

chapter


1

The History of Bread Making



Learning Outcomes:

- Identify the many critical junctures in world history related to society's need for bread.
- Describe the evolution of bread from its primitive origins through its modern-day form.
- Identify the key role wheat plays in the development of leavened bread.
- Define fermentation.
- Understand the evolution of the short, intensive, and improved mixing methods.
- Discuss how artisan bread baking evolved as a reaction to misguided baking techniques.



A Brief History of Bread Making

For many of us, bread is what we use every day to hold the ham in our sandwich or the butter on our toast, and we don't give it much more thought.

This is a very different perception than that of people just a few generations ago. For them, bread was the staple of most meals, or even the means of sustaining life itself. Bread served these purposes for thousands of years.

Bread's Impact on Basic Survival

Bread used to be so important to everyday existence that its scarcity or abundance could affect the history of kingdoms and empires. You've probably read about epic struggles for existence, wars of succession, and the overthrow of governments in your high school or college history classes. A surprising number of these events illustrate the historical and cultural importance of bread. This chapter demonstrates that the bread we take for granted today was once not only an accompaniment to dinner—bread was power.

A Cornerstone of Civilization

THE SUMERIANS

The *Sumerians*, for instance, who 10,000 years ago ruled over an area in what is now Iraq, could lay claim to being the world's first true nation because they devised more efficient methods of organized agriculture. Better organization meant more grain for bread produced by fewer people. Nomadic life gave way to settled agrarianism, which allowed for the development of skilled artisans, bureaucrats, and a professional military. Villages grew into towns and then cities. All this happened because wheat for bread was plentiful and more time was available to accomplish things of greater magnitude within their civilization.

The evolution of specialized trades and businesses would have been critical before the Sumerians could establish a strong central government. As far as we can tell from archaeological records, they used their prosperity to expand their power all over the area known as the *Fertile Crescent* (today's Middle East) and established what came to be viewed as the world's first true empire.

FROM ANCIENT ROME TO THE FRENCH REVOLUTION

The *Roman* rulers of antiquity (200 B.C.–A.D. 400) famously kept their citizens content and supportive by providing “bread and circuses”—that is, free bread and gladiatorial entertainment. King Louis XVI of France should have studied that lesson before the French Revolution (1789–1799), when a period of famine made bread both expensive and difficult to obtain. France's starving population eventually was so outraged that revolutionaries overthrew the thousand-year-old monarchy. It's been said that King Louis XVI's wife, *Marie Antoinette*, on hearing that mobs in Paris were incensed by the scarcity of bread, commented, “Then let them eat *brioche*” (later mis-

The Evolution of Fermentation

The first person to discover fermentation may also have discovered the first hangover. Archaeological evidence suggests barley was used to make beer long before leavened bread was a reality. In fact, the ancient Egyptians often located their breweries and bakeries in the same building.

Eventually, the Stone Age people made pots from clay and were able to boil their grains into a sort of mush or porridge. By today's standards, this porridge was probably not appealing in taste or texture. It would have been coarse, with many bits of chaff from the grassy stalks. It almost certainly had no salt, and sugar was unknown at the time. This mush could sustain life, though, and the ability to store grains for long periods enabled people to stock up when they were available in the wild.

People eventually discovered that by slamming a round rock in their hand onto a flat rock on the ground, they could smash open grains and shorten the time necessary for the seeds to absorb water and make porridge. This process represents the first known method of milling flour. By the late Stone Age, people were making flour using a special concave saddle stone placed on the ground, and finally they moved to a more elaborate mortar-and-pestle arrangement, with the large mortar carved from stone or wood and the pestle made from a long length of hard wood (see Figure 1.1).



Figure 1.1 In modern-day Zambia, villagers still use an ancient method of crushing grain to make their family's porridge: a mortar and pestle. Courtesy of iStock Photo.

translated as “cake”). Her iconic words were remembered as a symbol of the disparity between the suffering peasants and the indifferent royals.

BREAD AFFECTS POLITICS TODAY

Bread has affected politics more recently in Russia and Eastern Europe. Former communist governments in these regions sometimes put a hold on bread prices, or even rolled them back, to keep their citizens from revolting. The Soviet Union became defunct for a number of reasons, but long lines for bread in government bakeries didn't generate sympathy for the party in power.

As we examine the past, then, it isn't an exaggeration to say that bread is central to the development of civilization. Indeed, it would be hard to imagine life without it.

How Bread Began

The evolution of bread is tied to the evolution of human life. Multiple species of *yeast* and *bacteria* were among the first plants and animals to appear on Earth. When larger species evolved and moved to land three billion years later, the yeast and bacteria fed on them when they died. Those single-celled organisms were hard at work degrading large pieces of organic matter before wheat or any other grain appeared. So fermentation was certainly around by then and was essentially a process of decomposition. We define *fermentation*, then, as the breakdown of organic substances by yeast and bacteria.

ROASTED GRAINS = ROASTED GRASS SEEDS

In the Stone Age, people gathered grasses from the wild and probably first consumed their seeds by roasting them over a fire. They eventually learned to distinguish one grass from another and selected only those with the biggest seeds or the best flavor. Among those chosen were the early varieties of barley, oats, and, possibly, einkorn and emmer.

Bread: An Accidental Creation

We can only speculate about when the first breads were made, but it is believed they resulted from people accidentally spilling bits of porridge onto the hot stones of a hearth. They wouldn't have thrown away the results; food

was hard to find. They probably ate the crisped little disks and found they liked them enough to continue making them. It's likely these first breads were coarse, dense pancakes. If you made them and baked them dry, you could carry them with you to work or to hunt, with no need to start a fire or boil water to make them palatable.

These first pancakes almost certainly didn't rise as they baked. Fermentation was well established throughout nature, and pots of porridge that had been kept too long must have occasionally gone over. But, as far as archaeologists can tell, the sort of grain mush that captured gas from wild yeasts was not yet commonly made. The fermentation of porridge also produced alcohol, of course, and people must have discovered its inebriating effects at some point. Archaeologists believe fermentation was used to make grain-based beverages, like beer or ale, before leavened bread was common. In truth, the mash for brewing beer and the porridge for making bread were nearly the same thing, with the beer mash just being a lot wetter.

BREAD THAT RISES

By 4000–3500 B.C., though, evidence suggests Egyptian slaves were working with bread made from grains that acted differently than barley or oats. If a batch of porridge made with this grain was left out a few days, it would grow in size. When it was baked on hot stones, it grew even further, billowing into short, pillow-shaped loaves. Those grains were the early ancestors of today's bread wheat. It is thought they are related to *einkorn* or *emmer*, which can still be found growing in the same areas today.

The critical difference between the flour made from early wheat and that made from grains like barley or oats was that wheat contained some unique proteins that could combine with water to form a more complex protein called *gluten*. Gluten had the ability to capture the gas produced during fermentation, and it could stretch to accommodate the gas as it accumulated. Other grains didn't contain enough of the right proteins to form gluten, so, while they could be used to make flour for bread, their flours would not make dough that could capture gas.

It is quite possible, even probable, that other societies within the Fertile Crescent were using similar forms of wheat by this time (see the Sumerians, above). This doesn't mean other grains for bread were no longer used. The Egyptians, we know, continued to use barley for bread well into the Roman era, and the Greeks, who learned of leavened bread from the Egyptians, left written records of how much they loved the taste of barley bread, just as they enjoyed the taste and texture of the newer wheat loaves.

THE ROMAN GUILDS

Ruins from the Roman cities of Pompeii and Herculaneum (see Figure 1.2) show that, in the year A.D. 79, Roman cities featured combination bakery/milling shops, where wheat (possibly a type of durum) was ground into flour and used to make bread for everyday consumption. At this time, those who practiced the craft of bread baking formed a *guild*, which was a legally sanctioned group of professional craftsmen. Their mills were still made of stone but were fairly large, and they were turned by two or more men (probably slaves). Then, as before, the possession of bread-making wheat was what really gave power to both emperors and their bureaucrats. When rulers were challenged in ancient Rome, the usurpers sometimes attempted to capture the fields where wheat was grown—it was the harvest that sustained life and bestowed title upon the rulers.



Figure 1.2 The ruins of an ancient Roman bakery in the city of Pompeii, Italy, dating from about A.D. 70. Notice the hand-powered mill on the right and the wood-burning oven on the left. Courtesy of iStock Photo.

A BASTION OF SLOW CHANGE

It may be difficult to believe, but from the fall of the Roman Empire to almost the start of World War I—about 1,400 years—bread making didn't change as much as you might expect. Some advances in the numbers of water-powered and wind-powered mills occurred, but wheat flour was still milled by means of chiseled, closely fitting stones. To get anything like white flour, you needed to pass the milled whole wheat through a progressively finer set of mesh or silken screens—a process only the wealthy could afford. Even then, the actual flour color would have been light tan or gray.

Ovens were still wood- or coal-fired and completely hand-loaded. No refrigeration was commonly available, so, although commercial yeast was produced by the late nineteenth century, there was no reliable way to distribute it very far from the yeast factory. Naturally leavened starters—*levain* to the French, sourdough to the English—remained the most common means of leavening bread in bakeries throughout Europe.

THE APPRENTICESHIP SYSTEM IN FRANCE

The guild of bakers in France continued to use the same apprenticeship system it had devised centuries before. When a boy was in his early teens, his family arranged for a master baker to take him on for training. He lived in the baker's home, usually located above the bakery itself, where he was housed and fed, with little or no wages, as he learned how to knead dough in large troughs. More experienced men then shaped the loaves and watched the ovens. After a few years, the apprentice was either promoted within the ranks of that bakery and made real wages, or he would move on as a journeyman baker for another employer.

Workdays were quite long—12 hours or more—and the typical bakery was a basement hovel where a wood-fired oven, a wooden bench, and a dough trough competed for space with the bakers themselves. Wonderful aromas surrounded the baker during his shift, but the work was hard, the wages were low, and the profits for the owners were marginal at best, given the government price controls since the Middle Ages.

The Parisian Croissant

In the late Renaissance, the Turks were besieging the city of Vienna, in the Austrian Empire. Bakers then, as now, usually worked through the night, and some bakers working in a basement heard loud digging noises outside their bakery as they were making their bread. They alerted the Austrian military commanders, who discovered the Turks digging tunnels under the city walls. The Austrians were able to surprise the Turkish soldiers and defeat them. In appreciation of the pivotal role the bakers played in surprising the Turks, the Emperor commissioned them to create a simple, sweetened yeast roll shaped like the crescent in the Turkish flag.

Viennese bakers who migrated to France in the 1800s brought with them the tradition of crescent-shaped rolls. By the 1920s, some bakers in Paris used a laminated dough (like puff pastry) that was yeasted to create the croissants, and the so-called Parisian croissant was born. Both the laminated croissant and the classic baguette first appeared in Paris in the same decade. They are almost certainly the two most iconic (and imitated) French bread products in the world.

Mechanized Bread Making

By the end of the nineteenth century, attempts were made to bring the baking profession into the industrial age. Steam-powered dough mixers were displayed at a technology exposition in Paris in 1889, but they were never widely adopted—possibly because they were judged by bakery owners as impractical or too revolutionary. Because electricity was not available for use in refrigeration, it was also not commonly available for powering mixers.

ELECTRIC MIXERS FINALLY APPEAR: THE SHORT MIX METHOD

A good deal changed after World War I. Electrical service became available in most large towns and cities, creating a market for mixers powered by electric motors. Early electric mixer models were fairly slow. They worked only on one speed, and the dough they created was not much different in consistency from that mixed and developed by hand. The chief advantage in these early machines was that they saved a huge amount of manual labor. They may have also saved a bit of time, but the entire process from mixer to oven wasn't remarkably shorter. It still took 4–5 hours of

bulk fermentation until bread dough was mature and strong enough to shape at the bench. This was the only option available to bakers then, and the technique had no name at the time, but it was later called the *short mix* or *traditional method*.

POWERED MIXERS MEET BETTER INGREDIENTS

In the early 1920s, the advent of powered mixers was accompanied by the introduction of better-quality commercial yeast and white flours that were stronger and

more affordable. While stone mills weren't completely discarded, steel roller mills ground most of the flour used in French bakeries. The baguette and the Parisian croissant had made their debut in Paris by this time. The Parisian croissant married the technique of butter-laminated puff pastry with what had been merely a sweetened, yeasted crescent roll. Baguettes probably were related to *pain viennoise* or Viennese bread, which featured a technique of boosting the power of manufactured yeast by placing it in a slurry of equal amounts of water and flour. This method was associated with bakers who had immigrated to France, some of whom had worked in Vienna. This slurry, a type of *pre-ferment*, sat for 5 hours or more and was later added to any remaining flour and water to complete the mixing of the actual bread dough. Because many of the Viennese who worked with French bakers were originally of Polish descent, this wet pre-ferment came to be called a *poolish*.

Direct Mixing Method

By the 1930s, many bakers were taking advantage of the stronger yeast strains available by eliminating the step of creating a pre-ferment for baguette dough. This came to be known as the *direct method*, because bakers were able to avoid the trouble of feeding a levain or mixing a poolish ahead of time (for more information on the subject of pre-ferments, see *Chapter 5*). Even with these changes, the time necessary for making baguettes was really not less than before, so direct mixing might actually be seen as a variation on the short mix or traditional method. The convenience of not making a poolish still required an extended bulk or *primary fermentation*. The yeast produced gas faster, but the dough still had to gain strength through long fermentation and a series of folds.

World War II and Its Aftermath

Virtually the entire European continent was consumed by war from 1939 to 1945. White flour became less and less available. Bread bakers in France and elsewhere had to use higher-extraction wheat flour (nearly whole wheat) and added barley, rye, and other flours to make their supply of flour go farther. By the time the war ended, the scarcity of flour for bread was so acute that bakers sometimes added sawdust to make enough dough for their customers.

PROSPERITY RETURNS

While the postwar economic boom did not happen overnight, some prosperity was returning to France, and the bakery profession was on its way to recovery by the early 1950s. During the rebuilding that occurred in this decade, electricity became available even in parts of the countryside that had never had it before. Bakeries in the countryside began to acquire the same types of mixer used by bakers in the cities and larger towns. Making bread dough completely by hand became less and less common, but the quality of bread was as good as ever because the dough was still fermented for long periods.

FRANCE AND FRENCH BREAD BECOME “MODERN”

By the mid-1950s, a new type of mixer featuring both low and high speeds made its appearance in the French bread baking community. This new type of mixer allowed

bakers to combine ingredients on the lower speed and then change to the higher one to develop the gluten faster than before. When using the high speed option for 8–12 minutes or more, this mixer could produce dough that was lighter in texture than any previously made, and its loaves had impressive volume. The loaves also had a much whiter crumb, and, though few people seemed to notice at the time, their taste was much blander than bread made by hand or with the older, slower mixers. The increase in gluten strength obtained using this new mixer before the dough even left the mixing bowl was a persuasive consideration. Bakers liked how dough mixed for a long time on high speed could gain maturity quickly—in as little as 30 minutes. Bakery owners embraced the prospect of making two or three times as much bread in about the same amount of production time as before.

The Intensive Mix Method

By the mid-1960s, most bakeries in France were using the new mixers. With the more powerful equipment came the adoption of the high-speed mixing technique, eventually named the *intensive mix*, which shortened the bulk fermentation, or *pointage*, so it was almost more of a rest period for the dough than a true fermentation. Millers began to mix small quantities of fava bean flour into their normal bread flour, which whitened the crumb of bread and accelerated the oxidation process that strengthened the dough. Bakers used greater quantities of yeast to ensure dough was gasified quickly for the new, almost no-time fermentation technique.

PAIN CHAUX

Customers seemed to love the new style of baguette, and it became customary for them to patronize the bakery two or three times a day to purchase warm loaves, or *pain chaud*, straight from the oven. They almost had to, if they wanted fresh texture, because the cottony loaves staled in a matter of hours. Several theories exist for how a product with such mediocre flavor and poor keeping qualities could come to dominate the bread market, with its novelty when compared to the dark, dense breads of recent wartime, the appeal of warm bread being available several times a day, and the sense of modernity or progress it conveyed were among them.

The reasons for small shop owners to invest in the new equipment went beyond merely making more money; industrial bakeries were appearing, with the capacity to produce tens of thousands of loaves per day. If the little guys were to survive and keep their prices for bread competitive with these newcomers, they had to make more bread in less time with fewer people on staff. Some present-day artisans would question the wisdom of those decisions, but—at that time—few people saw the quality as an issue. Bigger, lighter loaves (eventually termed *pain blanc*) actually seemed better to many consumers, and the option of buying warm bread three times a day seemed to outweigh any trifling issues of flavor or color.

Unfortunately for those bakers, the movement toward a new style of bread was just part of a new attitude toward the role of bread in an average consumer's diet. Bread consumption was on the decline during the 1950s and 1960s, and the loss of quality in the same period did nothing to stop the trend. Many bakery owners who simply couldn't compete with bread factories or more mechanized small bakeries had to close their shops. The number of bakery operators in France has

continued to decline; Steven Kaplan provides evidence in *Good Bread Is Back* (Duke University, 2006) that from 1960 to the year 2000, the number of operators in France dropped from 55,000 to around 33,000, and bread consumption per capita went from perhaps 300g (12 oz) per day to about half that. These small operators who mechanized the bread process were honest working men who were trying to preserve their craft in the face of increased competition from large industrial bakeries. They were trying to save their lives and their means of making a living. Most of us probably would have made the same choices these small bakery operators made at the time to save our livelihoods. It may be fair to say, though, that this trend toward mechanization, when combined with industrialized bread production, was largely responsible for the decline in French bread quality and the drop in the number of bakery operators.

Rescue Arrives—The Improved Mix Method

By the late 1970s and early 1980s, many bakery operators and consumers realized bread quality was not as good as it had been 20 or 30 years earlier, but they didn't know why. Bakers became acutely aware of the drop in individual bread consumption, and studies were initiated to determine exactly what made modern bread so unappealing.

At that time, Raymond Calvel was a professor of baking at a milling school in Paris called l'École Française de Meunerie. He had been among the most vocal critics of the intensive mixing practices that had overtaken the French baking community. In his books and technical articles, he proposed that the lack of taste in modern baguettes resulted from short (or even nonexistent) bulk fermentations, as well as a mixing process that destroyed the important pigments in flour while oxidizing important fatty acids. He recognized bakers would never return in large numbers to completely manual production methods, so he went about devising a mechanical mixing and fermentation technique that preserved the aromas and flavor of bread without sentencing bakers to a life of endless waiting.

BETTER BREAD IN THE SAME SHORT TIME

The method he created later became known as the *improved mix method*. It combined some of the accelerated gluten development of the intensive mix method with as much of the flavor, color, and crumb structure as possible. It featured a short mix (3–4 minutes) on first speed with another short period on second speed (3–5 minutes, using a spiral mixer). If the mixer had removable bowls, the baker could pre-mix the flour and water for only about 20 minutes before adding the salt and yeast and continuing on second speed. As the mixture rested, the baker utilized the rest time to begin assembling another dough in a different bowl, or performed other tasks. The use of a simple pre-ferment such as leftover baguette dough (*pâte fermentée*) could jump-start the development of bacteria and organic acids, which shortened the primary fermentation and development of maturation to just 60–90 minutes.

The improved mix method enabled bakers to make better-tasting bread with good volume, nice color, and a crumb that approached that of traditional mix methods. The time expended to make bread from start to finish remained essentially the same as using the intensive mix method. In the early 1970s, Julia Child credited



ARTISAN BAKER PROFILE

Amy Scherber

Amy's Bread, New York, New York

Amy Scherber moved to New York City after graduating from St. Olaf's College in Minnesota. She initially pursued a career in marketing, but after just three years she realized her obsession with food needed a professional outlet. She left her job and enrolled at the New York Restaurant School, then gained experience as a line cook and pastry chef at the famous Bouley Restaurant in Manhattan.

Amy's interest in bread led her to seek bakers in France who would allow her to work with them and learn firsthand the techniques necessary for making outstanding loaves. These hands-on experiences were her central inspiration in developing the traditional philosophy her bakers practice today. Among the bakers who have influenced her outlook are Bernard Ganachaud, Eric Kayser, Christian Vabret, and Didier Rosada.

Amy opened a tiny 650-square-foot shop in the Hell's Kitchen neighborhood of Manhattan in 1992, where she initially prepared everything—from mixer to oven—in just one room. Even in New York City, traditionally prepared handmade breads were hard to find at that time, so the community embraced her new business, and it was not long until she had to find a new facility to accommodate the growing demand for her baguettes and *pain au levain*. She opened her second location in the Chelsea Market district in 1996, where most of the baking takes place today. Her company has now grown to six locations in Manhattan, and her staff has ballooned from five people at the original spot to over 100 bakers, administrators, and sales staff. Though they now make thousands of loaves every day, her bakers continue to shape every one of them by hand and to uphold as much as possible the traditions she learned in France.

She has written *Amy's Bread* (William Morrow, 1996) together with Toy Dupree, and has another book forthcoming as of this writing. Amy and her bread have often been featured on television shows such as *Martha Stewart Living* and *Emeril Live*. She has been nominated twice by the James Beard Foundation for pastry chef of the year, and she serves on the advisory board of the Bread Bakers Guild of America.

IMPRESSIONS OF ARTISAN BREAD BAKING AS AN INDUSTRY

People who succeed as you have in this business are often confronted with the dilemma of maintaining standards of exceptional quality while building their business and increasing their production levels. How do you do it?

As the business grows, you can see when the product suffers from taking on too much business. Then you have to figure out how to improve the production process to bring back the quality. You can add another shift of bakers to make more of the product later so it is not all done at once. You can change your equipment to accommodate a different-size batch, such as purchasing a bigger mixer, or add staff to make things go faster. These all cost more money than using machines, but the initial investment in machines is also very expensive. It can be done, but it is up to the managers of the bakery to maintain a standard of quality if they are growing their business. I think you just have to catch up and hit a plateau for a while, and then grow again when you have stabilized the team and the production. That is how we do it.

What are your thoughts on prospective artisan bakers? What characteristics or personality traits do you look for in prospective employees that will increase their potential for hire? Are there any traits that might exclude them?

An employee that seeks out the bakery with a well-researched cover letter and a personal visit, as well as a follow-up call and repeat visit, is usually someone we really want to hire. The person who brings in a tattered book of recipes they made when they worked somewhere else is a no-hire because I don't want them to steal my recipes after they work for me, and I don't want them to make someone else's bread in my bakery.

Do you have any pearls of wisdom for the bakery and pastry students reading this book?

Stay in each job at least two years to really learn what goes on in that bakery, as long as you are being treated properly, and be willing to do anything that needs to be done. You will definitely move up and learn more if you are willing to do everything.

Calvel for his insights on the taste of bread and for instructing her and her coauthor before they wrote their iconic *Mastering the Art of French Cooking, Volume II*.

Renewed Interest in Great Bread

It might be said that since the late 1980s there has been a renewed interest in good bread among French consumers and the bakers who serve them. Much of the bread in France is still made using intensive mix methods, but a growing number of bakery owners offer alternatives. Bakers such as Lionel Poilâne (who died tragically in 2002) and his brother, Max Poilâne, each maintained bakeries that, sometimes against fashion, used the high-extraction brown flour and sourdough methods of France's past, while avoiding baguettes altogether.

Other artisans have resurrected the baguette as a symbol of proud bread making. A number have risen to prominence; among the best-known are Jean-Luc Poujauran, Eric Kayser, Dominique Verbron, and Basil Kamir. These bakers are competitors who have achieved near-celebrity status. They each have their own ideas about how to achieve the “best” flavor and texture, but they have at least one thing in common: a commitment to using technological advances with caution while making the best bread possible.

THE BREAD BAKERS GUILD IS ESTABLISHED

This revival of good bread-making practices has spread through some other parts of Europe and has even made its way to North and South America, Australia, and Japan. Within the United States, an organization arose in 1993 to meet the needs of a nascent artisan bread movement. This organization was formed by professionals and home bakers who viewed their craft as an institution that needed nurturing, education, and support. They named the organization the *Bread Bakers Guild of America*, and it continues to uphold its mission by offering opportunities for the exchange of important ideas through conclaves, seminars, and informative newsletters. More information about the Bakers Guild can be found at www.bbga.org.

Summary

Until quite recently, bread was the most important source of sustenance among people in the Middle East, North Africa, Europe, and the Western hemisphere. The availability of bread ingredients such as wheat and other grains played a significant role in determining the history of nations from biblical times through the fall of communism.

Milling methods and mixing technology didn't change significantly for several millennia, but by the early twentieth century, bakers began to consider the possibility of incorporating more advanced milling and mixing methods into their production. The machines they adopted were purely beneficial at first, but by the 1950s, more powerful mixers had a destructive effect on the quality of bread in France. About three decades later, an artisan movement came about that aimed to reclaim the reputation of French bread and raise the consciousness of passionate bread bakers throughout the rest of the Western world. Artisan bakers believed that while successful business practices are necessary for any bakery to survive, they would not abandon sound principles of bread making for the sake of production and profitability.

Key Terms

<i>Sumerians</i>	<i>guild</i>
<i>Fertile Crescent</i>	<i>pain viennoise</i>
<i>Romans</i>	<i>pre-ferment</i>
<i>Marie Antoinette</i>	<i>poolish</i>
<i>yeast</i>	<i>direct method</i>
<i>bacteria</i>	<i>primary fermentation</i>
<i>fermentation</i>	<i>intensive mix</i>
<i>einkorn</i>	<i>pointage</i>
<i>emmer</i>	<i>pain chaud</i>
<i>gluten</i>	<i>improved mix</i>
<i>short mix</i>	<i>pâte fermentée</i>
<i>traditional mix</i>	<i>Bread Bakers Guild of America</i>

Questions for Review

1. How was the greater availability of wheat for bread a factor in the growth of Sumerian civilization?
2. What grain enabled Egyptian bakers and others to make leavened bread?
3. What substance was used to make most grain mills through the early nineteenth century?
4. What reasons did Raymond Calvel provide for the deterioration of bread quality through the 1960s and 1970s?
5. How did the pre-ferment called *poolish* get its name?

Questions for Discussion

1. How can you choose between a really good baguette and one that is poorly made?
2. Where do you go to purchase bread? Would you pay a bit more or make a special trip to an artisan bakery if you're confident the product is better?