

Why We Eat What We Eat

The quest for food has shaped the development of our society. The search for sustenance has influenced population growth and urban expansion, has dictated economic and political theory, and has inspired wars. Food and the science of food touch our lives in numerous ways. Many religions follow strict dietary laws. Some of the earliest observations in the world of chemistry came from the preparation and cooking of food. Food has influenced technology, too. The water wheel, developed for the milling of grain, became a primary tool during the Industrial Revolution. Even class distinctions in some societies are determined by what foods are put on the table.

In the prehistoric world, humans were successful predators, and were able to cook, to cultivate plants, and to tame animals. By 10,000-12,000 years ago, the climate was mellowing on earth, with glaciers retreating – which provided excellent conditions for fast-growing plants to take hold. Settlements began to appear around the crops, so that humans would be ready and available for harvest. The grain that was grown attracted herbivorous animals, and sheep and goats became domesticated. It followed, then, that milk became a part of the human diet.

By 3,000-4,000 BC, humans were cultivating wheat, barley, lentils, olives, figs, dates and pomegranates – foods not unlike the typical Mediterranean diet that exists today. Primitive irrigation systems and simple harvesting tools, such as the sickle and plough, were also developed. Over the next few thousand years, huge advances were made - in the grinding and milling of grain, the beginnings of the spice trade, and in the evolution of beer and leavened bread.

During the middle ages, as in all other times, cooking was adapted to the ingredients and equipment that were available. By 1000 AD, the predecessors of the modern fish farms were in existence, which kept fish fresh until it was ready to be prepared and eaten. By 900 AD, teahouses and cook shops cropped up in many countries, with China the most advanced in this area. Shops that sold prepared noodles, wontons and barbecued meats were not uncommon. The concept of crop rotation also developed during this time, which made the land more productive, and produced complementary protein sources of grains and beans. Spices were becoming very commonly used not only for taste, but also for health. It was known early on, for instance, that cinnamon and cloves provided an antiseptic to the intestine – an important quality during these not-so-clean times. Salting and drying became the primary preservation methods, and salt became one of the most powerful factors in the world economy.

The discovery of the New World meant the discovery of new foods. When the Spaniards cruised the Caribbean and tropical Americas, they found a shortage of food animals, with insects and worms the protein staples in the diet. There was an incredible variety of new species available, but by far corn became the most important of all the new foods. By the time Columbus landed in the New World, the inhabitants had developed more than 200 varieties of corn. Eventually, these corn seeds made their way back to the Mediterranean and the Near East and by the 1500s corn became an important crop in China. Other items native to the Americas were tomatoes, avocados, beans, chilies and fish – all foods associated with South American cooking today. Overall, America contributed an incredible variety of foods to Europe, including tomatoes, corn, pineapples, green beans, kidney beans, limas, chocolate, peanuts, vanilla, peppers, tapioca, turkey and chewing gum.

The first colonists settled in the early 1600s. By all historical accounts, they likely would not have survived without the generosity of the native Indians, since the colonists are uniformly described as incompetent, argumentative, ignorant and ill equipped with tools. The Pilgrims landed in Plymouth in 1620, bringing with them seeds of wheat and rye. However, corn still flourished, and the pattern of East Coast eating was established – hominy, succotash, corncakes, fish, beans, oysters, duck and ham were staples of the diet during this period.

The necessity for convenience foods during travel fostered their development during the next hundred years or so. Sea travel posed special problems, since ships needed to carry men, cargo and ammunition,

in addition to food and water. The staple food item was the sea biscuit, made with flour and water, but it proved inedible to all but the weevils that took up residence in them. The dried, salted meats that were offered to the sailors were inedible, but proved to be the perfect substance for carving intricate trinkets and snuffboxes. After months of sea travel, and without the intake of fresh fruits and vegetables, an epidemic of scurvy developed. This "sailor's disease" was characterized by bleeding, swollen gums, and many died of starvation. Although the treatment was soon discovered, it took many years for officials to approve fresh fruit and vegetable rations, deeming them too expensive. By the 1700's, the British navy accepted the notion that citrus could prevent and treat scurvy, and lemon and lime juice rations were added to the diet. Most sailors often mixed their rations with rum.

For land travel, food that was light and compact was needed. Some could live off the land somewhat, but many carried *pemmican*, a mixture of fat, dried cherries and marrow. This high fat concoction provided significant calories for the long treks across the land. Fat was also used to seal containers that were packed with meat to keep it fresh. The first bouillon cubes were called "pocket soup" – highly concentrated stock with a glue-like consistency that was broken into pieces and mixed with water.

The Industrial Revolution changed the availability, distribution and production of food like never before. The 19th century brought with it huge growth in towns (the population of New York multiplied 80 times between 1800 and 1900), and expansion of roads and railways. Interestingly, this period also brought the first food adulteration. With a rapidly increasing population, the food industry had a difficult time dealing with shortages of materials and in an effort to keep costs down, bulked up food items with questionable fillers. Tea was a particular target for adulteration because the taxes were so high – scavengers were sent to retrieve used tea leaves from restaurant trash bins, and the leaves were dried, stiffened with a gum solution, and then dyed with black lead.

By the 1850s the expanding industrial society experienced the most radical influence on the quality and quantity of food available – the railway system. Previously, horse or oxen had hauled items, but the amount they could carry was limited. Bulky items could be shipped via the waterways, but items sent in this manner were really only available to those who lived near the water. The railways were fast and could carry huge loads. Meat quality improved, since carcasses were transported rather than live animals, and fresh milk was brought in from the country, rather than being dispensed in town from old cows living in the city.

The first canned foods appeared in England during the early part of the 19th century. For a while, these foods were more expensive than fresh, but they provided convenience for those who traveled (cows took up a lot of room on ships). The mass production of canned products appeared in the 1870s, and soon after mechanical devices were developed to prepare foods for the canning process. By the end of the 19th century, manufacturers used their knowledge of pasteurization to heat foods to the proper temperature for the proper length of time, leading to huge improvements in quality, taste and safety of the canned products.

Foods were kept cold during this time in "ice houses" which were built with double walls and triple roofs and stone floors. People were, however, dependent upon nature for the ice. Manufactured ice was produced in the mid-1800's, following the development of compressed air refrigerators. Most stoves at this time were wood burning, with gas versions available by about the 1880s. Electric stoves were not in full use until the 1920s.

While we are hard pressed to imagine life without chilled foods, frozen foods, canned foods, convenience foods, preservatives, transportation, tools, microwaves – we are now offered new sweeteners, new fat substitutes, juice boxes, aseptic meat packages, freeze dried items and "functional foods". Manufacturers and food technologists are scrambling to provide what consumers want most – taste, cost, and convenience. No doubt, the technological explosion will continue to affect why we eat what we eat.