

The art of nutritional cooking



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Foreword

Modern American Cuisine has finally turned the corner in regard to nutrition. No longer is nutrition viewed as a fad or style of cuisine. It is now recognized as an integral component of cuisine.

The Art of Nutritional Cooking by Michael Baskette, CWC, CCE, and Eleanor Mainella, RD, combines the artistic flair of the chef with the scientific orientation of the dietitian. Both are the recognized experts in their field, and this marriage of arts to science yields results that are beneficial to all of us. Far too long have these two respected professions gone their individual ways, ignoring the benefits to be derived from the natural alliance based on food. Once united, as in this book, the symbiotic relationship is obvious. While the chef maintains his mission in search of flavor, the dietitian sets parameters for individual health and wellness based on the latest creditable scientific data. However, this newfound partnership should not blur the lines between the professions. The chef should remain the practitioner of the art. The dietitian should remain as the source of information regarding health and wellness as they relate to individual diet. That both work together so well in the following pages is a tribute to the quality of the work contained herein.

Chef Baskette's perception of flavor and its relation to taste sets the foundation for the book. He addresses in depth all components of this sense. Mrs. Mainella puts this genius in a matrix of creditability that makes this volume a must for those who continually strive to expand their culinary horizons. It provides enough detail to be complete while still holding your interest. You are not overindulged with information that cannot be incorporated into your culinary repertoire.

This book will become a classic in the culinary classrooms all across America as well as a valuable addition to your personal library. It is well that it heeds its own advice, that of moderation, variety and balance. It does not preach nutritional dogmatism, but addresses the

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main facts of this science in a well-rounded and informative manner. The presentation of material is clear, concise, and necessary as a precursor to the recipes that follow.

Chef Louis Jesowshek, CEC, AAC Chairman of Nutrition Projects Committee American Culinary Federation

Preface

The science of nutrition was born out of the same craze for knowledge that underlies most of modern thinking; the burning desire to "understand" one's self and one's environment. Today "nutrition" is as much a way of life as it is a collection of data and scientific theories. Recognizing its importance on maintaining good quality in human life makes it the most sought after preventative facing the twenty-first century. What we eat and drink not only builds what we are today, it also determines in what shape we will find ourselves tomorrow.

The Art of Nutritional Cooking is both a guide and a tool to all who are interested in preparing healthy food. It is more than just a recipe book and much more than a "nutrition" text; it is an explanation of a new way of life. It combines both the tenants of science and the axioms of philosophy into an applied scientific culinary experience. Built upon a framework of cooperation and support between an experienced chef and a registered dietician (combined together for the first time in a single text) it opens up a new challenge for cooks, chefs, and dieticians to work hand in hand for a healthier tomorrow.

Good nutrition does not only heal the sick, protect the aged or build the young, it is what we all should strive to achieve in our quest for long and healthy lives. Eat well, but eat smart!

The recipes in the book are mere examples of the many culinary applications available for the cooks and chefs who undertake this new challenge. They represent ideas as much as formulas and procedures. If you read what is being said in the recipes as closely as you read the text then you will be better able to master the art of nutritional cooking.

Many of the recipes have nutritional or culinary footnotes attached to them to emphasize a certain nutritional aspect. Salt has been left out of most of the recipes to show the benefits of cooking for taste using natural ingredients and flavors. Then, if desired, a pinch of salt may be added.

Make adjustments in the seasonings and ingredients. Your cooking is only as good as your understanding of how to create and preserve good taste in all your food.

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Exploring the past

S alts and fats played essential roles in food preservation for thousands of years before the invention of controlled freezing, refrigeration, and canning. Thus, over the centuries, these necessary ingredients often dominated food flavoring in the European regions from which we draw many of our culinary traditions. This historical dependency on salts and fats may help explain the reluctance of twentieth-century consumers to abandon these ancient culinary staples. The relatively new science of nutrition (less than three centuries old), however, shows us that good health is best achieved through the use of a variety of foods and tastes.



Taste is a pleasure — complicated yet primal, refined yet personal. We use it as a selector in our choice of what to eat. Frequently, the pleasurable tastes help us to escape from life's many inconsistencies — we may eat when we are happy and overeat when depressed. In anticipation of a hard day's work, we allow ourselves an extra food portion to fuel our physical machines. Chiffon pie becomes a prize for a job well done and peach cobbler a reward for honesty.

This helps explain why we are reluctant to give up some taste and variety in favor of better nutrition. Unfortunately, we often neglect nutrition until we begin to develop major health problems, which then require rigid dietary guidelines. Nutrition is thus often perceived as a concern of the sick and the elderly, and the young continue in over-consumption of the wrong foods.

It is difficult to change this mindset, which is based on centuries of traditions and lore. We must first explore the history of food to help reveal why humans became so dependent on salts and fats. More important, we must show that good nutrition does not necessarily mean the giving up of tastes. Rather, it is awakening the palate to many of the natural tastes disquised by improper seasonings and poor cooking methods.

Food preservation

Fats

Humans first learned through observation and experimentation what to eat and how to survive. Their eating experiments might lead to a better way or sometimes end in death, but in this way humans learned what foods to avoid.

They also learned how animals survived extremely cold climates and scarcity of foods by fattening themselves during the plentiful springs and summers. Bears, for example, would fatten themselves to three or four times their springtime weights and successfully sleep through the long winters. Ducks and geese, which seemed to prefer the colder climates, contained more fat than lean meat. These animals and birds used their own fat as a stored food supply and as insulation. It becomes easy to conjecture as to why ancient hunters preferred catching fatty animals, for they possessed qualities that humans desired. Early cooks soon used high percentages of fats in their cooking to reproduce these "healthful" qualities.

Early humans unexpectedly discovered that cooking animals with a high fat content or adding large amounts of fat when cooking leaner meats could also preserve them. Although they did not understand that immersion in rendered fat sealed out the oxygen necessary for most bacterial growth, humans came to associate the presence of pure fats with "wholesome" food. The absence of a fatty taste automatically triggered concern over the food's condition.

Fats were also used to supply moisture to dry foods such as sausages and meat puddings. This practice, dating back thousands of years, was the basis for an American Indian food called *pemmican*.

When Alexander MacKenzie became the first European to cross the North American continent in 1793, he carried with him a powerfully sustaining food called permican. Traveling unsettled lands was very treacherous and fresh game and wild vegetables were often scarce. Permican, a portable food supply, gave the traveler high-energy proteins and insulating fats and would not spoil, even in extreme conditions.

The recipe, which had been handed down for thousands of years, consisted of a paste made of dried lean meat and equal amounts of animal fat. The technique of drying thin meat strips in the sun and the wind had been used for centuries; the addition of fat not only preserved the mix but also lent it palatability. The paste was then wrapped in animal skins and sealed with tallow (a blend of beeswax and rendered animal fat). The Cree Indians, who aided MacKenzie's expedition, would have included chopped berries or nuts for variety and flavor.

Permican was so successful as a food for travelers that it was one of the first products used in a new canning process developed in the early nineteenth century by Nicholas Appert of France and Bryan Donkin of England (Tannahill 1973). Permican is still being used by explorers. William Steger, Jean-Louis Etienne, Victor Boyarsky, Geoff Somers, Keizo Funatsu, and Qin Dahe depended on permican when they crossed Antarctica by dogsled during a seven-month journey in 1989-90.

In many cultures throughout history — dating back to 3000 B.C. — the use of animal fat as a preservative kept food healthy. It was also used as an insulator and to give moisture to otherwise unpalatable foods. Foods necessary to sustain life is that nutrition?

Salt

The use of salts as a preservative dates back to the time of the early Egyptians, who used them in body mummification. They believed that heavily salted flesh could be preserved almost indefinitely. Although there is not a clear connection, salted fish became one of the earliest foods exported by the Egyptians.

Another religious tradition fostered growth in the use of salted foods. The early Christian religion required that during Lent, under penalty of death, only fish be eaten. Because fresh fish was only available to people living near water, fish preserved through the use of salt was transported to many inland Christians.

By the Middle Ages (A.D. 500-1500), salted fish, poultry, and meat became a common food source. Few people could afford to slaughter a live animal every time they wanted meat, so most of the meat had to be preserved for later consumption. Farmers often could not afford to feed their animals through the long winter months and therefore slaughtered most of them in the fall, selling some of the meat fresh, making sausage and salamis out of the higher-fat-content meat, and salting and curing the rest.

Early cooking methods were concentrated on the roasting of fresh meats. With the development of ironworks came the use of great iron cauldrons in which cooks combined dried meats and root vegetables with large amounts of water to add moisture. Dried legumes were added to absorb some of the meat's saltiness and produce a more palatable meal. These stews and other soup-type meals became the daily meal for many people.

Smoking and drying

The third ancient preservation tradition was that of smoking and drying. Juices were first forced out of thin meat strips by pounding and crushing the flesh with large stones. In dry climates, the meat strips were hung outside in the sun and wind to dry. In moist climates, houses were built to store the meats and a fire inside the building was used to force out the remaining moisture.

The different combinations of woods used as fuel produced a wide variety of flavors. Through experimentation, people discovered which ones produced pleasant tastes. Smoking became so popular that even wines and cheeses were stored in smokehouses. A smoked, hearty red wine or a piece of smoked, aged cheese would become great accompaniments to the most ornate of meals.

Historically, sausages are the result of a combination of all three preservation techniques. To make sausages, cooks finely ground meats (originally hand-forced through sieves, thus the term "forcemeat") along with almost equal parts of fat, then combined this mixture with herbs, spices, and a significant amount of salt. The resulting product, when smoked slowly over a hardwood fire, would last, unrefrigerated, for several months. Variety could easily be achieved through the use of different kinds of meats; combinations of herbs, flavored seeds, and spices; and cooking methods.

Discriminating tastes

During the Renaissance in Europe, between the fourteenth and seventeenth centuries, the culinary arts began to develop. No longer satisfied with eating for mere sustenance, people experimented with flavor combinations of foods and ingredients. The more pronounced the flavors, the greater the acceptance of the recipe. Spices and seasonings from the Eastern countries were so prized that wars were fought over their procurement and great prices paid for their delivery.

Over thousands of years, humans so indulged the physical senses that society was forced to place certain restrictions on behavior. However, when it came to taste, a reasonably private sense, people were able to defend extravagance as a reward for controlling the other expressive senses. This practice became so popular over the centuries that taste and pleasure became synonymous.

According to Jean Anthelme Brillat-Savarin (1755-1826), the eighteenth-century gourmand:

It appears that taste has two principle uses:

- 1. It invites us, by means of pleasure, to make good the losses which we suffer through the action of life.
- 2. It helps us to choose, from the various substances offered us by Nature, those which are suitable as food.

(Brillat-Savarin 1984, p. 37)

Brillat-Savarin used two main arguments for the overindulgence of taste: for pleasure and as an assurance of wholesomeness. The second point is the one most easily discarded because the development of the processes of freezing, and later, refrigeration, negated the need for great amounts of salts and fats as preservatives. As fresh foods become more available throughout the world, these preservatives become less and less important. Brillat-Savarin's first point is now the only argument that could remain for maintaining these old culinary traditions.

Understanding these historical traditions gives us the strength to abandon them in the hope of new taste discoveries. New taste sensations can be created by using foods' natural flavors, combined with modern cooking techniques, to stimulate our senses. Rather than dominating taste, salts and fats can now take their proper place as equals to other flavors.

A brief history of nutrition

Health versus diet

For centuries, people attributed certain healthful properties to food, but their reasonings were almost always guesswork and often laced with legend and superstition. For example, the use of garlic to ward off demons arose from evidence that garlic and other herbs relieved people of common ailments that were thought to be the result of demonic possession. As the centuries progressed, and information regarding health and disease became more scientific, evidence was found to demonstrate a direct connection between diet and good health. Enough evidence had not been found, however, to define any specific relationships.

By the turn of the seventeenth century, sea captains had learned that by rationing citrus juice to their sailors they would be less likely to contract scurvy, a disease affecting the gums and the healing of sores. They didn't know why it had to be every day nor why other, cheaper fruits would not produce the same results. Scurvy is a disease caused by a deficiency of vitamin C, which is water-soluble and therefore needs to be consumed daily. The concept of vitamins was unknown in those earlier days, let alone the concept of water- and fat-solubility.

People at that time were just beginning to realize that not merely the quantity, but the types, varieties, and wholesomeness of foods were important for a healthy diet. The science of "nutrition"—the precise knowledge of foods' compositions and their effects on human development — was born in the early nineteenth century.

Food properties

In 1846, Justus von Liebig (1803 – 1873) became the first scientist to describe human and animal tissue, including food, as being composed of carbohydrates, fats, and *albuminoids*, later called proteins. He hypothesized that, together with liquids, these would be the "parts of foods" needed to sustain human life. Together with other nineteenth-century theorists, who linked the mechanisms of the human body to the same scientific principles in fuel-burning engines, von Leibig would conjecture that there existed a precise connection between the specific types of foods that were consumed and good health. These initial discoveries would,

however, only lend support to the belief in the benefits of eating meats, fats, and starches, as fruits and vegetables were still considered supplemental foods.

During the same period, Louis Pasteur (1822 – 1895) was perfecting his theories on the existence of microorganisms, which he believed were evidenced through the "high" smell of rotten foods. This smell identified foods unfit for consumption. He was also intrigued by the process of fermentation, dating back thousands of years, which undoubtedly "stole" something from the air to trigger the transformation of malted grains and grapejuice into ale, beer, and wine. Thus began the search for living particles too small to be seen with the human eye. When Pasteur identified and studied these microorganisms, he raised theories that would later be used to perfect the process of canning, and would lead to the discoveries of pasteurization and controlled fermentation.

Vitamins were not discovered until the beginning of the twentieth century, when Dutch scientists began research into the causes for certain diseases such as beriberi. It is therefore easy to see why controversy still exists over the connection between certain food components and good health. That few organizations can agree on acceptable levels or even the types of cholesterol in our diets is evidence of the inexactness of nutritional science.

Everyone does seem willing to accept one nutritional premise: a healthy diet requires a balance of foods. Overconsumption of almost anything is now considered unhealthy. It is this new science of nutrition, which grows more exact every day, that threatens thousands of years of traditional food habits.



Taste with herbs and spices

The role herbs and spices played in the development of civilization cannot be overemphasized. Today they play an important part in providing new tastes to daily meals. In order to be able to build taste sensations in food, a cook must understand the structure of "taste"—a harmony of flavors—and the relationship between taste and smell.

Many different kinds of herbs and spices are available and can be used in many different ways for today's discriminating tastes. At the end of this chapter is a catalog of herbs and spices most commonly used in today's professional kitchens, with some historical anecdotes.



Leaves, needles, flowers, blossoms, seeds, berries, fruits, bark, and roots are items to which you would not generally attribute much importance, yet their cultivation and trade have influenced the very shape of world history. The above represent a whole spectrum of flavorings known as herbs and spices.

The botanical definition of herbs, as defined by *The American Heritage Dictionary* (second college edition, 1985) is: "1. A plant that has a fleshy stem as distinguished from the woody tissue of shrubs and trees and that generally dies back at the end of each growing season. 2. Any of various often aromatic plants used esp. in medicine or as seasoning."; while spices shall include all "various aromatic and pungent vegetable substances such as cinnamon or nutmeg, used to flavor foods and beverages."

This seems to segregate herbs as a subcategory of spices. The culinary definition may be quite different simply because of a need to characterize like ingredients with like applications. Herbs are the leaves and needles of plants that have the greatest flavor value when fresh, and, in chopped or whole form, are added to the preparation usually during the final stages. Spices are all other vegetable aromatics, including the bark, seeds, and roots of some plants, which usually require a drying or curing process to enhance the flavor. Used in whole or ground form, they are added early in the preparation to fully release their characteristic flavors. For example, while the leaves of plants like fennel and dill are considered herbs, their dried seeds are considered spices.

Over the centuries, some spice varieties have had great value and importance. Cassia and cinnamon were bartered for fine silks and jewelry; sesame seeds were used to pay ransoms and taxes in ancient kingdoms. Anise, cumin, and marjoram were used in embalming practices by the ancient Egyptians; even Moses was instructed to make holy anointing oils and fragrant incense using spices:

The Lord said to Moses, "Take the finest spices: five hundred shekels of free-flowing myrrh; half that amount, that is, two hundred and fifty shekels, of fragrant cinnamon; two hundred and fifty shekels of fragrant cane; five hundred shekels of cassia—all according to the standard of the sanctuary shekel; together with a hin of olive oil; and blend them into sacred anointing oil, perfumed ointment expertly prepared.

(New American Bible, Exod. 30:22-25)

History of spices

The history of the spice trade helps explain the development of world cultures and civilizations. The route of the spice traders, from India and the Orient through the Middle East and into Europe, determined which ancient cities would last through the centuries and which would perish. Constantinople and Alexandria became great market centers for the collection of these precious spices and their further sale and transport into Europe. Venice owed much of her development as a major European city and political power to the spice trade. Situated at the head of the Adriatic, Venice became known for the maritime expertise of her citizens, who would control all shipping in the Mediterranean Sea, including the movement of spices from the East to the West.

The Portuguese

It was the search for another route to the land of spices, one by sea, which encouraged the Portuguese to sail south along Africa's western coast and, they hoped, around the great continent and back north to China and India.

Prince Henry of Portugal (1394-1460), known as the Navigator, was a learned man who had a keen interest in maritime adventures, astrology, and cartography (map-making). He was also a very shrewd ruler who knew that finding a sea route to the spice lands would secure for his country a dominating position in world trade.

Henry would have known of the writings of the Greek historian Herodotus (484-425 B.C.), who made extensive journeys through the Middle East and logged his travels in a masterful work of many volumes called *The History of Herodotus*. He recorded the stories of the people he visited, believed to represent true history, including a story of King Necho of Egypt (610-594 B.C.).

The Egyptian king wanted to open a direct route between the Red Sea and the Mediterranean Sea to enable him to carry expensive spices to the Europeans without using the Arab caravans. He first tried to dig a canal linking the two seas, but abandoned this attempt after the loss of thousands of Egyptian lives. Still determined to find a connecting passage, Necho commissioned Phoenician sailors to sail his ships around Africa, not having any idea how long it would take. According to Herodotus, those Phoenician sailors who were successful in their attempt finally reached the mouth of the Mediterranean Sea three years later.

Two thousand years later, much more was known of sailing and shipbuilding, and Prince Henry must have thought he could re-trace the route of those Egyptian ships, this time from Europe to the Orient, with much greater speed and diligence. He was determined to take the edge away from the rich Venetians, no matter what the cost or the dangers.

Prince Henry died 27 years before Bartholomeu Dias (1450-1500) rounded the Cape of Good Hope, and 37 years before Vasco da Gama (1460-1524) completed the journey to India with three small ships on May 20, 1498, but his dream was finally realized, and Portugal became a major player in the trading of priceless aromatics.

Christopher Columbus

The adventures of the famous Italian captain Christopher Columbus (1451-1506) were merely an attempt to beat the Portuguese in discovering a sea route to the spice lands. While the Portuguese were headed south, Columbus, believing that the world was round and that Spain and India were on the same parallel at the top of the sphere, was able to convince King Ferdinand V of Castile and Queen Isabella I, rulers of Spain, that the quickest route was to the west.