The physician as neologist:

Portrait of Sir Thomas Browne, 1686. Wikicommons

Sir Thomas Browne

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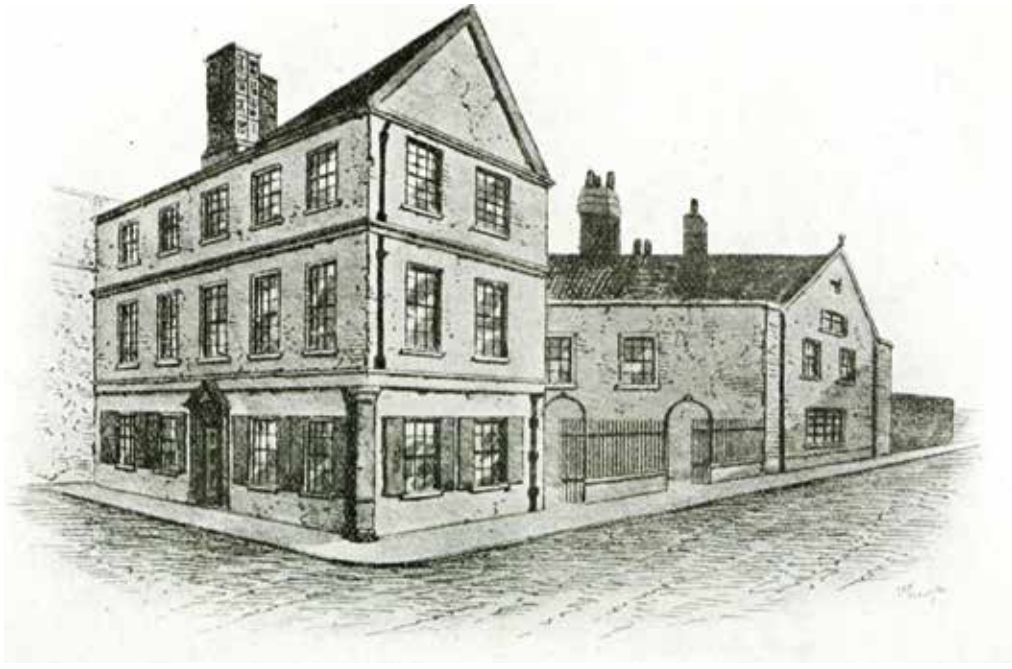
Sir Thomas Browne is not only one of the greatest physician-essayists in the English language, but also, save Shakespeare, one of the writers who introduced the most new words. He enriched the vocabulary of medicine far more than any other physician. He is said to have contributed more than 700 new words, many of which serve physicians and scientists today.[1]

The study of a word's origin provides an appreciation for ideas that are too easy to take for granted, fostering something akin to grateful mindfulness. It also deepens a dedication to using words with precision, cultivating economy and beauty in professional expression. Progress in biomedical science and clinical practice often hinges on a capacity to recognize and name new phenomena, a faculty that can be honed with practice.

The origin of many of Browne's neologisms can be traced to his superb classical education. Again and again, he drew on his deep knowledge of Latin, and to a lesser extent Greek, to forge new words. Here are 12 of the most notable of the many words Browne coined: ambidextrous, biped, capillary, coma, dilution, electricity, follicle, hallucination, medical, operable, parturition, and technology.

The man

Browne was born in London in 1605, and he died in Norwich on his birthday, October 19, 1682 at the age of 77.[2] His father, a silk merchant, died when Browne was eight-years-old. Browne's mother then married a man of questionable character, and the two eventually fled to Ireland. Browne remained in England, attending Winchester College and later Oxford University. Browne then studied



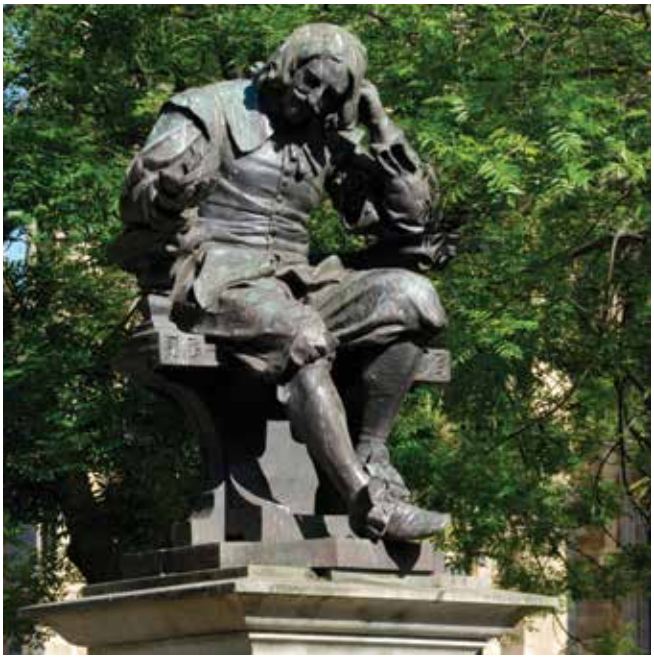
An illustration of the house previously at Haymarket, Norwich, England, where Sir Thomas Browne lived. Wikicommons

medicine at the premiere European institutions of Padua, Montpellier, and Leiden, where he received his medical degree in 1633. Returning to England, he set up practice in Norwich, then one of England's largest cities.

Browne's first literary work, *Religio Medici* (A Physician's Religion) was initially circulated in unauthorized form in 1642. The following year, Browne published an authorized version. It became a best-seller throughout Europe, making Browne famous at a relatively young age. Its intimate, even confessional tone, its curiosity and tolerance, and the beauty of its language have made it a favorite of writers in succeeding centuries. Sir William Osler prized his collection of Browne's works and once wrote of the value of reading the *Religio*:

> Carefully studied, from such books come subtle influences which give stability to character and help to give a sane outlook on the common problems of life…. Mastery of self, conscientious devotion to duty, deep human interest in human beings—these best of all lessons you must learn now or never; and these are some of the lessons you may glean from the life and lips of Sir Thomas Browne.[3]

In 1646, Browne published his most widely read work of the day, *Pseudodoxia Epidemica*, (Widely Held False Beliefs). The work is encyclopedic in its scope and debunks numerous misconceptions and outright falsehoods. Browne based his criticisms on the opinions of acknowledged authorities, reason, and empirical investigations. Revised by Browne over the course of his lifetime as new evidence came to light, it promoted a more skeptical attitude on the part of the literate public and fostered among its readers a desire to stay abreast of the newest developments in medicine and science.



A view of the commemorative statue of Sir Thomas Browne, English polymath, at Hay Hill, Norwich, England, United Kingdom. Alamy photos

Browne's final important works, both published in 1658, were *Urn Burial* and *The Garden of Cyrus*. The former was prompted by the discovery of ancient human remains in earthenware vessels, which led Browne to muse on the panoply of funereal customs around the world, the importance of bearing mortality in mind, and the fleeting nature of earthly greatness. The latter focused on the pattern of five dots on one side of a die, which Browne saw nearly everywhere in nature, supporting the notion that the world corresponds to recognizable, rational patterns.

In 1641, Browne married Dorothy Mileham, and the couple had 10 children, six of whom they outlived. It was not until late in life that Browne, who was not born into the nobility, was knighted and became Sir Thomas Browne. King Charles II was visiting Norwich, an occasion customarily accompanied by a knighting. However, the mayor of the city, a strong republican, refused the honor. This left Browne, Norwich's most prominent citizen, as the logical choice. After his death, some of Browne's books were included in the original British Library collection.

New words

There are deep insights to be gained from Browne and his contributions to the lexicons of the profession of medicine and English-speaking people all over the world by considering 12 of his neologisms. Browne presumably invented words because he was conceiving ideas for which no existing term would do. Though perhaps not doing research in the conventional sense, he was nonetheless pushing the boundaries of the existing linguistic paradigm, helping to create concepts that, in many cases, would prove indispensable to those who followed him.

Ambidextrous, from ambi (both) and dexter (right-sided)

Browne first introduced the term in *Pseudodoxia*, where he argued that handedness results more often from custom than nature. Of course, only about 90 percent of any human population is right-handed, but because right-handedness is so much more common than left-handedness, it serves well to designate people who exhibit an equal degree of

skillfulness with either hand. Over time, the term's meaning expanded to connote either mental or physical agility, such as a person with multiple diverse talents.

Biped, from bi (two) and ped (foot)

In his dialogue *Statesman*, Plato defines human beings as featherless bipeds, at which Diogenes is said to have tossed in a plucked chicken, saying, "Behold, the Platonic human!"

Browne knew well that upright posture and bipedal gait are not distinctively human features, and he introduced the term in an essay on the ostrich. Remarking on a specimen that was seven feet tall, Browne compared it to the hummingbird, which weighs only "12 grains"—the huge variation in size of birds signifying the natural world's incredible plenitude.

Capillary, from *capillaris* (of hair).

Browne introduced the term to refer to the body's passageways for water. Later, however, the term provided a hook for a conceptual breakthrough. William Harvey (1578-1657), perhaps medicine's greatest experimentalist, proved that the blood circulates through the body, away from the heart through the arteries and back toward it through the veins. There was just one problem: how did the blood get from the arteries to the veins? It was only after Harvey's death that Malphigi (1628-1694) used a microscope to visualize capillaries.

Coma, from koma (deep sleep)

Today the most common causes of coma are drug poisoning, hypoxia, and stroke. When Browne used the term, he was referring to a friend who had "fallen so ill agayne, and is in a coma, so some soporous disease, and threating apoplexis and palsy: and should bee (sic) glad to heare that hee (sic) were in some way of recovery; perhaps his last mistaken draught of the opiate, left some ill impression upon his brayne."[4]

Even nearly 400 years ago, Browne recognized both that some cases of coma were reversible and that drug misadministrations could be responsible for the condition.

Dilution, from dilutus (dissolved, washed away)

Browne introduced the term in a discussion of water, commending the long-held view that water has no nutritional value, as evidenced by the fact that many creatures do not drink it. Instead, Browne argued, water serves as a medium through which to transport nutrients throughout the body.

Contemporary use of the term was later shaped by a tradition in medicine, homeopathy, which held that "like cures like" and attempted to cure diseases by using very dilute preparations of substances that produced similar symptoms in the healthy.

Electricity, from electricus (of amber)

Ancient cultures knew that rubbing substances such as amber with cat's fur would cause them to attract objects such as feathers, the general property Browne referred to in his first use of the term.

Later, Benjamin Franklin (1706-1790) would establish that lightning is an electrical phenomenon and introduce the concepts of positive and negative charge. Even later, Galvani (1737-1798) would demonstrate that the muscles of dead frogs could be made to contract when contacted by an electric spark, a breakthrough in bioelectricity and nerve conduction.

Follicle, from follis (bag), meaning little bag

When Browne introduced the term, he was remarking on the fact that he could identify no receptacles for bile within the liver, though he knew bile is transmitted through the biliary system into the gallbladder and duodenum. He intuited that such structures must exist, but lacking the use of a microscope, he could not demonstrate them. Today, we use the term follicle in referring to the anatomy of structures as diverse as the skin, the teeth, the lymphatic system, the endocrine system, and the ovary.

Hallucination, from alussein (to be uneasy or distraught)

Browne introduced the term in a discussion of the faculty of vision, where he said that if it is abolished, it is called blindness, while if it is "depraved and receives its objects erroneously," it is hallucination.[4] While Browne's original sense of distorted vision is still very much in use, over time, the concept has been expanded to encompass other sensory forms, included auditory, olfactory, tactile, gustatory, and even command hallucinations, which are simply present in the mind without apparent sensory input.

Medical, from medicus (physician)

Browne not only introduced the term but also used it in many different senses: as it applies to remedies; as something more generally conducive to health; as something of interest or importance to a physician; as requiring the attention of or produced by a physician, as pertaining to the practice or profession of medicine; and in distinguishing vulgar or folk notions. Today, even the names of

prominent societies, such as the American Medical Association, bear Browne's neologism.

Operable, from operari (expend labor on)

Today physicians generally use the term to refer to lesions that can be treated by a surgical procedure, but Browne introduced it with a somewhat wider end in view, to explain why many people harbor false conceptions:

> And therefore also they judge of human actions by the event; for being uncapable of operable circumstances, or rightly to judge the prudentiality of affairs, they only gaze upon the visible success, and therefore condemn or cry up the whole progression.[4]

Just as some people interpret texts only literally, so do others know in events only what they see and fail to grasp underlying principles. Browne calls the practice of taking a second look "deuteroscopy."

Parturition, from parturire (to be in labor)

Brown introduced the term in a discussion of the common false opinion that when bears give birth their young are ill-formed and the mother must literally lick them into shape. Here, as in many other cases, when Browne used the word, he accompanied it with a definition, writing "parturition, or very birth itself."[4]

Browne rejected the false opinion based on a principle—that nature would not allow an unformed creature to be born. He pointed to the fact that infants struggle to be born, implying that they are already sufficiently formed to act.

Technology, from techne (craft) and logia (systematic treatment)

Browne introduced the term to refer not to devices and their functions but to terminology. The Greek term *logos* means word, and Browne highlighted the fact that some of the most important tools of thought are the concepts we think with and the words that denote them. Microscopes, stethoscopes, and CT scanners are invaluable, but even more fundamental and influential are the ideas that populate the mind.

The contribution

As one of the greatest neologists of the English language, Browne recognized that the ability to recognize, understand, and utilize ideas depends in large part on vocabulary. If we understand something in the wrong terms, we may fail to see it, operate with a misguided notion of its nature, or even misuse it. As a result, Browne savored good words, ruthlessly attacked mis-conceived or misused words, and did more than any other physician to populate the English language with new words.

Browne's field of view encompassed not just biological science and medicine but the whole world, and in exploring the connections between the microcosm and the macrocosm, he illuminated many ideas taken for granted today. Fundamental terms such as approximate, causation, coexistence, disruptive, and suicide all flow from Browne's pen. He reminds us to seek not only consistency and precision but also metaphor and beauty in our use of language, for what we say and write shapes not only what we think but also who we become.

The English language is not yet ossified, and we need neologisms as much today as ever to probe the unknown and characterize new discoveries. A relatively recent example is the word "chromothripsis," referring to the shattering and rearrangement of chromosomes in cancer-producing patterns such as the RELA-fusion-positive ependymoma. Such a concept would have not made sense just a generation ago, but progress in cancer genetics has made it indispensable. Browne would have approved.

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