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God Bicentenary Year: 200 years after his birth**

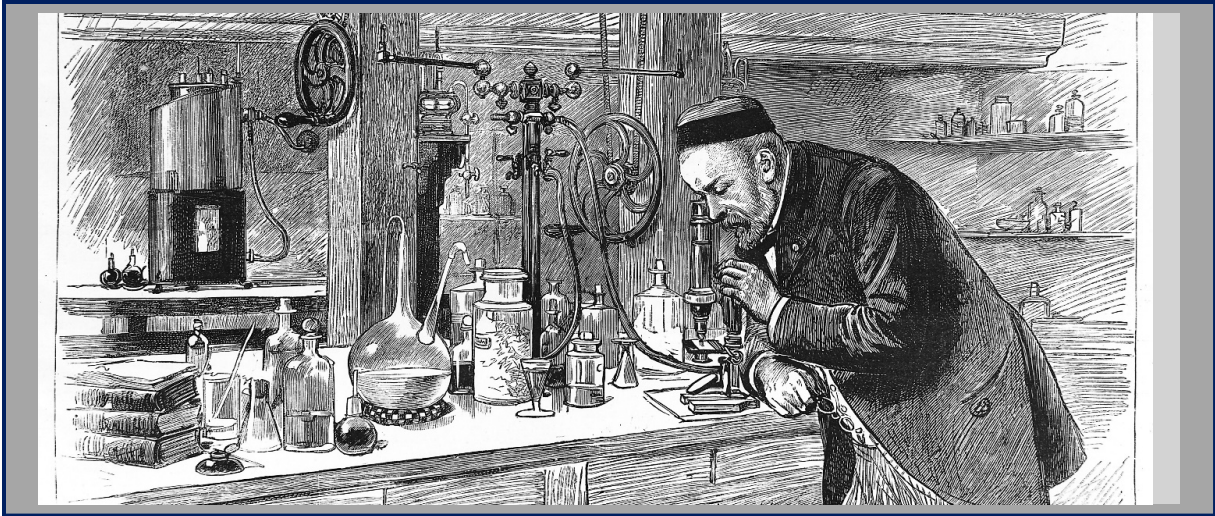
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Louis Pasteur Signature Saying: Science Brings Men Closer to God Bicentenary Year: 200 years after his birth

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Abstract

This year (2022) marks the bicentenary birth (December 27, 1822) of Louis Pasteur. He has a global reputation. His contributions can be seen in our homes, in the "pasteurized" products derived from one of his discoveries and in disease prevention. It was in his discovery of gently heating beverages and food for what we today call pasteurization that he first said: "Man's first look at the universe discovers only variety, diversity, multiplicity of phenomena. Let this gaze be enlightened by science — by science which brings man closer to God — and simplicity and unity shine everywhere." Louis Pasteur (Vallery-Radot, *Life of Pasteur*, 1902, English translation, p. 194, Monday, Nov. 11, 1867; 730 pm Orleans France)

Introduction

It was Louis Pasteur (1822-1895) who laid the scientific foundations for germ theory, the principles of handwashing, and preventing contagion that took on importance during COVID19 and other pandemics. Louis Pasteur generally avoided shaking hands with people. If he made an

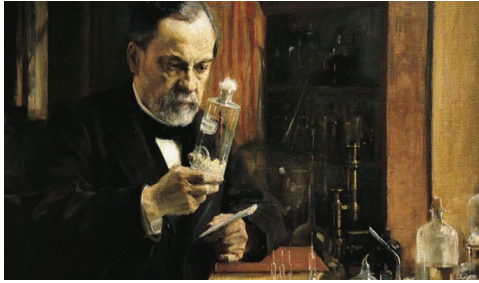


Fig. 1. Louis Pasteur studying Rabies, first zoonotic disease, clearly described. Image credit: Albert Gustaf Aristides Edelfelt via Wikimedia Commons.

exception, he would wash them immediately. Perhaps, he knew the danger of *Streptococcus* and *Staphylococcus*; he was among the first to describe them. Pasteur bridged the Old Testament idea of “contagion” and statistical evidence of Semmelweis and provided hard evidence for the germ theory of disease. He gave many reasons for handwashing that were lifesaving out of his love for God and people.

While Pasteur is very famous for his rabies and anthrax vaccines that earned him the title "benefactor of humanity", the breadth of his accomplishments and his credit to God is less known. Many do not realize

that God and the Bible influenced his life. He started research on zoonotic and emerging diseases at the Pasteur Institute in 1887 (Fig. 1). Even though he came up with pasteurization which continues to have an impact on our daily lives and food safety, not many realized this discovery had a spiritual impact on him. Allow me to elaborate by taking a closer look into a signature saying of his and the religious motivations and inspiration of Louis Pasteur.

Many are familiar with Louis Pasteur’s quotation: “The more I study nature, the more I stand amazed at the work of the Creator. Science brings men nearer to God.” Few know the original speech; fewer still know the context. This short article provides the expansion and the context. The quote as it is in English appears on dozens of internet articles. Although it may or may not have been said exactly in the translation. It is certain the ‘essence’ of it was said in French. The context of this quotation was the discovery of what we call pasteurization today. His fermentation studies of wine and vinegar led to the development of ‘pasteurization, which solved the wine and vinegar spoilage problem for France. This discovery merited the great honors from Napoleon III. Louis Pasteur discovered that microbes were responsible for souring wine and vinegar. He generally used French microscopes, such as Nachet (Fig. 2), Hartnack, and Verick microscopes. They were small but had very good optics for the era. He came up with the process of pasteurization, in which bacteria and fungi are destroyed by heating beverages and then allowing them to cool. Later, this principle would be applied to milk and dairy products for preservation. Pasteur was age 44.

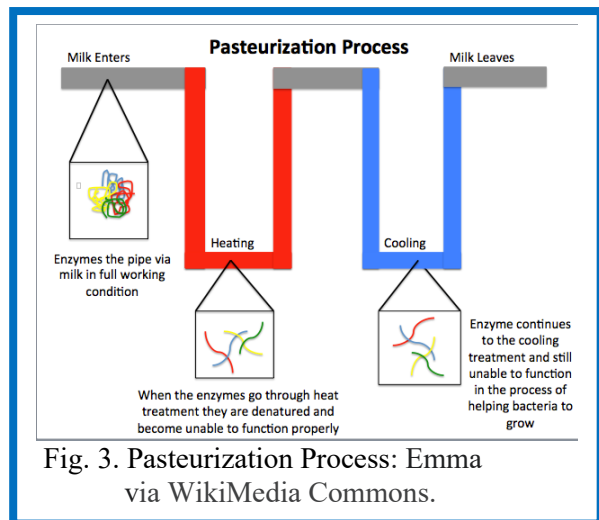


Pasteurization is the heating of a substance to 163 -170 degrees Celsius to reduce bacteria counts (Fig. 3). After heating the substance, it is rapidly cooled. The harmful bacteria are killed, but other bacteria remain. Bacteria that are heat resistant are left in the milk. (Gillen and Williams 1988). Pasteurization helps to reduce the number of bacteria, fungi, parasites (esp. *Cryptosporidium*), and some viruses. Pasteurization, along with handwashing, asepsis, and vaccines are the major ways of preventing infectious and parasitic diseases.

**Original in French: (Vallery-Radot, Life of Pasteur, 1902, French translation, p. 209)
 Le premier regard de l'homme jeté sur l'univers n'y découvre que variété, diversité, multiplicité des phénomènes. Que ce regard soit illuminé par la science, — par la science qui rapproche l'homme de Dieu, — et la simplicité et l'unité brillent de toutes parts. Louis Pasteur Original: Monday, Nov. 11, 1867; 730 pm Orléans, France.**

The man that is most associated with the concept that “germs make us sick” is Louis Pasteur. Louis Pasteur was born on December 27, 1822. Pasteur was perceptive to God’s blessing on his work, biological and chemical observations, and human and animal suffering. It was Pasteur who developed his ideas of fermentation and experiments on milk and wine spoilage, with the purpose of reducing disease by microorganisms. Prior to Pasteur, the connection between microorganisms and disease was not apparent, since many microbes were known to be beneficial and were thought to not cause disease. By 1877, the germ theory of disease was so firmly established that even Pasteur’s critics could not counter the evidence (Gillen 2020). Pasteur went on to suggest that the genesis of germs in hospital patients was the result of microbes coming from microbes, not a result of spontaneous generation! This revolutionary idea would have application in many areas of medicine. It formed the basis of biogenesis, pasteurization, asepsis in surgery, and the germ theory of disease (Gillen, 2020). In the age of COVID19, his 19th century foundations for pasteurization, germ theory, disease prevention, and vaccines have new relevance.

In his speech in Orléans, France, he recalled the benefits of preserving beverages and food. It was here that he gave glory to God for his discovery. "Pasteurization" is now part of our daily lives – it is used to preserve milk, cheese, fruit juice, vinegar, wine, tomato purée, beer, and cider. The French economy in the mid to late 1800s was at stake and Emperor Napoleon III called on Louis Pasteur, known for his research on fermentation, to search for the causes of the wine diseases and identify means of preserving good wine. It was in his hometown of Arbois that Louis Pasteur began his work on wine. From his simple laboratory, he proved that the diseases affecting wine were caused by microbial contaminants. The development of these harmful microbes had to be prevented or stopped to solve the problem. A simple, practical method is to heat the wine to a temperature between 60 and 100 degrees Celsius. Louis Pasteur turned the gentle heating of



beverages into a scientific process with clear theoretical bases, making wine "the most healthy and hygienic of drinks." "Pasteurization" spread quickly through Europe, and machines of all types were devised to perform the process, culminating in food industry procedures in the early 20th century. The method is uncommon for wine these days because it can affect its taste, but it is still used to preserve milk and dairy products.

“Man's first look at the universe discovers only variety, diversity, multiplicity of phenomena. Let this gaze be enlightened by science — by science which brings man closer to God — and simplicity and unity shine everywhere.” Louis Pasteur (Vallery-Radot, Life of Pasteur, 1902, English translation, p. 194, Nov. 11, 1867; Orleans France)

In the age of COVID19, his 19th century foundations for germ theory, disease prevention, and vaccines have new relevance. Louis Pasteur was among the first to describe zoonotic diseases and his early workers (ex. Charles Nicolle) at the Pasteur Institute would be able to describe new and emerging diseases. We would hypothesize that Louis Pasteur, the father of microbiology and modern immunology, would have made vaccines to control and eradicate COVID-19. Although he worked initially with the attenuation of viruses and bacteria, after his successful work with rabies, fowl cholera and anthrax, it became clear three steps were needed to develop a protective vaccine against infection. First, the organism should be isolated, then inactivated, and finally injected. In 1885, Pasteur's rabies vaccine employed an air-dried fixed virus. In time, he would fully elucidate the connection between animal and human diseases, now called zoonotic diseases. He would also stimulate his ‘disciples’ to further understand new and emerging diseases.

Perhaps, the Bible verse that most closely parallels Pasteur’s conviction that nature and science bring him closer to God is: *“For since the creation of the world God’s invisible qualities—his eternal power and divine nature—have been clearly seen, being understood from what has been made”* (Rom. 1:20 NIV).

His amazement of nature parallels expressions in Psalms 8, 19, and 139. He marveled at God’s Majesty; he also understood the need to control contagions and heal the sick as the scripture implied in a fallen world. It should be noted that he had read the committed Christian and outstanding scientist, Blaise Pascal. His book, *Pensées*, is likely influenced by him. It seems that his philosophy on science and nature bringing him closer to God was like that of Pascal. Table 1 summarizes why he may have made these comments and speech after he had invented the process to preserve foods by heating them gently (i.e., pasteurization).

| Table 1. Possible Reasons Why Pasteur said Nature and Science Brings Me Closer to God |
|--|
| 1. Order, Organization, Harmony, and Integrated Complexity |
| 2. Beauty, Design, and Symmetry |
| 3. Hand of God Blessing Experiment – Crystals Study and Biogenesis Experiments |
| 4. Preservation of Food: Prov. 20: 21; Keeping of ‘new wine’ in the Bible |
| 5. Invisible Attributes and His Eternal Power |

Another writer (Pasteur Brewing, 2022) reports:

“Pasteur was a spiritual man and recognized the need for religion, as many times he would rely on faith alone to keep his work going. He trusted that the universe was ordered and organized efficiently and that if he continued to pour his heart into his work, his efforts would not fail him. ... But Pasteur did not hide from religion. In a letter to his sisters as a young man he wrote: If by chance you falter on the journey, a hand will be there to support you. If that should be wanting, God, who alone would take the hand from you, would accomplish the work.” (Pasteur Brewing, 2022).

Conclusion

Pasteur was a humble, godly Catholic who served The Lord and his fellow man through science. If you enjoy milk and food that does not spoil in a few days, if you enjoy a wide variety of healthy foods, if you can take a vaccine and live without fear of infectious diseases, if you enjoy a longer life than your ancestors did, you should thank the good creation microbiologist Louis Pasteur, because you owe much of your physical health and safety to him. But your ultimate thanks should go to the Great Physician, who taught the Israelites many principles of good health and sanitation in the Bible. Pasteur merely rediscovered and elaborated on three basic ideas from the Old Testament: (1) contagion causes disease, (2) life was created, and (3) man can preserve food. Pasteur’s discoveries unveiled secrets to preventing disease, extending life, relieving suffering, and demonstrating life comes from life via the Creator. “The virtues of the gospel were present with him. He came to his Christian faith simply and naturally for spiritual help in the last stages of his life.” (Vallery Radot, 1902 p. 312). He died with one hand on a crucifix and one with his wife (Vallery Radot, 1902 p. 315).

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Notes:

1. Header Image Credit: Portrait of Louis Pasteur in his laboratory via Wikimedia Commons and Wellcome Image, M0010355.jpg.
2. Notes: Personal Microscope of Alan Gillen. Nchet 1860 'PETIT MODÈLE': 'NACHET ET FILS, A PARIS'
3. For more information on Louis Pasteur and some of his discoveries, read **The Genesis of Germs**, 2020 (Revised Edition).

