

# Cheese

A Pocket Guide Club Guide



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ISBN: 1732013705

ISBN-13: 978-1732013704

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## INTRODUCTION

Last year the average American ate over thirty-eight pounds of cheese, and that number has continued to rise each year.

Compare that to the measly eleven pounds of cheese we had back 1970 and it's obvious we've all become a little bit cheese crazed. But it's not just the quantity of cheese that's changed. The types of cheese we are eating are changing as well; Italian style cheeses (mainly mozzarella) come in first—thanks in large part to pizza's growth in popularity.

Our second most popular is cheddar, and third place goes to 'American' or processed cheese, though that category is steadily losing popularity. But even at thirty-eight pounds per person, Americans aren't the top cheese eaters. Greece holds the top spot, at sixty-eight pounds of cheese per person, followed by France with fifty-three pounds. Any way you slice it, that's a lot of cheese. So, what is cheese anyway? Cheese, at its simplest, is a food made from pressed milk curds. It is, technically, a living food as it is full

of bacteria and as such it is constantly changing.

There are over 1400 varieties of cheese available, made from a range of milk from cows, goats, and sheep to some made from water buffalos, camels, and yaks. Since the last decade of the twentieth century, there has been a sharp rise in the popularity and consumption of artisan cheeses, or those made on a small scale following old-school methods.

Quite often the milk for artisan cheese is from heritage breeds of cows, goats, or sheep, and this rise in popularity has led more people to be curious about the world of cheese.

## 2 HISTORY OF CHEESE

Cheese has been enjoyed for thousands of years, probably as long as humans have been herding animals. Some speculate it may have been first created by accident when milk stored in a ruminant (most likely sheep) stomach curdled from the rennet, an enzyme present in the stomach lining.

Others speculate it was discovered after milk was salted or sprinkled with an acid like fruit juice; both of those actions would have caused the milk to curdle as well. It would have been a welcome way to preserve perishable milk.

The first milk used for cheese was from goats or sheep, as these were most prevalent in the Mediterranean areas of the Fertile Crescent.

There are ancient Sumerian records going back as far as 4000 BCE showing they ate cheese. Egyptians as well were fond of the stuff, as evidenced in cheesy remains found in clay pots dating to 2300 BCE.

The Bible has references to cheese, with perhaps the most famous tale recounting David carrying

cheese to his troops just prior to him slaying Goliath.

But, very recently, an even older cheese discovery was made much farther north when a cache of 7500-year-old pottery cheese strainers were found in modern-day Poland. These Neolithic people were dairy farmers, not just hunters, so their relationship with animals is more complex than was once supposed.

Although remains of other dairy farms have been found in Neolithic ruins, this was the first that showed evidence of cheese making. But it was the ultra-organized Romans who first mass-produced cheese. Larger homes had separate rooms for cheese making and storage. Often Romans would age their cheese or smoke it—both practices adding to its shelf life—and they made hundreds of different types.

It was a convenient form of protein that their armies could carry with them. And carry it they did as they trooped across the continent. In this way, their cheese spread throughout Europe, to be mixed and blended with local ways of cheese making. In medieval times, cheese was often made in monasteries that were also making beer and wine. Farmers usually made their own cheese as it was a way to use up and preserve perishable milk.

In American history, there are a few notable cheese tales. One concerns dairy farmer Colonel Thomas Meacham who hailed from Sandy Creek, New York. He was quite proud of his cheese-making abilities, and in 1835 he held a public celebration in Oswego where he revealed ten cheeses of his own creation. He made two giant wheels of cheese, each weighing in at 750 pounds, for Vice President Martin Van Buren and New York Governor William Macy.

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The really really big wheel—four feet wide and two feet tall—he made for President Andrew Jackson and sent it to him via schooner. The 1400-pound behemoth was secured with a belt emblazoned with a bust of Jackson and emblems of the 24 states linked on either side.

When it arrived in Washington, it was paraded to the White House in a cart drawn by twenty four horses. Quite the spectacle. The reportedly rather stinky cheddar took up residence in the front hall of the White House.

It in 1835, but was still there two years later when someone, perhaps Jackson himself, decided to give out what remained—which apparently was still quite a lot—during a celebration in honor of Washington’s birthday.

Ten thousand visitors arrived, knives in hand; they carved it up, ate it up, and even stashed some away. The horde decimated it in under two hours. However, the smell lingered, and when the new president, Van Buren, arrived to take up residence, he reportedly had quite a task removing the smell, whitewashing and repainting the room it had inhabited.

As odd as this story may seem, it was not the first time a giant wheel of cheese had been delivered to a president. Some thirty-four years prior, in Cheshire, Massachusetts (named after the famed cheese making town in England), Reverend John Leland, ardent abolitionist and fierce Jefferson supporter, wanted to pay his newly-elected president a tribute after his recent victory over the Federalist John Adams.

From his Baptist pulpit, he called on the dairy farmers (only Republicans, no Federalist milk was to be used), and their wives and daughters, to join in

making Jefferson a fitting tribute. Now this one was also four feet across, but it was slightly shorter and not quite as heavy as Jackson's wheel—only 1200 pounds. As was befitting of a cheese made by Republican supporters of religious tolerance, it was adorned with the words "Rebellion to Tyrants is Obedience to God." Milk from all nine hundred of the town's (anti-Federalist) cows was used.

As regular cheddar presses were not up to the task, a cider press was called into use. The cheese was made in the summer of 1801, and though longer aging may have improved it, it was decided to move it while the ground was covered in snow and ice, as transporting by sleigh would be a bit easier than slogging a heavy cart through muddy roads.

So by way of sleigh, wagon, and sloop, the wheel traveled the five hundred miles from Massachusetts to Washington, DC. Along the way, Rev. Leland used every opportunity to preach to the large crowds that would gather whenever the cheese passed through a town.

By the end of December 1801, it had arrived, and it was presented to Jefferson on New Year's Day 1802. Apparently, Jefferson was particularly taken with the gift. Though it was his own policy to not accept presidential gifts, he showed his gratitude by donating \$200 back to Leland's congregation.

The cheese soon became widely-known as 'The Mammoth Cheese.' The moniker was originally made by Federalists as a term of derision to poke fun at the silly Republicans and was a tongue-in-cheek reference to the recent discovery of fossilized mastodon (or woolly mammoth) bones by a Jefferson-backed expedition. This was the first time the word

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'mammoth' was ever used as an adjective.

The term mammoth caught on and other 'mammoth' creations began popping up everywhere: mammoth breads, mammoth veal, and more. This wheel also remained in the White House for nearly two years.

In 1804 one visitor remarked that it was "very far from being good." On a cheesy side note, it was also Jefferson who brought mac and cheese to this country. While visiting France he had fallen in love with many of the pasta dishes he had been served.

He even brought a pasta machine back with him and first served mac and cheese at a state dinner in 1802. Other mammoth cheeses followed.

At the Chicago exhibition of 1893, the Canadians, in a feat of transport engineering, arrived with a 22,000 pound giant cheddar that crashed through the exhibition hall floor while being set up.

And the Canadians still hold the record for the largest cheese: a 57,000 pound monster made in Ontario in 1995. If you want to get your own mammoth wheel, you'll have to contact Henning's of Wisconsin.

They are the only remaining cheese maker who can produce mammoth wheels. Should you get the urge, you can order one up to 12,000 pounds at my time of writing

### 3 SCIENCE OF CHEESE

Cheese is truly a living thing, a bustle of bacteria, yeast, and mold. To study cheese is to study microbiology. Robert Hooke, one of the developers of the microscope, was also one of the first people to observe the microbes of cheese and commented on them in his work, *Micrographia*, in 1665, noting the “hairy moldy spots.”

The basic process for making cheese has not changed much over time—milk is coagulated, curds are cut up (and often cooked), whey is forced out by pressing and molding—though today, of course, most of it is mass produced.

The difference is that now, thanks to a series of scientific discoveries, we have a deeper understanding of the process and can thus better control the factors. Beginning in the nineteenth century, scientists began identifying the ‘good’ bacteria and purer starter cultures began insuring more consistent results.

Milk is the first, and understandably the most key, ingredient. And cheese making calls for a lot of it—

ten pounds to make one pound of cheese. The milk is then tested, and in most cases pasteurized. Some cheese, particularly some well-known imports, are made with raw milk, for example true Parmigiano-Reggiano, Manchego, Gruyere.

However, to be sold in the United States, ever since 1949, these must be aged at least sixty days (and have been kept refrigerated the whole time). The theory is that after sixty days the acid and salt levels in the cheese are enough to prevent pathogens from forming. There has been a renewed call for legalizing fresher raw milk cheese, but for now, the FDA is standing firm.

As a result, French Bries and Camemberts available here in the States are all pasteurized, though the traditional raw milk versions are enjoyed back in France. For a milk to be pasteurized, it needs to be heated to a temperature of 161° F for fifteen seconds or to 145° F for over thirty minutes. This process will kill 'bad' bacteria and pathogens like E. coli, Listeria, and Salmonella. But pasteurization also kills the 'good' bacteria, so starter cultures need to be added.

These cultures contribute both flavor and texture in the final cheese. They turn the lactose in the milk to lactic acid. This raises the acid levels in the milk and starts changing it to a solid as the protein in the milk begins tightening. The lactic acid also gives the cheese a certain sweetness.

Rennet is also added to help coagulation. Traditionally this was found in the stomach lining of young goats, sheep, and cows or in some plants and yeast microbes. Beginning in the 1960s, it was more common for rennet to be chemically made, and today, genetically modified rennet is the most common type.

Now, for our Little Miss Muffet moment: when the curds are separated from the whey. Larger curds (or solids) will make soft cheese; and they are cooked at a low temperature. For all other cheese, the curds are cut smaller and cooked at a higher temperature. This way the part that is not coagulated (the whey) can drain away easier. The more you cut the curds, the drier the cheese.

Though whey is the watery leftover, it still contains protein, though traditionally it was either discarded, given to animals, or sprayed onto fields. But demand is growing for whey protein in nutritional supplements, and it is also used to help make processed cheese creamier, as we will soon learn.

The curds are also salted by either adding it during the cheese making process, or rubbing onto the curds, or being put into a salt water bath. Salt does more than add flavor. It also plays a role in controlling fermentation, thereby helping to preserve and prevent spoiling.

Next comes shaping or molding the cheese and there are many different practices.

By pressing the cheese into molds it further helps expel any remaining liquid. This usually is done in three to twelve hours. Some cheese is put into baskets or molds lined with cheesecloth and allowed to drain and dry on racks. Some are drained and shaped at the same time, like fresh cheese. Some cheese, like cheddars, are cut and stacked atop one another, in a process called, weirdly, cheddaring.

The final stage is the ripening process where the cheese gets aged. This is when the flavor really develops. It can be as short as one month on up to several years. Today the conditions for ripening are

controlled, but cheese used to be aged in caves because the conditions of temperature and humidity were usually ideal.

There are a number of differences in how cheese surfaces are handled. Sometimes they are rubbed or wiped or washed. Some are wrapped in wax or leaves or even ash. Sometimes holes are made to let the bacteria's gas escape, sometimes that is confined.

Sometimes even more bacteria is injected or applied as a wash. As cheese ripens bacteria breaks it down a bit, changing flavor and texture. Fungus may be added either externally, as with Brie, or internally, as with blues.

The process is slightly different for 'American' cheese and its story begins just before the first World War with a man you may have heard of: J.L. Kraft. Kraft, a cheese maker already, was experimenting with canning cheese as a way to reduce waste and increase shelf life.

Picking up on some experiments the Swiss were doing, he began heating it and blending it with emulsifying salts. In 1916, he received the first patent for this 'processed' cheese. At first it was packed in tins and was even sent overseas with the fighting doughboys once America entered the war. In the 1920s, he began packaging it as a loaf and sales skyrocketed as consumption doubled.

Over the years several tweaks to both the ingredients and the equipment were made, with the next breakthrough arriving in the 1944 when Norman Kraft, brother of J.L., patented the processed cheese slice; generations later nearly three-quarters of all cheese sold in American supermarkets is in the form of a processed slice

J. L. Kraft was not the only busy cheese maker in 1916. A small cheese factory in Pennsylvania asked Emil Frey, a Swiss immigrant and recognized cheese whiz (pun intended), if he could help them with a recurring problem—broken wheels of Swiss. He monkeyed around with blending whey into heated cheese, and he created a cheese that melted easily and was as smooth as, well, velvet. He called it Velveeta, and it became a big success and was bought by the Kraft company in 1927.

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