

EIGHT SAGES OVER FIVE CENTURIES SHARE OXYGEN DISCOVERY

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AL NAFIS



SERVETUS



SENDIVOGIUS



MAYOW



SCHEELE



PRIESTLEY



LAVOISIER



CAVENDISH

Oxygen is often called the most significant discovery of science in 1774 by Joseph Priestley and soon named and understood by Antoine Laurent Lavoisier. Historians in the 20th century reported six prior discoveries related to understanding the nature of oxygen and water.

IBN AL NAFIS: 1213-1288

A Syrian physician, hospital director in Cairo, anatomist, theologian and legal scholar he wrote (about 1250), “...to form the vital spirit (Galen’s words for red blood), the blood from the right chamber must flow through the pulmonary artery to the lungs, spread through its substances, be mingled there with air, then pass through the pulmonary vein to reach the left chamber of the heart.”

MICHAEL SERVETUS: 1511-1553

A legal scholar, geographer, poet, biblical expert and physician he investigated anatomy and physiology and discovered the pulmonary circulation. He found that blood flows through the lung, excreting waste and getting something from air that brightens blood color.

MICHAEL SENDIVOGIUS: 1566–1636

A wealthy Polish noble he studied medicine, science and alchemy in half a dozen European universities. In 1604, in alchemist’s secret language, he wrote of his discovery that a part of air is a special gas used by the body. He named it the *Food of Life*. He reported that it was the same gas emitted when saltpetre (KNO_3) is heated. His work was widely read over the 18th century but not understood by science.

JOHN MAYOW: 1641–1679

In 1668, Mayow published two books reporting that 1/5th of air was a special gas he named “spiritus nitro aereus” that was consumed during breathing and in fire and used to provide both body heat and energy. Mayow’s findings were forgotten after 1700 when the new false theory called phlogiston explained fire and life without anything from air by prominent physician and chemist, Georg Ernst Stahl.

CARL WILHELM SCHEELE 1742-1786

He was an apothecary and discovered various metals. In 1771 he found that heating silver carbonate generated a strange gas. He called it *fire air* because it brightened a flame. He delayed publishing because it didn’t fit phlogiston. In 1774 Lavoisier sent his new chemistry textbook to

Scheele who promptly wrote Lavoisier to thank him for the book and asked Lavoisier to help him explain the nature of his *fire air*. In 1775 he read about Joseph Priestley's 1774 method that produced the same gas. Scheele wrote that Lavoisier never answered his letter.

JOSEPH PRIESTLEY: 1733-1804

Priestley trained as a dissenting Unitarian minister in England. On August 1, 1774, Priestley discovered how to generate a new gas by heating red calc (oxide) of mercury. He showed that a mouse could live longer in that gas than in air in a sealed bottle. He also found that a smoldering ember burst into flame when thrust into the new gas. He called it dephlogisticated air. He published it in the Royal Society News. In early October 1774, Priestley was invited to dinner with Lavoisier and other scientists and described his discoveries.

ANTOINE LAURENT LAVOISIER: 1743-1794

Lavoisier was a brilliant chemist educated in science, literature, philosophy and law. In early 1774 he incorrectly said the gas evolved from heated mercury calc was fixed air (CO₂). In early 1775, after Lavoisier read Priestley's report in the Royal Society news, he began investigating it. In 1777, he named it *principe oxigen* but continued to refer to it as 'vital air'. Over the next 8 years of research Lavoisier was still not sure whether it was a new element.

HENRY CAVENDISH: 1731-1810

In 1766, a wealthy and reclusive scientist in London generated inflammable air (H₂) by strong acid dissolving iron. He showed in 1780 that burning it made pure water. His report was called false because water was assumed to be an element that could not be generated. On June 24, 1783, when Lavoisier and associates burned inflammable gas they found Cavendish had been correct!

LAVOISIER AND NEW CHEMISTRY.

Having to rethink the meaning of generating water, Lavoisier suddenly understood and announced: "Inflammable air and vital air are elements. Water is a compound of them". He then named the two gases hydrogen and oxygen. He proceeded to revise all chemistry and falsify phlogiston theory. Lavoisier published his major work, "Elements of Chemistry" in 1789. In it, he **falsely** wrote that "he, Scheele and Priestley had discovered how to make this air at **about** the same time", not crediting either with priority, and thereby showing that he had read but never answered Scheele's letter.

A CENTURY OF REDISCOVERIES

- In 1924, Ibn Nafis discovery was rediscovered by an Egyptian physician, Muhyo Al-Deen Altawi, in the Prussian State Library in Berlin.
- In 1953, Yale professors John Fulton and Roland Bainton published Servetus's discovery.
- In 1955, Johns Hopkins Professor Donald Proctor republished Mayow's discovery of "spiritus nitro aereus".
- In 1992, Polish-English chemist Andrew Szydlo in London published Sendivogius discovery of *The Food of Life*.
- In 1993, the French Academy of Sciences obtained Scheele's 1774 letter to Lavoisier, secluded by Lavoisier's descendants for 219 years, finally proving Lavoisier had plagiarized both Scheele and Priestley.

Editor's note: We wish to thank Dr. Severinghaus for editing his talk on this topic to fit our space requirements.