler guaranteed its popularity, although one voice was raised in dissent: that of Rabelais, speaking through the disrespectful mouth of Panurge, who accuses the *fazéolz* of making Lent even more disagreeable.

The French, kidney or haricot bean was thus first known in the Mediterranean countries by such names as *fagiolo*, *fayoun*, *fazéolz*, deriving from *fava*, the familiar broad bean. Then, suddenly, the word *haricot* surfaces in Oudin's dictionary of 1640, where it is defined as 'a kind of legume'. Eleven years later, Nicolas de Bonnefons felt able to mention 'the *fève de haricot* or *feverolle*'. Where did the word 'haricot' come from – a word which was to supersede all other names for these New World

beans in French, and to be taken over in the English language to denote their dried seeds in particular? It was a word already familiar to every French ear and indeed stomach: the *haricot* or *héricoq*, recorded as early as the fourteenth century[9] (probably deriving from *harigoté* or *aligoté*, a word of Germanic origin meaning 'cut into pieces'), meant a stew or ragout of mutton and vegetables. The dish is still popular. But originally, and for very good reasons, there were none of the new beans at all in such ragouts. Instead, they contained root vegetables, particularly turnips. From the fourteenth century onwards, naturally, people were tempted to add haricot beans. But although Alexandre Dumas may cite Cyrano de Bergerac (the writer himself, not the character in Rostand's play) to support his theory, he is wrong in saying that a stew of mutton with haricot beans came first historically, and the beans were then 'dethroned by turnips'. The 'Revolutionary' (*sic*) ragout made with potatoes came in after the Empire period. This was to be the dish known as a *navarin*, somewhat confusingly, since the word may seem to suggest the *navets*, turnips, which it no longer contained. It is likely that the name refers to preparation of the ragout 'in the manner of Navarre' rather than to the battle of Navarin-Pylos fought in 1827.

The whole etymological puzzle, with its mistaken identities and coincidences, restored something like their original name to the foreign beans. For before anyone ever tilled the soil, the *ayacotl*, still a tiny bean, was gathered in Central America, south Mexico and Yucatan. A second centre of origin has been identified in the hot regions of Ecuador, Bolivia and Peru, where beans were found in Inca tombs. Confusingly, the large Lima bean comes not from Lima in Peru, but from Guatemala.

And that is not the whole story. As we shall see later in this chapter, the tropical regions of the American continent favoured root vegetables. *Phaseolus multiflorus* grows in Central America, a bean which not only is very prolific, as its scientific name indicates, but also has large, edible tubers. In fact it is a truly protean plant; the developing peoples of America and Africa (where New World beans have done very well indeed since being imported), more resourceful than Westerners who enjoy a superfluity of everything, eat the leaves as well, cooked like spinach.

By now it will be obvious why beans are second only to maize in importance in the Latin-American diet, from New Mexico to the Magellan Straits. The national dish of Brazil, the *feijoada completa*, is a kind of cassoulet, a baked bean stew which can be basic or grand depending on what else goes into it. Over a million hectares are given over to the cultivation of beans in Mexico, and they will even grow at an altitude of 3000 metres.

The 'French bean', as it is commonly known in the green state in English, had clearly acquired French nationality when some unknown person in the seventeenth century (perhaps Oudin himself) gave its name the Gallic form of *haricot*, but until early in the twentieth century reference books continued to profess ignorance of its origins. For instance, the delightful *Physiologie des substances alimentaires* published in 1853 'by the author', Stanislas Martin, a member of the Parisian Société de Pharmacie and of the 'Association of Inventive Artists', informs its readers: 'HARICOT (pron. A-RI-KO) = *Phaseolus vulgaris*. The haricot bean is a herbaceous plant native to Asia, and has been grown in Europe since time immemorial.' As witness the fact that a critic contemporary with Voltaire stated grandiloquently in a gazette:

Jadis, d'un vain goüt nos poètes esclaves N'entraient dans les jardins qu'embarrassés d'entraves; Phoebus ne nommait pas, sans un tour recherché, Le haricot grimpant à la rame attaché.	Formerly, with futile tastefulness, our slavish poets entered gardens only hampered by impediments; Phoebus did not mention the climbing haricot attached to its beanstick without some elaborate turn of phrase.

Like Martin, George Lindley, writing *A Guide to the Orchard and Kitchen Garden* in the early nineteenth century, informs us that '*Phaseolus vulgaris*, or Dwarf Kidney Bean, is the *Haricot* of the French. It is a half-hardy annual, a native of India . . .'

It was not until 1901 that an entomologist's careful observation and a poet's meticulous scholarship between them restored its true identity to the haricot bean.

Jean-Henri Fabre was the author of a great ten-volume study of insects: *Les souvenirs entomologiques*. Like any southern Frenchman he enjoyed haricot beans, which he describes in moments of gastronomic emotion as *fèves*, the word which usually denotes broad beans, further describing the vegetable as 'blessed bean, consoler of the poor . . . kindly bean'. But: 'Today', he writes, 'it is not my intention to extol your deserts. I want to ask you a question, simply out of curiosity. What is your country of origin? Did you come from Central Asia, with the horse bean and the pea? Did you belong to the collection of seeds which the first pioneers of husbandry landed to us from their garden patch? Were you known to antiquity?'

The answer to Fabre's question came not from the haricot bean itself but from a predatory insect, the weevil, more scientifically known as the bruchus, which is extremely fond of dried pulses. 'Here the insect, an impartial and well-informed witness, answers: "No, in our parts antiquity did not know the haricot. The precious legumen did not reach our country through the same road as the broad bean. It is a foreigner, introduced into the old continent at a later date." '

What proof of this assertion could the haricot weevil offer? The fact that it never eats haricot beans, but will gorge itself on other legumes, including much less appetizing varieties such as the lentil and the vetch, as soon as the seeds form. Why this chauvinistic prejudice?

> Apparently because this legumen is unknown to her. The others, whether natives or acclimatized foreigners from the East, have been familiar to her for centuries; she tests their excellence year by year and, relying on the lessons of the past, she bases her forethought for the future upon ancient custom. She suspects the haricot, as a newcomer whose merits she has still to learn. The insect tells us emphatically that the haricot is of recent date. It reached us from very far away, surely from the New World. Every edible thing attracts those whose business it is to make use of it. If the haricot had originated in the old continent, it would have its licensed consumers after the manner of the pea, the lentil and the others. . . . This strange immunity can have but one explanation: like the potato, like maize, the haricot is a present from the New World. It arrived in Europe unaccompanied by the insect that battens on it regularly in its native land; it found in our fields other seed-eaters, which, because they did not know it, despised it. In the same way, the potato and maize are respected over here, unless their American consumers are imported with them by accident.[10]

Fabre's reflections had reached this point when the invasion he feared in fact took place, starting in the Bouches-du-Rhône area and surely spreading from Marseilles, a seaport visited by many travellers, both official and unofficial. This particular illegal immigrant, reaching Maillane no one knows how, greedily attacked all the haricot beans it could find there, much to the astonishment of the people of Provence. Fabre was sent a 'bushel of haricots outrageously spoilt, riddled with holes, changed into a sort of sponge and swarming inside with innumerable Bruchi.' It was subsequently identified as an American species, and in the laboratory it refused to eat lentils, wheat, barley, rice or castor-oil seeds, none of them native to the New World.

Fabre had already been surprised to find the poet Virgil, in his *Georgics*, advising farmers to sow the *faselus*, translated in French dictionaries since the seventeenth century as 'haricot', in autumn, when every amateur gardener knows that it is a complete waste of time to sow French beans before Easter. Similarly, no naturalist of classical antiquity actually describes the kidney-shape of the seeds of the haricot bean, different from those of other leguminous plants, which are round and more or less flattened. 'They are quite silent on the subject of the sonorous bean. The word haricot itself sets us thinking. It is an outlandish term, related to none of our expressions. Its turn of language, which is alien to our combinations of sounds, suggests to the mind some West-Indian jargon, as do caoutchouc and cocoa.'

In fact the etymology which was puzzling Fabre before the American haricot weevil reached Maillane was explained by the great Parnassian poet José Maria de Heredia at the same time; one of those remarkable coincidences which do sometimes happen. Ideas are in the air, and several people seem to pluck them out all at once. Just as the American weevils were making their presence known, Fabre's eye fell on a magazine article, an interview with the author of *Les Trophées*. In it, the poet proclaims himself prouder of having discovered the etymology of the word *haricot* than of writing his famous sonnets, perhaps because of his own Cuban ancestry. José Maria de Heredia told the 'lady journalist' interviewing him:

> I found some particulars about haricots while searching through a fine sixteenth-century natural history, Hernandez' *De Historia plantarum novi orbis*. The word haricot was unknown in France until the seventeenth century; we used to say *fève* or *phaséol*; and in Mexican *ayacot*. Thirty varieties of haricot were cultivated in Mexico before the conquest. They are called *ayacot* to this day, especially the red haricot, with black or violet spots.

'How right I was', marvelled Fabre, 'to suspect that strange word haricot of being an American-Indian idiom! How truthful the insect was when it declared, in its own fashion, that the precious seed reached us from the New World!'

The story of the weevils is a reminder that tiny pests of this kind, not to mention innumerable rats, have been ransacking our granaries and silos for thousands of years. They might be held responsible for many famines if we estimated the thousands of millions of tonnes of food they have stolen from under our noses. Fabre remarked of the haricot weevil that a single couple of larvae – he describes the larva as 'a tiny white creature, with a red head' – scarcely visible to the naked eye, will reproduce at a rate of four generations a year. 'An isolated couple supplied me with a family of 80. . . . At the end of the year, the couples resulting from this source will therefore

be represented by the fourth power of 40, reaching in terms of larvae the frightful total of over five million. What a heap of haricots such a legion would destroy!' Indeed, it seems miraculous that nature has not caused the world to disappear under a thick blanket of weevils and similar creatures.

Fabre optimistically concluded that 'with the aid of insecticides defence becomes relatively easy.' He could not know in 1901 that by the end of the century, when two world wars had provided the incentives for chemical research, DDT and other pesticides, while protecting crops and stored food, would also endanger the precarious ecological balance of everything from grass to the cow, from insects to birds. The problem does not seem near any solution yet. What is to be done? Should we take drastic pesticidal action after all? It is easy to think so in view of the wasted labour and empty stomachs found all over the world. And there is yet further cause for alarm in knowing that the great powers, running out of other ideas for methods of mutual destruction, have already drawn inspiration from the weevil. Nuclear bombs are out of fashion; introduce a few colonies of tiny larvae where required – voracious, prolific and tough because genetically 'improved' – and famine can quietly take over the world. This is not the scenario for some disaster movie, but a genuine threat by both sides, as the use of defoliants has already shown. There would then be nothing for the survivors to do but return to gathering, always supposing anything grew again to be gathered, in the shape of tiny, very tiny seeds. Gathering was the instinctive reaction of the starving, and we could yet see them make the same gesture again.

The Holy War of Cassoulet

Ever since the persecution of Protestants and the Albigensian Crusade in Languedoc, a holy war has been waged in that part of France, and it is nowhere near dying out. The various ways of making cassoulet are the issue at stake. For there is not just *one* cassoulet. The dish exists in several versions, each of which has its fanatical supporters, vehemently defending their faith. Every little local district proclaims that it alone practises the true rite – for rites rather than recipes are involved in the perfect preparation of this baked bean dish. People can discuss the matter for whole evenings on end as passionately as they will discuss sport. But all are in agreement on the following points:

– The dish's name derives from the *cassole* of Ussel, an earthenware pot which came from Ussel near Castelnaudary.

– Before the discovery of America and of New World haricot beans, cassoulet was made with broad beans, known as *favolles*. The best haricot bean to use is the *mounjete*, 'monk-bean', a bean of plump shape like a Capuchin friar, but the large, white, tender butter bean can be used if need be.

The beans must be cooked in two lots of water, the dish itself must be finished off in the oven, and its crust of breadcrumbs should be broken six times. The seventh crust (seven is a magical number) is the sign of the apotheosis of the dish.

In Toulouse, breast of mutton and the famous local sausage are essential ingredients.

In Carcassonne they preach the virtues of pork chops.

In Castelnaudary only preserved duck or goose is really acceptable, but a little garlic sausage may be tolerated.

Finally, it would be sacrilege to make cassoulet in Corbières without lightly salted pig's tail and ears.

Soya: the Most Widely Eaten Plant in the World

The dictionary defines cereal as 'a name given to those plants of the order *Graminaceae* or grasses which are cultivated for their seed as human food, commonly comprised under the name *corn* or *grain*', and although it adds, 'sometimes extended to cultivated leguminous plants', corn or grain is the generally accepted notion of cereal plants. The soya bean, however, should surely qualify.

Westerners have a rather vague idea of soya, familiar to us only in a few of its manifestations: bean-sprouts in allegedly Chinese cookery, the sauce which some people think is the juice of its fruits, and soya oil, valued mainly because it is cheap. It may be surprising to realize that the soya plant is eaten more widely than any other in the world – and as a food it comes in many other forms. The average Westerner might concede the likelihood that it is eaten more widely, since it comes from China and Japan, where there are so many mouths to feed. But having only a vague notion of botany as well as of geography, he might be hard put to it to say what the plant looks like.

Soya, then, is a legume like the pea, the haricot bean and the broad bean: a plant with papilionaceous flowers resembling broom, which grows to a height of 80 centimetres to a metre. Its flowers may be red, white or purple. As they develop they form hairy pods three to five centimetres long, each containing two or three seeds about the size of a pea or smaller, round or oval, and yellow, green, purple, brown, black or spotted in colour.

The scientific name of soya, *Glycine max*, also looks rather odd. 'Max' is not the diminutive of some botanist's first name, nor the abbreviation of 'maximum', but is a Portuguese transcription of the plant's Persian name. 'Soy' and 'soya' derive from the Japanese word *shoyu* for the sauce made from the salted beans. After acquiring the recipe from the Chinese in the tenth century, the Japanese manufactured it on a large scale. In China, it was called *jiangyou*. The Chinese and Japanese use the same ideogram in their written languages for the word which we render as soya; in Peking, however, it would be pronounced *dadon* and in Tokyo *dai-zu*.

Naturally there are legends about the discovery and popularization of soya. One tells the tale of two bandits or warlords, Yu Xi-ong and Gong Gang-shi, lost in the desert, who managed to survive on the beans of a hitherto unknown plant. According to an eighteenth-century Pekinese encyclopaedia, this happened 'very long ago'. Under the Ming emperors, in 1595, Li Shi-zhen devoted a section to soya in his treatise on botany and the medicinal properties of plants, the *Bencao gangmu* (Great Scheme of All Plants), but we have to go back to the sixth century BC to find the first written mention of soya in the court poems of the *Book of Odes*, a text full of information on many subjects. It states that the wild soya plant came from

northern China, and began to be cultivated in the Chang period, around the fifteenth century BC.

The archaic ideogram *su* used to denote the plant is itself a lesson in agriculture. There is a row of little marks at the base of the character, said to represent the roots of the plant. Why go to all the trouble of showing them? Because the roots of the soya, even more than those of other leguminous plants, are able to feed the soil; the nodules they bear are storehouses of nitrogenous bacteria which disperse as the roots rot. Growing soya is therefore a way of replenishing soil impoverished by such greedy plants as wheat or maize, and it can be regarded as a green manure crop.

This useful property of soya, one that was recognized very early, is not its only virtue. In fact it could be described in the ornate Chinese fashion as a treasure-house of life. It contains, balanced in ideal proportions, all we need to sustain life: proteins, fats, carbohydrates, vitamins and mineral salts. It is easy, then, to appreciate its importance in the countries of the Far East, where there is so little cattle-rearing. Moreover, the people of those countries – perhaps by some genetic coincidence – often have a kind of hereditary allergy to milk, which they do not digest very well. One wonders if the reason is that they are traditionally unused to drinking milk once weaned from the breast. Be that as it may, nature has allowed the Asiatic peoples to make up for a serious dietary deficiency by providing a vegetable milk, soy-bean milk, a decoction of the dried beans, which is richer in protein than cow's milk. Bones of people who gathered wild millet, found on Paleolithic sites occupied before soya first appeared in their diet, have been found to bear clear signs that they suffered from rickets.

The Chinese Buddhist missionaries of the sixth century who reached Japan by way of Korea were well received there. They brought not only their religious message, but the miraculous plant which became a staple of the Japanese diet, in the same way as Buddhism merged with the native religion of Shinto. As the Shinto archives or *Kogiki* show, tithes levied on soya also fed the imperial treasury.

During the last war, the only survival rations carried by Japanese soldiers consisted of a bag of soya flour. Soya can be eaten in all kinds of ways: fresh, dried, plain, sprouting, ground, fermented, as curd, in soup, as a dessert or a drink. It is a curious fact that outside the Asiatic countries there has been so little interest in so versatile a plant. Until the second half of the twentieth century, Western countries have been particularly inclined to ignore it, while rice has been extremely popular in the Western diet ever since its first introduction, even though it has nothing like the same nutritional balance to offer.

Yet the Portuguese and Dutch sailors who traded with China and Japan from the end of the fifteenth century onwards were not unacquainted with soya. They mentioned it in their travel writings, always with indifference, at a time when Europe was experiencing periodic famines. In 1690 a German naturalist, Engelbert Kaempfer, published his *Geschichte und Beschreibung von Japan*, an account of his travels in Japan in which he mentions among other things that 'the Japanese use the *dad-fu*, or *daid* bean, which is almost the size of a Turkey pea,[11] as their daily food, and prize it second only to rice. They make a pulp of it, with which they prepare meat, as we use butter. And there is also *soeja*, a kind of *ammaba*, which they eat with their meals to stimulate appetite.'

The comparison with butter is applied to a paste of fermented, salted soya beans called *miso* by the Japanese. It is a thick and very savoury substance containing lactic bacilli and yeasts. It differs from region to region, and may also be made from crushed rice or barley, though the result is not so good. It is Chinese in origin; before soya became popular, and until the fifth century, the Chinese made a paste they called *jiang* using a fish purée.[12] At the time of the Han dynasty in the third century, soya paste became the standard ingredient of *jiang*, replacing a mixture first of fruits and then of cereals. Japanese development went through the same stages, but it was another three centuries before Japan acquired the soya recipe which by then was in use in Korea.

The famous *soshu miso*, from the Nagano region in the middle of the larger island of Japan, is said to have been created in the fifteenth century by a samurai named Takeda Shingu, a proud warrior and a gourmet, and *hatso miso*, dating from the same period, has been made by the same family for six centuries. Japan is a country of tenacious dynastic tradition. Various kinds of *miso* differ in colour and subtleties of flavour; they are all concentrates of vitamins and mineral salts, and no Japanese will willingly omit them from his diet. They are an essential part of the Japanese breakfast, a more fortifying meal than the Continental breakfast of Western Europe.

Engelbert Kaempfer's mention of *soeja* refers to what we now call soy or soya sauce. A contemporary of Kaempfer's, the Italian Gemelli Careri, following in the footsteps of Marco Polo, gives an account of meals consisting entirely of soya which he ate in the Peking area: 'They eat pieces of boiled paste, delicately sliced, and a soup of beans, called *tan-fou*, which is one of their most delicious dishes, for they dip their food into it. It is made of small, skinned white beans.'[13]

But Careri was no more able to interest the West in soya than any of his predecessors among travellers to the East. Even the fact that Asiatic peoples extracted a very useful oil from the plant excited no one's attention. The first soya crops grown in the Jardin des Plantes in Paris towards the 1700s and in the Botanical Garden in London were for private interest only. Certain dietary experiments were made, for instance at Étampes: the 'all-soya' meal served on 11 May 1911 by the Société Nationale d'Acclimatation aroused a passing interest in the press, but obviously none of these efforts went any further, for in spite of the subsequent food shortages of the First World War, still no one thought of exploiting the potential of soya.

It was not until after the Second World War that soya really took off, influenced not by Asia but by North America. The Americans were initially interested in its ability to regenerate the soil when grown in rotation with maize. Soya beans were used as animal feed, and in particular in the oil manufacturing industry. The Ford factories made plastics for car accessories from the residue of oilcake left after the oil had been pressed out. Suddenly American farmers reacted: soya growing began in the Central West of the United States, spread fast, and soon covered some 20 states. The USA, which had been the biggest importer of fats before 1940, now became their biggest exporter. There was a large concentration of soya fields on the banks of the Mississippi; the beans could easily be sent down the river on their way to seaports on the Gulf of Mexico. For some years now, the United States have been responsible for approximately two-thirds of world soya production, followed by China, Brazil and Argentina, which between them more or less account for the remaining productivity.

Soya beans of a special variety grown solely for the extraction of oil and the production of the oilcake residue have several advantages over other oil-producing plants: they are very suitable for bulk transport, and they will easily stand up to long storage and travelling long distances. Harvesting the beans is very easy too: it can be done completely mechanically, whereas the fruits of the olive, palm or coconut trees have to be picked by hand. Moreover, thanks to a very short growth period (only 15 weeks from sowing to harvest), it is possible to adapt production easily to the demands of the world market. On the one hand, therefore, supply can be guaranteed, and on the other hand there is no risk of having to destroy a surplus.

Although originally a sub-tropical plant, soya is now grown up to latitudes of 52° north. The length of daytime hours is the principal factor affecting the crop's success. Each variety has its characteristic photo-period, the time when germination and seed development begin. Different varieties have thus been bred to adapt to different latitudes. In France, for instance, agricultural research has created hybrids suitable for growing in the Aquitaine area. However, it has not yet proved possible to grow soya successfully in Great Britain.

The beans are sown by heavy agricultural machinery in mid-May. They are harvested in early autumn by gigantic harvesters which cut a swathe of up to seven metres. At this point the soya fields look brown, since the leaves of the plant wither and drop before the beans mature, leaving only stalks and pods.

Besides the oil derived from a particular variety of soya bean, which as mentioned above is the principal market for soya in Western countries, various traditional soya-based foods adopted from Chinese gastronomy can be bought in health food shops or those specializing in exotic produce, or from the corresponding shelves of large supermarkets. The most common is bean-sprouts, used in salads or as a stir-fry vegetable; they are popular because they are so low in calories. In fact they are not usually the sprouts of soya beans, but of mung beans, which are similar but smaller. They are grown for the market in hothouses with warm sprinkler systems, and can also be raised at home on cotton wool in a warm place. Devotees of macrobiotic diets think highly of bean-sprouts, and of course they feature in Japanese and Chinese restaurant dishes, although the Japanese and Chinese themselves are not especially fond of them. As a vegetable they actually derive from a Vietnamese dish in which they are eaten only just cooked, to conserve vitamins. Bean-sprout salad is called *goi gia*.

Soya flour is now widely used in special diets to compensate for protein deficiency suffered by the very sick, old people and babies. Another excellent product to combat dietary deficiency is the soy-bean milk mentioned above. It is very good in liquid infant food and soups. It is sold in cartons, just like ordinary or protein-fortified milk, and its only drawback is that it is sometimes sweetened, in which case its usefulness is restricted. Soya pastes feature among exotic, vegetarian and macrobiotic foods, and as well as *miso* include *tofu*, Japanese soya bean curd, which may be either compressed or cream-like in consistency, and its Chinese counterpart *dou fu*. The arrival in the West of large influxes of refugees from the Far East has encouraged demand for green soya beans in specialist shops in some countries: they are eaten pods and all like mange-tout peas, and where available may be sold fresh, frozen or canned. The seeds are also sold as a dried vegetable, and are popular in Great Britain

in vegetarian diets because of their protein content. Finally, soy sauce is used as a seasoning, sometimes to excess, in Chinese, Japanese or other Far Eastern dishes.

However, none of this is of anything but incidental gastronomic interest to Europeans, whereas the whole question of world famine remains extremely serious. Soya could help to overcome that terrible problem, not only as feed for the intensive rearing of animals bred for meat, or as a seasoning, but as what it originally represented to the Chinese and Japanese: a storehouse of nutritional riches.

Soya: Nutritional Facts and Figures

The human frame requires a minimum half-gram of protein per kilo of body weight daily. According to the optimum figures on a scale drawn up by the World Health Organization, this means, in grams per day:

baby:	minimum, 15	average, 20
child:	minimum, 45/50	average, 65/75
adult:	minimum, 35/45	average, 50/70

Alternative methods of supplying the daily protein requirements of an adult are:

soya flour:	140 grams	pasta:	585 grams
cheese:	280 grams	bread:	775 grams
fish:	280 grams	rice:	875 grams
meat:	410 grams	milk:	2330 grams
eggs:	540 grams	potatoes:	3500 grams

Moreover, soya protein contains all the amino acids necessary to the organism for the perfect synthesis of its requirements, and these amino acids are present in perfect equilibrium both of quantity and of type. They make soya a source of protein comparable to meat, milk, fish and eggs, all the so-called animal proteins. But unlike soya, meat lacks an important amino acid, methionine (while bread is deficient in lysine). Thus soya is a food with one of the best coefficients of digestive utilization, a figure of 82.

Soya has a high vitamin B content, including vitamin B1, higher than the vitamin B content of meat. It also contains vitamin E, calcium, phosphorus and iron. Finally, soya oil has a very high percentage of polyunsaturated fatty acids necessary to the human body, which cannot synthesize them itself, and this helps to lower blood cholesterol.

Soya flour and dried soya beans provide 392 calories per 100 grams.

Mushrooms and Fungi

Mushrooms are the plant *par excellence* for gathering. One hundred and twenty thousand species of mushrooms and fungi have so far been recorded throughout the world,

and the 1841 species among them which are recognized as edible have surely been of interest to the human race ever since people began picking them. They offer a delicious food to be had for nothing but the trouble of bending down. However, the residues found in the course of archeological excavations provide no such evidence of mushroom feasts as can be relatively easily found when vegetable substances (like seeds and nuts) are protected by a cellulose envelope.

Cave drawings and paintings tell us hardly anything about the plants the cave-dwellers ate, and it is even rarer to find them showing mushrooms, which does not mean that the latter never featured on prehistoric menus. Residues identified prove that other vegetables were in fact eaten, even if few felt any urge to depict them on cave walls.

Moreover, if we look at the dietary customs of contemporary peoples who are still at the Paleolithic or Neolithic stage of development, there is plenty of evidence of an interest in mushrooms both edible and poisonous. The latter can be used in hunting, fishing, or indeed for homicidal purposes. Many tribes use the most dangerous cryptogamous plants in carefully calculated dosages for medication, or as hallucinatory or aphrodisiac drugs employed in certain religious practices. The empirical knowledge of the people who prepare these drugs is remarkable.

Mushrooms have been described as a vegetable meat. The term is something of an exaggeration, but they certainly have nutritional value. Besides their pleasing taste, which makes them a popular flavouring, they do indeed provide the organism with elements which we expect to find in meat and eggs: plenty of proteins and vitamins, mineral salts – and very few calories, a particularly appealing quality today.

As the scientific name of the common mushroom, *Agaricus campestris*, indicates, it is a field plant which grows in humus, the rotting vegetation found on damp soil. The English word *mushroom* derives from Old French *mousseron*, itself from late Latin *mussirio*. Certain species, however, have been cultivated since classical times, including *Agaricus hortensis*, known in France as the Paris mushroom. The ancient Egyptians and Romans greatly enjoyed mushrooms. Even today, the Papuans regard them as 'a food generating strength and courage'.[14] They grow in every latitude, in humid regions, although one species found on the shores of the Red Sea can remain more or less fossilized between the rare rainy seasons. This 'mushroom stone' was mentioned in the fourth century BC by Aristotle's pupil Theophrastus, but it does not look as if the Hebrews of the Book of Exodus thought much of it. The Bible, although full of references to food of many kinds, never mentions mushrooms, either in praise or otherwise. For reasons of hygiene or caution, they seem not to have been regarded as kosher.

The cultivated mushroom mentioned just now was grown on beds of horse manure. It was called the 'Paris' mushroom because the caves in the many stone quarries of the countryside around Paris have been used for nearly two centuries to grow it, in the dark and in particularly stable conditions of temperature and humidity. The hills of the Val de Marne and the Val d'Oise are riddled with mushroom caves, which can be located by their ventilation shafts above the ground. Mushrooms are also grown in the valleys of Maine-et-Loire and on the banks of the Gironde. In the United States, growing your own mushrooms is in fashion, and a corner of the family basement is reserved for them. Special cupboards, with boxes instead of

shelves, enable the enthusiast for home-grown mushrooms to harvest a kilo of white mushrooms per square metre of mushroom compost, which is a mixture of humus and deodorized horse manure. The mycelium or spawn, consisting of branching filaments from which the mushrooms will sprout, is bought mail order, in compressed slabs. The United States is the biggest producer of mushrooms in the world, with France and Japan coming next.[15]

The Japanese grow the 'perfumed mushroom', *Tricholomopsis edodes* or shiitake, on a large scale. In the West, it has been available dried from the exotic food departments of stores and supermarkets, and recently European growers have also begun supplying it fresh. The spawn is introduced between the bark and wood of small chestnut or oak tree trunks, and the mushrooms grow on them.

So far as wild woodland and field mushrooms in general are concerned, interesting experiments in north Italy are opening up the distinct possibility of growing the boletus, chanterelle, parasol mushroom and species of *Psalliotus* for sale. The *Pleurotus*, or oyster mushroom, is already available commercially. In France, advertisements in agricultural and hunting journals offer the inducement of good profits to people who would like to grow cultivated morels in the gardens of their second homes.

But the supreme pioneers of mushroom cultivation must be the ants of equatorial America. In the same way as Western European ants rear aphids to milk them of honeydew, these tiny tropical farmer ants live exclusively on cultivated mushrooms. They carefully choose the right sort of soil, reduce the surface to a tilth with their feet, fertilize it by mixing it with a suitable compost of vegetable substances, and then add the spawn, tending it as it grows and matures exactly as the modern American tends the mushrooms in his basement. When they have to move house, they choose a new home in a place suitable for growing the spawn, first moving a relatively large piece which they then break up *in situ* to re-start the process. Even when food is in short supply they will never eat this sacred stock of spawn before it has reproduced; they will sooner eat their own eggs. When the spawn has started growing again they harvest the fungi judiciously, gathering the young mushrooms and taking care to leave enough of the basic stock in place. They had organized their mushroom-growing in this way long before man even evolved.

The mushroom, which may be either a delicious food or a deadly poison, was viewed very respectfully in classical times. There was something mysterious about its appearance after the rains and storms of autumn, as if it had been born of a thunderbolt, since it shows neither flower nor fruit. In fact the mushroom actually is a fruit, technically described as a carpophore in botanical terms. The Middle Ages, preoccupied as they were with sorcery, concluded that mushrooms were magic, and alchemists tried to discover the secret of creation from them: life regenerated by decay and death.

It is not surprising, therefore, that first Hippocrates in the fifth century BC, discussing the therapeutic virtues of certain mushrooms which unfortunately cannot now be identified, and then two other Greek doctors are our main sources of information about the contemporary cultivation of so valuable a plant, for doctors are always dealing with life and death. Nicander of Cleos, who was also a poet and grammarian,[16]

explains in his *Theriaca* of the second century BC how mushrooms can be produced 'at will', in manure placed between the roots of fig trees. Dioscorides, a first-century physician, in his *Materia medica*, advocates sprinkling shredded poplar bark on compost to obtain the best mushrooms 'spontaneously', sown by the grace of the gods. And the grace of the gods was in great demand, so keen were his contemporaries on the boletus and other delicious field and woodland fungi. Dioscorides issues a warning about indigestion, to the effect that taken in excess 'even the best can do ill', and in such cases he recommends enemas of salt water as very efficacious.

However, the most prized mushroom of antiquity was the royal agaric, although the Empress Agrippina contrived to get rid of her unwanted husband the Emperor Claudius by serving him a dish of the fly agaric, similar in appearance but highly poisonous, and subsequently known as Caesar's mushroom. Fifty years later Horace (*Satires*, Book II, iv) thought that the sensible mushroom-lover would be wise not to risk such a fatal accident: 'Mushrooms from the meadows are best; others are not to be trusted.' If the sensible mushroom-lover disagreed with Horace's categorical statement, he could refer to the works of Pliny the Elder (AD 23–79), a contemporary of Agrippina and the unfortunate Claudius, who gives precise details of the appearance of various edible and poisonous species of fungi in his *Natural History*.

At the beginning of the fifth century, St Augustine denounced the dietary customs of the Manichaeans, vegetarian ascetics, 'who would think they sinned if they took a little bacon and cabbage with a few mouthfuls of pure wine, but will be served at three in the afternoon with every kind of vegetable, the most exquisite of mushrooms and truffles, flavoured with a wealth of spices.'

The famous Persian doctor and philosopher Ibn Sina, known to the Western world as Avicenna (930–1036), was particularly interested in poisonous mushrooms, as was Albertus Magnus, the thirteenth-century Dominican philosopher, who first gave its name of fly agaric to *Amanita muscaria*. He fed some flies with milk in which he had infused pieces of the fungus; not one of them survived. He then turned his attention to antidotes.

The first illustrated reference work on mushrooms, the *Corpus of Mushrooms*, was the work of a Siennese, Pietrandrea Mallioli (1500–77). The *Théâtre d'agriculture et mesnage des champs* of Olivier de Serres, published in 1600, contained useful advice on the cultivation in beds of the *mousseron* (as already mentioned, the source of the English word) which grows wild in woodland clearings and in pastures. Rabelais praised the Jew's Ear, *Auricularia auricula*, which grows on the trunks of old elder trees.

Morels preserved in salt were exported in the past by the people of the Narbonne and the papal state of the Comtat Venaissin. Louis XIII of France was very fond of them. He is said to have amused himself by threading them on strings for drying – in his own bedroom, because he liked their woodland scent so much – and was occupied in this way on his deathbed. Cardinal Mazarin also praised the *mousseron* dear to the heart of Olivier de Serres. During the Frondist revolt, the daughter of Louis XIII's brother Gaston d'Orléans, known as la Grande Mademoiselle, glanced one day at the provisions destined for the royal family and the prime minister, against

whom she was siding with Condé at the time, saw a basket of mushrooms and removed it, saying: 'These are too good. I do not want the Cardinal to eat them!' La Grande Mademoiselle had a reputation in some quarters for poisonous behaviour, but she was obviously no real-life poisoner, or she might have followed Agrippina's example and substituted other fungi.

Even though the dangerous species may be distributed over a much wider area than the edible mushrooms, it is a good idea to be able to tell them apart. The criteria for doing so were a matter of superstition as much as science in the popular mind for a very long time. In fact only the mycological knowledge of botanists can really be relied on. The members of the Société Mycologique de France include both eminent specialists and very knowledgeable amateurs, who themselves meet in a number of local societies. But outside exhibitions or guided walks, beginners are seldom able to say for sure whether a particular mushroom is edible or not.

Similarly, even the most detailed descriptions in books, colour plates, and the identification posters found in chemists' shops on the Continent of Europe, although useful, are not enough to provide positive identification of an individual specimen. The colour of a mushroom can vary in the course of the day. It must be smelt, felt and broken open as well as examined. Only experience and genuine knowledge are any guarantee of safety.

One should never, *never* take country lore and old wives' tales as a way of telling edible from poisonous wild mushrooms. If there is any doubt about it, consider the fungus poisonous. Purely for interest, I will mention a few of the tenacious popular beliefs still current, which have been responsible for some tragic postprandial accidents: that a silver coin or small silver spoon will turn black in contact with mushrooms being cooked only if they are poisonous, that onions or garlic (traditionally supposed to avert evil) will turn black in contact with a poisonous specimen, that slugs and ants will not attack dangerous species. There is no scientific foundation whatever for any of these beliefs.

However, part of the pleasure of gathering mushrooms is surely just walking in the woods or pastures in the pure morning air of late summer, when there has been warm weather followed by heavy showers. Every copse may reveal irresistible treasures, but they should never be eaten before an expert has been consulted. If you do not want to overload your basket, carefully lined with moss, however, you should never cut mushrooms (and they ought always to be respectfully cut, not pulled out of the ground) which have any of the three following features: scales under the cap, a ring, and a small sac at the base of the stem. All poisonous mushrooms show these three features, and if you leave fungi displaying them alone then at least you will be on the safe side: they may not be fatal but they will not be good to eat. Disregard the three warning signs of scales, ring and sac, and you could find yourself hurrying to the doctor for an antidote to something that seemed harmless.

Edible field mushrooms in Western Europe include those with pinkish caps, well rounded, and those with a cap like a Chinese coolie hat and a shell-like colour. Among the best of the woodland mushrooms are the yellow trumpets of chanterelles, ceps or boletus, with their large brown caps reminiscent of the Smurfs' houses; big parasol mushrooms with hollow stems which may grow 35 centimetres high and beige caps that may be 25 centimetres across, hollow morels with honeycombed caps

looking like brown sponges on a white stem. (But beware of false morels, which resemble them. Eaten raw, they can be fatal. Dried and sold commercially, however, they are harmless.)

Dried substances looking like mushrooms and sold in the exotic food sections of stores and supermarkets are not really mushrooms at all if the packet bears the words *moq nhi*, but seaweed from the China Sea. The genuine black Chinese mushrooms are called *mu*, or in Japanese *kitinape*.

And finally, you do not need to have gathered a basketful of mushrooms to find yourself eating fungi. Moulds are fungi too. Most of them are not good to eat, particularly on fruit, but blue cheeses like Roquefort and Gorgonzola owe their delicious blue veining to a microscopic species of mould called *Penicillium roqueforti*. The velvety white rind of Camembert and similar cheeses is produced by *Penicillium camemberti*. Antibiotics were isolated from certain strains of *Penicillium*. Beer and wine yeasts are also fungi, the moulds of barley and of grape must respectively. Without these fungi, invisible to the naked eye, bread would not rise and champagne would not sparkle. Yeasts are a true food in their contribution to our intake of protein, vitamins and enzymes; we could not do without them.

I have not yet mentioned truffles, but I have not forgotten them; that would be unforgivable. Those 'black diamonds' will take their place in the section on charcuterie below, in the context of the traditions of Gaul and the Périgord area, for the truffle, like certain other luxury foods, did not achieve fame until the time of the Roman conquest.

TEONANACATL, THE DIVINE MUSHROOM OF THE AZTECS

The first item to be served at banquets was a small black mushroom which is intoxicating, and gives visions, and which also incites to lechery. They ate it before daybreak, with honey, and when they began to feel heated, they started dancing. Some sang, others wept, intoxicated as they were by these mushrooms, while others did not sing but remained seated and pensive indoors. Some foresaw that they would die, and wept; others imagined themselves devoured by wild beasts, or yet again, becoming rich, or the masters of many slaves. Others foresaw that they would be convicted of adultery, and their heads crushed for that offence; others that they would commit theft, and be executed. And there were many further visions too. When the intoxication caused by these mushrooms had passed off, they spoke among themselves of the visions they had seen.

Fra Bernadino de Sahagún, *Historia general de Las Cosas de Nueva España*

A LIBERTINE'S MENU OF MUSHROOMS

We ate supper: and upon my word, I needed it. She served me morels, truffles with a sauce made of ham, mushrooms *á la marseillaise* . . . We hastened straight from the table to bed . . .

Mirabeau, *Le libertin de qualité*

Roots

Many who were at primary school in the 1930s or 1940s may remember history lessons which imparted the information that 'in the Middle Ages the peasants lived a very wretched life. They were called villeins, and ate roots.' It all conjured up a picture in the child mind of a set of thin, villainous-looking people, their faces streaming with tears because they were so wretched, feverishly scratching in the ground for small, brown, earthy objects which they greedily devoured.

Such was the view of history presented. None of what we were told was actually wrong. The peasants of the Middle Ages did indeed have a hard life; they were called villeins, from Latin *villa*, a farm, and the word, though with a slight difference of spelling in English, is etymologically the same as 'villain'. And yes, they ate roots. So did the people of the towns. So do we today, at almost every meal. Roots have been part of man's diet throughout his history.

What exactly is a root? The dictionary defines it as 'That part of a plant or tree which is normally below the earth's surface . . . serving to attach the plant to and convey nourishment from the soil to it . . . the underground part of a plant used for eating or in medicine.' Besides being the plant's reserve and organ of nourishment, roots provide food for farm animals and for ourselves. Cooked or raw, roots such as radishes, turnips, salsify, beetroot, celeriac and carrots[17] appear on our tables daily.

A tuber, from Latin *tuber*, a hump or swelling, is defined as 'an underground structure consisting of a solid thickened portion or outgrowth of a stem or rhizome, of a more or less rounded form.' Tubers include potatoes, sweet potatoes and yams. The Amerindians eat dahlia tubers, and grew and gathered dahlias only for food. Rhizomes are swollen roots such as those of the garden iris. Of edible plants, the Jerusalem artichoke and the Chinese artichoke are tubers. Bulbs are plant organs formed from an underground swelling which produces many close-set leaves and stores food so that the parts of the plant above the ground can grow again every year. Bulbs include onions, leeks, garlic, Florence fennel, daffodils, tulips, etc.

'Root vegetables' are therefore those plants whose underground parts in particular are edible. Although he was certainly much richer than the peasants on his estates, the Duc d'Orléans gave a banquet consisting entirely of root vegetables on Good Friday of 1690, a meal that went down in the history of princely feasts.

The nutritional elements – starch, sugars, mineral salts, certain vitamins – which accumulate in roots, rhizomes, tubers and bulbs are very satisfying to the stomach, as the first gatherers of roots soon realized, even if they did not understand the reasons. The hotter and more humid a country, the better the underground parts of its plants thrive and the more useful they are. As the topsoil in such countries is often very thin there is hardly any need even to dig. Roots were a great blessing in such climates.

It was while searching for roots in the soil that the human race took the first step towards farming. The only tool you need to pick plants is the hand, but you had to scratch the earth to find its buried treasures. People soon began using pointed sticks or stones if the soil was dry and hard. The digging stick was the ancestor of the hoe and the plough. It may not be too far-fetched to suppose that

if agriculture, the cultivation of the field (Latin *ager*, *agri*) first developed in the countries of the Middle East, it was because digging required a certain amount of effort in those parts.

In tropical zones, on the other hand, the soil is so swollen with water for most of the time that there is no difficulty in opening it up. Intensive agriculture developed much later in such regions than in temperate climates, and horticulture, the cultivation of the garden (Latin *hortus*), predominated. All you had to do in the gardens made in tropical clearings was scratch the surface of the humus or make a hole in it to plant cuttings or offsets of whatever grew best and most rapidly, including roots, tubers and bulbs dug up in the forest and now more readily available. Seed-sowing is always more risky because of the chances that seeds will rot or be eaten by pests.

If digging was the first step towards farming, it also proved to be one of the first agricultural methods. This was pure chance: where ground has been dug, the soil, which has been moved, aerated and mixed, becomes more fertile. The plant of the next generation will be more fruitful if something has been allowed to remain in the soil to reconstitute it. Gatherers observed this piece of agricultural wisdom. Similarly, hunters selected their game by allowing animals to go on reproducing. Ecology and respect for nature are lessons of the Paleolithic period.

Roots and tubers, gathered or cultivated, are the staple of the vegetable part of the diet in tropical zones, being easy and profitable to grow, but unfortunately they do not constitute a balanced diet, although they do provide plenty of energy: their high carbohydrate content is combined with a very small amount of proteins and vitamin C, which becomes even smaller after the removal of the large water content of the pulp, sometimes amounting to as much as two-thirds of it. The cooking necessary to make the starch digestible destroys any remaining vitamin C. Fortunately, people used to employ leaves in the cooking process, wrapping them round either the whole root or the pulp obtained by scraping or grating it.

The sacred flower of the Egyptians, the white lotus or water-lily, was represented over and over again by ancient Egyptian artists. Besides being used to perfume the hair, the table or the garden, it was also a providential foodstuff for the poor, who ate its seeds and rhizome either boiled, or dried and ground into flour. The Amerindians used marsh lotus of the New World, the pale yellow American lotus, in the same way. Since ancient times, the Sinhalese and Chinese have eaten the rhizome of their pink lotus, *lian-he*, dried or fresh and cut into serrated slices. Preserved, it has the delicious flavour of *marrons glacés*. This lotus, brought back by Alexander, was not introduced into Egypt until the Hellenistic era. The famous Lotus-eaters or Lotophagi of Djerba in fact ate ground jujube.[18] The botanical vocabulary is a jigsaw consisting of approximations and borrowings from antiquity, a time when confusions and approximations were frequent in any case. Many different plants were described as *lotus* or *lotos* in classical times, and Linnaeus accordingly gave the jujube tree the name of *Rhammus lotus.* In his *Travels in the Interior Districts of Africa*, of 1795, the Scottish explorer Mungo Park tells us that a bread made of the fruit of the lotus was eaten in Gambia and the Bambara district of Senegal-Mali. The lotus in question, he adds, was a tree growing wild in all the sandy sub-Sahelian regions. It can hardly have been a water-lily.

The sweet potato comes from the equatorial forests of America. A widely travelled tuber, it reached Polynesia two thousand years ago, and helps to clarify the problem of contacts between the Pacific islands and the north coast of South America. It is an additional proof that Melano-Polynesian migrations took place in ancient times. Until quite recently it was thought that the sweet potato was introduced into Africa at the beginning of the slave trade. We now have to put that date back several centuries, without knowing how or why it got there. Perhaps across the Pacific, as the intrepid Polynesian canoeists made their return journey from the coasts of Ecuador or Columbia to the archipelagos, then on either to Malaysia and South-East Asia or to East Africa by way of Madagascar. Maize,[19] groundnuts, peppers and cassava are thought to have accompanied the sweet potato. The coconut palm, the banana tree and the taro (a huge root known to the Romans) are also believed to have travelled in the canoes, together with agricultural techniques which are remarkably similar in all tropical regions (including hoeing, brush fires, terrace cultivation and long fallow periods), and which cast doubt on the sacrosanct belief that the Middle East was the 'cradle of agriculture', a title it appropriated without consulting the rest of the world.

The sweet potato, nutritionally richer than other giant roots (it contains vitamins, iron, calcium, sugar and carbohydrates) is a versatile tuber. It can be eaten boiled, roasted, mashed, stewed, ground into flour, preserved or in sweet tarts. The word potato comes from the Peruvian *batata*, designating any tuber, and the sweet potato has more right to it than the familiar everyday potato, which in English attracted the name by association.

When the potato and the sweet potato landed in Europe in a basket given to Queen Isabella by Columbus, the potato itself was not popular, and had to wait for the end of the eighteenth century before it came into its own. I shall therefore leave it until I am discussing nutritional developments of a later date. But the English of the Elizabethan era welcomed the sweet 'potatoe' with enthusiasm; at a time when sugar was so scarce and expensive, they liked its sweet flavour. The English colonists of North America made it one of their national dishes, following the example of the Indian tribes. When the potato itself came into fashion, therefore, it was regarded only as another 'potatoe', and the previously more popular sort had to be qualified by the addition of the adjective 'sweet'.

The people of the Antilles make a drink from the sweet potato, *ouycou*, from a Caribbean Indian recipe. The Empress Josephine tried to bring the sweet potato back into fashion – Louis XV had been very fond of it – but its 'exotic' flavour put off the general public, who preferred the ordinary and more plebeian potato.

Jerusalem artichokes are not particularly popular today, although they are one of the ingredients of Algerian recipes for couscous. To the average Frenchman, they suggest the shortages of the Second World War, of which he will have heard even if he did not live through them, and they do not emerge particularly well from these memories, which in my view is a pity. (I cannot say as much for the swede, which I think was right to return to the mangers whence it came in wartime.) The Jerusalem artichoke crossed the Atlantic in the seventeenth century. It grew wild in the great prairies of the northern United States and southern Canada. The flowers resemble yellow daisies, and it is part of the sunflower family – hence, in English,

its name, from French *girasol*, the sunflower which 'turns to the sun'. It has nothing to do with the city of Jerusalem at all. In his journal for 1603 Champlain, the founder of Quebec, mentions 'roots cultivated by the Indians, which have the flavour of the artichoke'; he meant the globe artichoke. The Jerusalem artichoke is almost the only food plant we get from North America, since in Europe the dahlia is grown only for its flowers.

The yam is as popular as the sweet potato in the West Indies. In the USA the name is sometimes applied to the sweet potato itself, but the real yam belongs to a different botanical family. The sweet potato is a climbing convolvulus, *Ipomoea batatas*. The yam is of the genus *Dioscorea*. It too is a climbing plant; however, the base of the stem does not form tubers but swells into a club-shaped rhizome. A single yam can provide a family with several meals, and specimens measuring half a metre in length and weighing up to 20 kilos are not uncommon. The yam grows naturally in clearings of tropical forests all over the world. It is not only very large but also relatively rich in protein. A purée of yam, cooked and allowed to cool and solidify into a flat bread called *foutou*, is the staple food of the people of the Ivory Coast; they eat it with whatever sauce is available.

Of all the giant tropical roots, the one most frequently eaten in Western Europe is the cassava. This may seem surprising until you know that tapioca is made from the tuber. Alexandre Dumas 'explains' the recipe in his *Dictionnaire de cuisine*, but incorrectly. The 'dried mixture' which Dumas, as a man of his times, describes as 'nourishment for the negroes in our colonies' is *gari* (or Antilles cassava), a favourite dish in the African regions around the Gulf of Benin.[20] The peeled and grated pulp is placed in cloth bags to drain and then to ferment slightly. It is then dried to produce a kind of acidulated semolina, used to thicken sauces on individual plates. The jellified appearance of tapioca is the result of warming the pulp until the starch changes to the consistency of an elastic dough, after which it is crushed and dried.

A Caribbean chief gave Christopher Columbus cassava at a feast on 26 December 1442. It is a remarkable plant, or rather shrub, which sometimes reaches a height of two or three metres. Its tender leaves are excellent cooked like spinach; older and tougher, they are used as wrappings around many foods to be grilled or steamed. The tuberous roots, arranged like the spokes of a wheel at the foot of the stem, can reach a weight of 25 kilos each. Parasites never touch cassava. Nature has ingeniously protected this tropical treasure with a skin containing poison (a kind of cyanide which the Indians use in hunting and fishing). The huge tuber has to be carefully and thickly peeled and then given a long soaking in water before it is crushed or grated and made into a dough or pottage, or cooked in flat cakes.

However, there is a variety of sweet cassava,[21] containing no prussic acid, and this is the variety which was brought from America to Africa and Madagascar at the time of the slave trade in payment for human beings. A very curious phenomenon occurs in Amazonia: though the Indians grow both varieties, they prefer bitter cassava in spite of all the complications of preparing it. It makes one wonder how the people who first came upon the dangerous wild cassava ever thought of eating it, since even a tiny quantity of the juice of the bitter cassava causes instant death. Was sweet cassava used first, and bitter cassava brought into the diet as a substitute at times of