

History of Food Industry

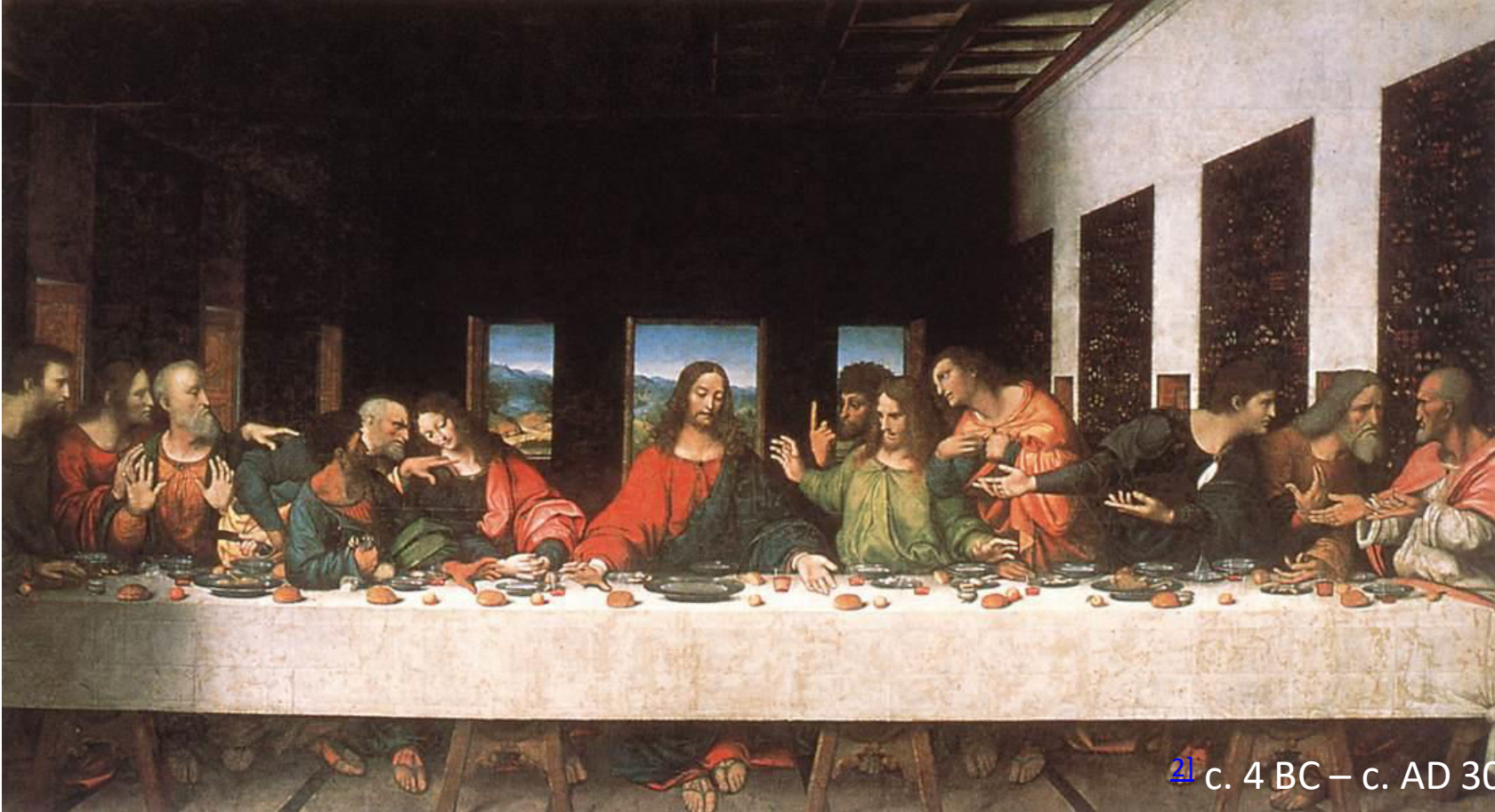
Session 3

Why let bygones be bygones!

- **Mention of food products can be found in the religious texts and study of civilisations.**

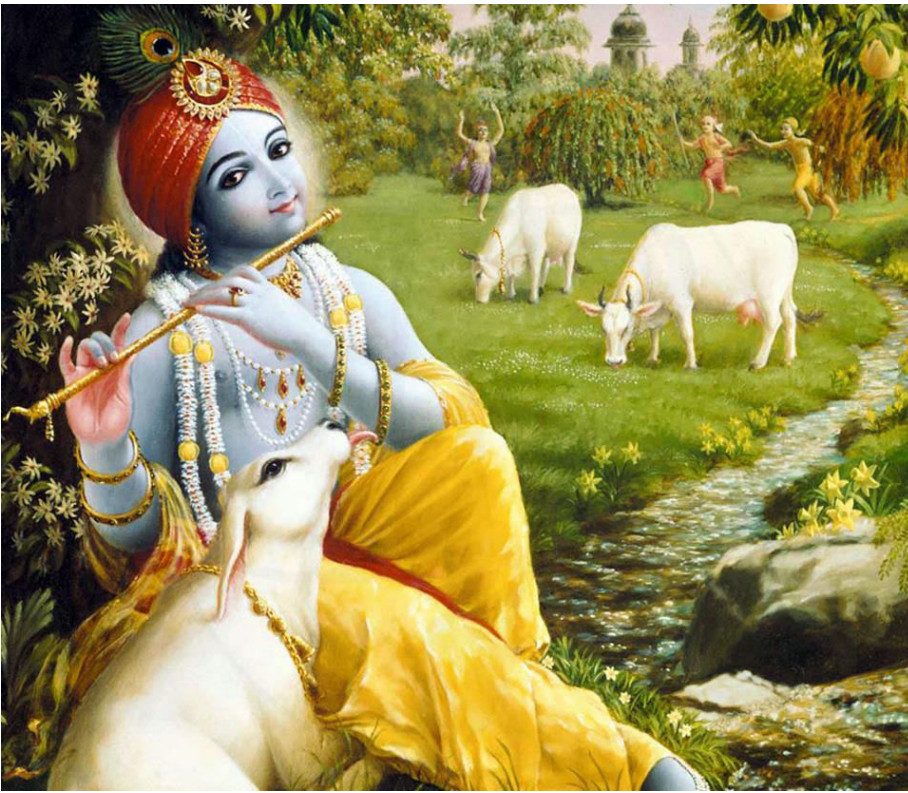


People consumed milk, milk products, grains, fruits, vegetables and meat. Clothes of cotton, wool and animal skin were worn. *Soma* and *sura* were popular drinks in the Rig Vedic society, of which *soma* was sanctified by religion. c. 1500 – c. 500 BC



[21](#) c. 4 BC – c. AD 30

Mention of Bread and wine is found in the bible.



**The mention of butter and dairying in general are mentioned in Mahabharatha.
(400 BCE, though the origins of the epic probably fall between the 8th and 9th centuries BCE.)**

The earliest pottery vessels date back to 20,000 BC and were discovered in [Xianrendong cave](#) in Jiangxi, **China**. The pottery may have been used as [cookware](#).



The **Sumerians** of about 3000 BC are believed to have been the first great **livestock breeders** and dairymen and were among the first to make **butter**.

Milk, butter, and cheese were used by the **Egyptians** as early as 3000 BC. Between 3000 BC and 1200 BC, the **Jews** used **salt** from the Dead Sea in the preservation of various foods.



Freeze Drying



1250 BC to 850 BC:

Ancient Peruvian Incas would place their **potatoes** and other **crops** above **Machu Picchu** where the produce would freeze. What they didn't know was that the **low pressure** of the high altitudes vaporized the water in the produce, essentially freeze drying it.

1938: **Freeze-dried coffee** was first produced, which led to the development of **powdered food products**.

Bellis, Mary. "Freeze-Drying and Freeze-Dried Food." About.Com:Inventors. 13 Aug 2008.

1940's: *The first commercial use of Freeze Drying.*

"Interesting Bits of Freeze Drying History." Petal Mania. 2008. 13 Aug 2008

Freeze Drying

Maxwell House

The **first commercial use of freeze drying** was introduced by Maxwell House in **1963**. The company implemented this procedure in order to retain the **coffee's flavor** and make the delivery process easier.

NASA

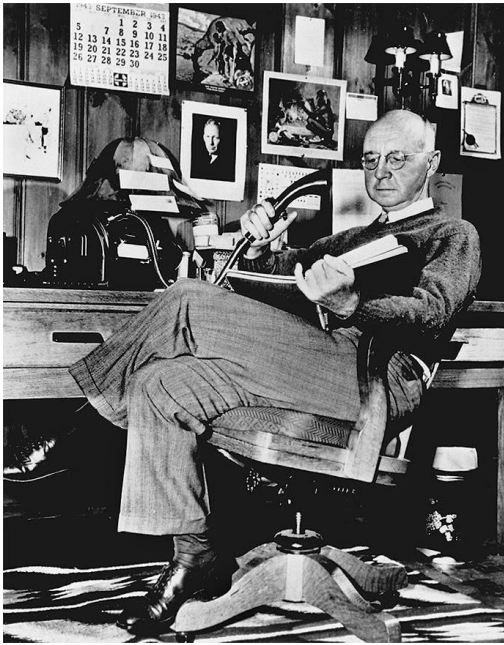
In an effort to accommodate astronauts going to the moon, NASA began to experiment with freeze drying a number of different foods. Later commercial use of **Tang** and **Space Ice Cream** came from this research.

Modern Uses

During the **1980s**, a number of companies began to use the freeze drying method to preserve a variety of **herbs** and **vegetables**. **Soups, beverages** and a variety of other materials were easily packaged and made a number of foods more convenient to cook.

Read more : http://www.ehow.com/facts_4966925_was-freeze-dried-food-invented.html

Freezing



Clarence Birdseye invented the **quick freezing** technique

Microwave Processing

The idea of using **Microwave energy** to cook food was accidentally discovered by **Percy LeBaron Spencer** of the **Raytheon Company** when he found that radar waves had melted a candy bar in his pocket.

Experiments showed that microwave heating could raise the internal temperature of many foods far more rapidly than a conventional oven.





Condensed milks

Nicolas Appert condensed milk in France in 1820, and Gail Borden, Jr., in the United States in 1853,



unsweetened condensed milk (evaporated milk) was not successfully canned until 1885 by competitor **John Meyenberg**.

- **History of food industry can be traced by developments w.r.t**
 - **Food preservation techniques**
 - **Food Microbes**
 - **Food poisoning**
 - **Food Laws**

Food Preservation Techniques

- **1843 - Sterilization by steam** was first attempted by I. Winslow in Maine.
- **1853**—R. Chevallier-Appert obtained a patent for **sterilization of food by autoclaving**.
- **1855**-Grim wade in England was the first to produce **powdered milk**.
 - A patent was issued to H. Benjamin in England for **freezing foods by immersion in an ice and salt brine**.
- **1917**—Clarence Birdseye in the United States began work on the **freezing of foods** for the retail trade.

Food Preservation Techniques

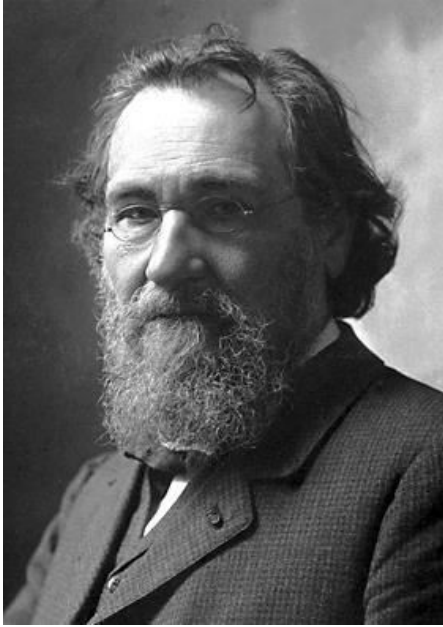
- **1929**—A patent issued in France proposed the use of **high-energy radiation** for the **processing** of foods.
- **1954**— The antibiotic **nisin** was patented in England for use in certain **processed cheeses** to control **clostridial** defects,
- **1955**—**Sorbic acid** was approved for use as a food preservative.
- **1988**—**Nisin** accorded **GRAS** (generally regarded as safe) status in the United States.
- **1997**—**Ozone** was declared **GRAS** by the **U.S. Food and Drug Administration** for food use.

Food Microbes

- **1659**— Kircher demonstrated the occurrence of bacteria in **milk**
- **1780**— Scheele identified **lactic acid** as the principal acid in **sour milk**.
- **1857**— Pasteur showed that the **souring of milk** was caused by the **growth of organisms** in it.
- **1867**—Martin advanced the theory that **cheese ripening** was similar to alcoholic, lactic, and butyric fermentations.
- **1873**— Lister was first to isolate ***Lactococcus lactis*** in pure culture.
- **1876**— Tyndall observed that **bacteria** in **decomposing substances** were always traceable to air, substances, or containers.

Food Microbes

- **1878**—Cienkowski reported the first microbiological study of **sugar slimes**
- **1907**—E. Metchnikoff and co-workers isolated and named one of the **yogurt bacteria**, *Lactobacillus bulgaricus*.
- **1915**—*Bacillus coagulans* was first isolated from **coagulated milk** by B. W. Hammer.
- **1917**—*Bacillus stearothermophilus* was first isolated from **cream-style corn** by R.J. Donk.



In particular, Mechnikov is credited with the discovery of [macrophages](#) in 1882. Mechnikov received the [Nobel Prize in Medicine](#) in 1908, shared with [Paul Ehrlich](#), for his work on [phagocytosis](#).

Metchnikoff thus attributed health benefits to lactic-acid producing bacteria, suggesting that “oral administration of cultures of fermentative bacteria would implant the beneficial bacteria in the intestinal tract.”

"Father of natural immunity"

Mechnikov himself consumed daily sour milk fermented with the bacteria he called “Bulgarian Bacillus” (later described as *Lactobacillus delbrueckii* subsp. *Bulgaricus*) and physicians began prescribing the sour milk diet for their patients. Probiotics were born.

Food poisoning

- **1820**—The German poet Justinus Kerner described "**sausage poisoning**" (which in all probability was **botulism**) and its high fatality rate.
- **1857**—**Milk** was incriminated as a transmitter of **typhoid fever** by W. Taylor of Penrith, England.
- **1894**—T. Denys was the first to associate **staphylococci** with food poisoning.
- **1904**—**Type A strain** of *C. botulinum* was identified by G. Landman.
- **1906**— *Bacillus cereus* food poisoning was recognized

Food poisoning

- **1938**-Outbreaks of *Campylobacter enteritis* were traced to milk in Illinois.
- **1945**— McClung was the first to prove the etiologic status of *Clostridium perfringens (welchii)* in food poisoning.
- **1960**—Type F strain of *C. botulinum* identified by Moller and Scheibel.
- **1960**— The production of aflatoxins by *Aspergillus flavus* was first reported.
- **1969**— *C. perfringens enterotoxin* was demonstrated by CL. Duncan and D.H. Strong.

Food poisoning

- **1975**—*Salmonella enterotoxin* was demonstrated by L.R. Koupal and R.H. Deibel.
- **1983**—*Campylobacter jejuni enterotoxin* was described by Ruiz-Palacios et al.
- **1986**—**Bovine spongiform encephalopathy** (BSE) was first diagnosed in **cattle** in the United Kingdom.

Food Laws

1939- The new Food, Drug, and Cosmetic Act became law.

2006- The Food Safety and Standards Authority of India (FSSAI) has been established under Food Safety and Standards Act, 2006.

Various central Acts like Prevention of Food Adulteration Act, 1954 , Fruit Products Order , 1955, Meat Food Products Order , 1973, Vegetable Oil Products (Control) Order, 1947, Edible Oils Packaging (Regulation) Order 1988, Solvent Extracted Oil, De- Oiled Meal and Edible Flour (Control) Order, 1967, Milk and Milk Products Order, 1992 etc was repealed after commencement of FSS Act, 2006.

Current Status and Future

- **Genetically modified foods**
- **Probiotics**
- **Novel Food products (HFCS, QUORN)**
- **Advanced enumeration and detection techniques**
- **Sequencing of genomes**