

## Who named it in anaesthesia?

AA Abraham\*\*

<sup>a</sup> Department of Anaesthesia, Yenopoya University, Mangalore, India

\*Corresponding author, email: [jljaa@hotmail.com](mailto:jljaa@hotmail.com)

The history of modern anaesthesia started on October 16, 1846 when WTG Morton demonstrated ether anaesthesia in Massachusetts General Hospital in USA. For about one month the new born branch of medicine was without a name. The word anaesthesia as we know of now as a science and art was suggested by Oliver Holmes Wendell in November 1846. New discoveries and inventions followed. Most of them needed new names or terminologies. Some of them were named by the people who discovered them, some by the people who did studies later. Few words existed before 1846 and majority naturally came after. A peep is made into the glorious past of anaesthesia which is one of mankind's greatest discoveries. This article salutes the great personalities who coined those words, which millions of tongues speak daily around the globe.

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The history of modern anaesthesia started on October 16, 1846 when WTG Morton demonstrated ether anaesthesia in Massachusetts General Hospital in USA. For about one month the new born branch of medicine was without a name. The word anaesthesia as we know of now as a science, and art, was suggested by Oliver Wendell Holmes in November 1846. New discoveries and inventions followed. Most of them needed new names or terminologies. Some of them were named by the people who discovered them, some by the people who did studies later. Few words existed before 1846 and majority naturally came after. A peep is made into the glorious past of anaesthesia which is one of mankind's greatest discoveries. This article salutes the great personalities who coined those words, which millions of tongues speak daily around the globe. Eponymous words like "Boyle machine"; "Mapleson circuit" are not included here.

The following terms are discussed below: anaesthesia, anaesthetic agent, anaesthesiologist, ether, chloroform, oxygen, nitrous oxide, cocaine, spinal anaesthesia, regional anaesthesia, conduction anaesthesia, balanced anaesthesia, premedication, controlled respiration, neuroleptosis, lytic cocktail, neuroleptanalgesia, artificial hibernation, dissociative anaesthesia. oximeter, adrenaline and epinephrine.

### Anaesthesia, anaesthetic agent

Greek philosopher Dioscorides first used the term "anaesthesia" in first century A.D. to describe narcotic like effects of the plant mandragora. Later different dictionaries defined the term as "a defect of sensation", "privation of senses", "absence of sensation", "diminished or lost sense of feeling". But the present use of term anaesthesia, to denote a sleep like state is credited to Oliver Wendell Holmes (1809–1894) who was a US physician and the Professor of Anatomy at Harvard medical school. He wrote a letter dated November 21, 1846 to Morton suggesting the painless state be called anaesthesia and the agent that produced the sleep like state be called anaesthetic agent<sup>1</sup>. Oliver Holmes considered other words also like antineuric, aneuric, neuroleptic, neuroleptosis and neurostasis, but settled for anaesthesia because other names were too anatomical and the changes induced by ether was a physiological one. Holmes was famous for his treatise on puerperal fever and its prevention.

He was acclaimed as one of the best literary figures of his days and his work included poetry, novels and essays.

### Anaesthesiologist

In the early years, operation theatre was dominated by surgeons and anaesthesia was considered to be unimportant. And it was not financially rewarding for physicians to take up anaesthesia as a speciality.<sup>2</sup> Nurses, junior surgical residents, students, general practitioners, dentists and a small number of trained physicians were practicing anaesthesia. All were called "anaesthetists". The term "anaesthetist" was used when anaesthesia-trained physicians formed their professional bodies in USA, namely, the Long Island Society in 1905, the New York Society in 1911 and the American National Society in 1936. Later it was felt that physicians who had formal training in anaesthesia should be known by a separate name, the term "anaesthesiologist" was born. In 1945, American society's name was changed to American Society of Anesthesiologists at the suggestion of Paul Wood.

It was a New York anaesthetist Dr .M J Seifert<sup>3</sup> who coined the term "anaesthesiologist". He defined anaesthesiology as "the science that teaches the means and methods of producing various degrees of insensibility to pain with or without hypnosis. An anaesthetist is a technician and anaesthesiologist is the specific authority on anaesthesia and anaesthetics".

"Anaesthesiologist" is generally considered to be American terminology. It is used commonly in USA and Canada. In England, Ireland, Scotland, Australia, New Zealand the word "anaesthetist" is being used.

### Ether

Ether was synthesized in 1540 and names of two personalities are associated with its origin. They are Valerius Cordus (1515–1544) a German physician and botanist, and Paracelsus (1493–1541) a Swiss physician and alchemist. At that time it was known by the name of sweet vitriol or sulphuric ether. It was August Sugmund Frobenius, a German chemist, who had named the liquid, "ether" in 1730 (*Spiritus Vini Aethereus*). Ether has come from the Greek word "either" meaning upper and pure air. Morton gave the name "Letheon"<sup>4</sup> to ether when he patented the discovery and

pretended that he was using a secret agent. Lethe is a river in Greek mythology whose waters induced forgetfulness in those who drank it. Later he was forced to reveal that the liquid he was using was the ether.

### Chloroform

Chloroform was discovered independently by Von Liebig in Germany, Guthrie in New York and Soubeiran in France in 1831. But it was Jean Baptist Dumas (1800–1884) a French chemist who described its chemical composition and gave the name “chloroform” in 1834, derived from its chemical structure. Nowadays, chloroform is not used in medical practice and is one of the intermediary substances in the production of Teflon®.

### Oxygen

Oxygen was discovered by Joseph Priestly and Carl Wilhelm Scheele independently in 1771. Priestly named it “dephlogisticated” air. Phlogiston is an obsolete scientific theory which postulated existence of a fire like element called phlogiston, which was contained within combustible bodies and released during combustion. Later Antoine Lavoisier (1743–1794) who was a French chemist and biologist demolished the phlogiston theory and named the new gas “oxygen” in 1777. Oxygen comes from a Greek word meaning “becoming sharp” because he claimed that the sharp taste of acid, comes from oxygen. Later this was proved wrong.

### Nitrous oxide

Nitrous oxide was synthesized by Joseph Priestly in 1772 and called it “phlogisticated nitrous air”. In 1799 Humphrey Davy (1778–1829) who noticed its analgesic properties, suggested nitrous oxide can be used for surgical operation and proposed the name “laughing gas”. He tried it on himself, getting relief from headache and toothache. In those days nitrous oxide was used as a recreational drug. While Davy was the medical superintendent of the Pneumatic Institute in Bristol he did extensive study on gases, especially nitrous oxide and, in 1800, published a 580 page book named *Nitrous oxide*. Since he was not a surgeon, he did not pursue it further. Britannica Online<sup>5</sup> credits Humphrey Davy for the naming of nitrous oxide. He was a chemist and great inventor. He had discovered many elements, such as potassium, sodium, barium, strontium, calcium and magnesium.

### Cocaine

Cocaine is very important in the history of anaesthesia because it was the first local anaesthetic isolated and used. Albert Nieman (1834–1861), a German chemist, first isolated the alkaloid from coca leaves imported from Latin America. Coca leaves were believed to be a gift from God to the people as a token of esteem and sympathy for their suffering. Modern local anaesthesia began with the introduction of cocaine by Karl Koller, a German surgeon in ophthalmic procedures. Since it was from the leaves of coca plants it was named “cocaine”.

### Spinal anaesthesia

James Leonard Corning (1855–1923) was a New York neurologist known for his pioneering work in neuraxial block. He injected cocaine into the spinal canal of a dog and then into a healthy man. He described and coined the term “spinal anaesthesia” in 1885 and published the first text book on local anaesthesia in 1886.

### Regional anaesthesia

The term “regional anaesthesia” was first used by Harvey William Cushing (1869–1939) in 1901, to describe pain relief by nerve blocks using cocaine. He did great work on nerves blocks and the repair of

peripheral nerves. He came from a family of doctors and later described Cushing syndrome. While working in Massachusetts General Hospital, along with Ernest Amory Codman, he devised the first anaesthesia chart and called it the “ether chart”. He also started recording blood pressure intra-operatively. Later he became a great neurosurgeon, a pioneer in brain surgery and is considered the father of neurosurgery.

### Conduction anaesthesia

Heinrich Friedrich Wilhelm Braun (1862–1934) was a German surgeon who developed several new nerve blocks. He did experiments with local anaesthetics on himself. He opined that novocaine was the best available drug at that time. He was the first to introduce the addition of adrenaline to local anaesthetic drugs to prolong their action and proved that 1:200 000 is the best concentration. He coined the term “conduction anaesthesia”. He is considered as the father of local anaesthesia. In 1905 he published a book called *Local Anaesthesia* which became a classic.

### Balanced anaesthesia

In 1926 John Silas Lundy (1894–1973) of Mayo Clinic used the term “balanced anaesthesia” for a combination of premedication, inhalational anaesthesia and muscle relaxants, suggesting that good anaesthesia can be provided by a nice balance of agents and techniques. Until then, all these components of anaesthesia except the premedication was provided by a single agent, diethyl ether. Lundy was a physician and anaesthesiologist who set up the first post-anaesthetic recovery room and the first blood bank in the USA.

### Premedication

“Premedication” appeared in print, formally, in 1920 in a *Lancet* article written by Francis Hoeffler McMechan (1879–1939). The term may have been used informally before. Other words that were used previously were “preliminary medication” and “pre-anaesthetic medication”.<sup>6</sup> The drugs available at that time were atropine, hyosine and morphine. McMechan was a British general practitioner and anaesthetist. He was a great organizer and formed the American Association of Anesthetists in 1912. In 1922 he started the journal *Current Research in Anaesthesia and Analgesia*, which is a monthly now published under the name *Anaesthesia and Analgesia*. Prior to starting the journal, he was the editor of two other anaesthesia journals.

### Controlled respiration

Ralph Milton Waters (1883–1979) in 1936 used the term “controlled respiration”<sup>7</sup> for a state of apnoea produced by high ether concentration in a closed circuit with soda lime. This technique was pioneered by Guedel and Treweek and was actually temporary loss of drive due to central and peripheral respiratory depression. Later the same effect were produced by the muscle relaxants, which had nothing to do with the respiratory centre. Waters started the first college-based anaesthesia teaching in University of Wisconsin in the USA. In 1933 he was made the first professor of anaesthesia in the USA and hence in the history of anaesthesia. He was an outstanding innovator, inventing a lot of equipment, which includes endotracheal tubes, laryngoscope blades, airways, carbon dioxide absorbers, liquid vaporisers, etc.

### Neuroleptosis

Dr. Delay Jean (1907–1987), a French psychiatrist and neurologist, coined the term “neuroleptosis” in 1959,<sup>8</sup> meaning “substances that take the nerves”. Jean along with his co-worker, Pierre Deniker, did a lot of pioneering work in this field.

### Lytic cocktail

In 1949 Henri-Marie Laborit and Pierre Huguenard French, army surgeons, used a barbiturate along with a phenothiazine derivative, promethazine, to produce a state of calmness and termed it "lytic cocktail"<sup>9</sup> In 1950, chlorpromazine was developed and it replaced promethazine.

### Neuroleptanalgesia

"Neuroleptanalgesia" was coined by two Belgian anaesthetists, De Castro and Mundeleer.<sup>10</sup> They presented a paper in 1959 at a French anaesthetic conference in Lyon, describing neuroleptanalgesia, which is a combination of a neuroleptic and analgesic drugs to produce a state of artificial hibernation.

### Dissociative anaesthesia

American pharmacist Calvin Stevens synthesized ketamine in 1962 for Parke Davis. Edward Domino and Guenter Corssen, both professors of Michigan University USA, were doing studies in ketamine in early 1960s and they described it as a potent psychedelic drug which produced profound analgesia and superficial sleep. In 1964 Edward Domino coined the term "dissociative anaesthesia"<sup>11</sup> which he credits to his wife. It means "the patient is dissociated from the surroundings" or "the body and mind of the patient is dissociated".

### Artificial hibernation

In 1905 Sutherland Simpson and Percy T Herring, British anaesthetists,<sup>12</sup> did many experiments on the effect of cold on animals. They anaesthetised a monkey with ether and placed in a cold chamber and found out that when temperature falls below 25 °C, ether was no longer necessary for anaesthesia and coined the term "artificial hibernation" or "cold narcosis".

### Oximeter

Glen Allan Millikan (1906–1947) was an American physiologist, who invented the first practical oximeter in 1940. He was working for British Royal Air Force, who wanted to monitor the pilots at high altitudes in unpressurised aircrafts. His instrument was attached to the helmet of the pilot and clamped to their ear lobe. He coined the term "oximeter".

### Adrenaline and epinephrine

John Jacob Abel (1857–1938) of John Hopkins University, USA, and Jokichi Takamine (1854–1922), a Japanese scientist, were trying to isolate and purify the secretion of human adrenal gland in the last years of the 19th century. In 1897 John Jacob partially succeeded in isolating the hormone and he called it "epinephrine". But it was Takamine who finally produced the purified hormone and he called it "adrenaline"<sup>13</sup> and took out a patent for his discovery. It was the first hormone in medical history to be isolated. Later John Jacob Abel isolated and produced the crystalline form of human insulin.

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