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Review Article

Every Man his own Electric Physician: T. Gale and the History of Do-It-Yourself Neurology

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Abstract

We review the promotion of electrical treatments by laypeople for neurological and other conditions in a largely rural period of United States history.

Keywords:
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Introduction

Self-Treatment:

In early America, the public had long practiced medicine with home remedies and medical manuals. Before the medical field was professionalized, healing was commonly a family or community activity.[1,2] People relied on self-care for many reasons, including money, convenience, personal beliefs, and the distance and difficulty of reaching the nearest doctor, which was often a serious consideration on the American frontier.[3] Books for the public brought simplified versions of treatments to common people.

Do-it-yourself books and medical almanacs abounded in the United States, containing everything from recipes and common remedies to popular herbal concoctions, patent medicines, and astrological advice. Englishman William Buchan's Domestic Medicine, first published in 1769, ran in more than 100 editions and several languages, and was intended for general household practice, carrying the radical message that medical practice should be open to all. John Wesley, the founder of the Methodist Church, believed strongly in the democratization of medicine, and in 1747 published a low-cost medical book called Primitive Physick: An Easy and Natural Method of Curing Most Diseases. He instructed readers on how to treat illnesses with simple kitchen ingredients. His book went through twenty-four American editions.[2,4] Into this environment of innovative individualism and self-determination, these guides found a welcome audience. They both promised cures and advocated healing thyself, physician or not. Electricity could end human suffering of all kinds and so should be embraced without delay, declared Gale. If used correctly, he proclaimed that electricity could cure anything, including palsies, epilepsy, St Vitus's Dance, and headaches.

Electricity as Medicine:

The idea of using electricity, generated by torpedo fish, to treat neurological and other medical disorders dates back to the Roman Empire, though it was not until the 1770s that the numbness and cramping

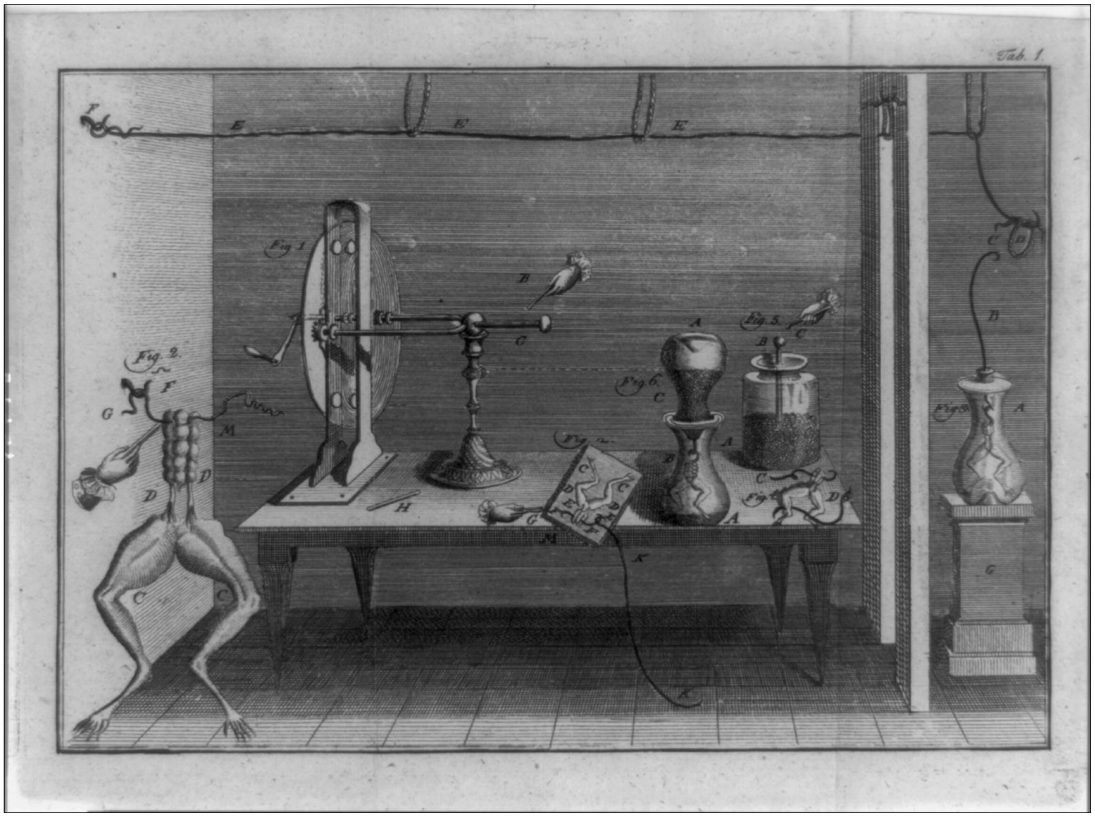


Figure 1. Galvani's frog legs. Luigi Galvani's theory of animal electricity came from his experiments electrifying dead frog legs. British Museum.

induced by the fish were understood to be caused by electricity.[5] By the late 18th century, advances in the understanding of electricity, combined with technological advances in electrical devices, made electrotherapy a real possibility. One of the new theories to gain a widespread following was that of "animal electricity," a term coined by Luigi Galvani to mean the electricity inherent in the nervous system of all animals, including humans, that was the "animating force" of life. Galvani's theory came from his observations of movement in the legs of dead frogs using electrostatic charges, which he reported in 1791 (Figure 1).[6] Pioneering electrical devices, such as the first electric generator, a rotating sulfur globe created by Otto von Guericke in 1663, the Leyden jar in 1746, and the Voltaic pile, created in 1800, stoked the public's enthusiasm for electricity and led to repeated efforts to find a medical application for these machines.[5,6] For many people, though, electricity was more entertainment than healer. Colonial American audiences paid five shillings each to see Ebenezer Kinnersley, an associate of Benjamin Franklin, electrify humans, who could then attract objects, throw sparks, and form a living circuit by joining hands.[6] Electricity's invisible but powerful force was a crowd pleaser.

The first person to suggest that electricity might have a place in medicine was German professor Johann Gottlob Kruger in 1743. He further suggested, based on his knowledge of how electricity could contract tight muscles, that it might work best with palsied limbs.[7] His student Christian Gottlieb Kratzenstein tested Kruger's theory and reported that it seemed to help some people with movement problems. Soon after, researchers and doctors began to tout electricity as a cure-all for many different medical disorders. Reports of miraculous cures, coupled with interactive performances, catapulted electricity into the public sphere where it became the preeminent science of the 18th and 19th centuries.[6]

There were few attempts at systematic research of electrotherapeutic applications in colonial America due to the lack of modern clinical research methods or regulatory bodies for medicine, as well as widespread skepticism about electricity's medical utility. The country's most famous scientist, Benjamin Franklin, remained unconvinced of electricity's effectiveness for medical conditions after conducting his own experiments on people with palsies, blindness, and hysteria.[5,7]

Medical electricity's fortunes began to change after the American Revolution. As the United States industrialized and transformed into a market economy, electricity, like almost everything else, was commodified through the sale of devices, handbooks, and demonstrations.[6] As a result, electricity passed from the hands of the genteel, like Benjamin Franklin, to commercial therapists like the man named T. Gale, who promoted electricity as a profound blessing to health. In the decentralized medical culture of the early United States, where experiment and eclecticism were the norm, electrotherapy flourished.

T. Gale:

In 1802, Dr. T. Gale proclaimed the importance of electricity to the future of medicine in the first American handbook on the theory and practice of medical electricity: "Adorable ELECTRICITY!...the friend of human life—with celestial blessing surcharged, of late descended from on high, to bid the dying live, the sick revive, the pain'd to rest in ease, the blind to see, the lame be whole."[8] Electricity could end human suffering of all kinds and so should be embraced without delay, declared Gale. If used correctly, he proclaimed that electricity could cure anything, including palsies, epilepsy, St Vitus's Dance, and headaches.[8]

Gale was one of a growing number of American physicians who sought to democratize medical knowledge in the late 18th and early 19th centuries. He was the first in the United States to reduce the practice of electric medicine to common sense and basic instruction. His 1802 book *Electricity, or Ethereal Fire, Considered* instructed readers on electrical principles, how to successfully use it to treat medical disorders, including those now considered neurological, and even how to build and maintain your own electrotherapy device.

Dr. T. Gale began offering his electrotherapy services as an itinerant physician in New York in the 1780s. Typical of itinerants, little is known about his life, including his first name, save for the information provided in his own publications. Gale was one of at least twenty itinerant physicians selling electrotherapies in New England and New York between the 1780s and 1820s.[6] While itinerants typically leave few traces in the historical record, Gale is exceptional for publishing a 300-page handbook on the

practice of medical electricity. His work is the first in what would become an explosion of 19th century independent entrepreneurial healers, and is emblematic of American efforts to understand natural forces like electricity for the purpose of practical applications such as medicine.

Electricity, or Ethereal Fire, Considered, published in 1802, was both a practical guide and a philosophical account covering such subjects as "Astronomical Electricity," "Animal and Vegetable Electricity," and "Electricity Spiritualized." Gale's work exemplified the early American impulse to combine evangelicalism with enlightenment science, reason with revelation.[6,9] Gale theorized about how medical electricity worked, weaving together centuries-old humoralism with contemporary theories of nervous physiology. For Gale, electricity was a form of "ethereal fire" of the same kind that emanated from the sun, animating the whole universe.[8] Gale explained fever as a state of deficient nervous excitement, which was, ultimately, caused by deficient ethereal fire. Electricity "administered in form and quantity" could relieve excessive tension of bodily fibers contracted by inflammation or fever, restoring their natural "elastic spring."[1] Electricity, wrote Gale, "expands every vessel…imparts electric springs to the vessels…accelerates circulation, and ferments the fluids universally."[8] Used correctly, Gale believed that electricity could cure anything.

Using electricity properly was one of Gale's primary concerns. Gale regretted that electricity had been used therapeutically before its nature and effects were better understood, despairing that these early attempts, which often failed, had clouded "the glory of this inestimable medicine."[8] Electrical treatments had been too strong, in Gale's view, and thus often caused a relapse.[8] The answer, he felt, was the use of lighter shocks and more patience, especially with palsies, which might take as much as six months of treatment to cure.

Even more than he wanted to encourage the proper use of medical electricity, Gale sought to put the resources of relief directly into the hands of the public with his book. An entrepreneur and an individualist operating in a time and a place ideally suited to his approach, Gale worked independently of any organization, choosing, instead, to directly give the public the means to heal.[6] Every man could truly be his own electric physician.

His instructions were simple and specific. For partial palsy, often resulting from stroke, Gale recommended 30 to 40 light shocks throughout the day for 15 to 30 days.[8] He instructed that recovery of voluntary motion was usually seen in the part of the body where the nerves "spring, or take their rise," and would then proceed to the extremities (Figure 2). Once this begins, the shocks were to be "passed from the origin of the nerves, in any particular part, to their termination."[8]

St. Vitus's Dance, also called Sydenham's chorea, was easily cured by 12 to 15 gentle shocks applied daily over the whole nervous system, wrote Gale. He reported the case of a young girl who had suffered from it for many months, unable to climb stairs or speak clearly. After seeing one or two doctors to no benefit, her parents brought her to Gale, who gave her 15 light shocks over her entire body for ten days, after which she was entirely cured.[8]

Epileptics, though not always cured, could always find relief with electricity. Gale reported that shocks could prevent seizures, or "fits," whenever symptoms began to appear. "It will also throw off the spasm, and bring any person out of paroxysm immediately, by passing a few shocks from hand to hand, through the breast, and from the sides of the neck, and from the top of the head, to the feet," said Gale.[8] Even if not caught before the seizure began, he stated that electricity reduced their intensity, and preserved the mental faculties.[8]

The ability to practice electrotherapy depended on access to a proper device. "Any man may use a machine," Gale promised, "but he must be well instructed, that doth it properly."[8] He prescribed a device of standard 18th century design, which came complete with a Leyden jar and an electrometer to measure the quantity of charge delivered. For those not wishing to purchase a commercial machine, Gale also included detailed instructions for the construction of an electrical device that would cost no more than two or three dollars to build, which, he claimed, was cheaper than any model that could be imported from Europe.[8] However, whether someone could actually construct a working model for such a low cost and without some prior experience is open to question. Gale himself also sold electrical devices, and like all other itinerant physicians, he charged for his services. Even so, Gale was



Figure 2. Electrotherapy. A person receives electrical shocks from a portable electrical device. FromGM, Rockwell AD. A practical treatise on the medical and surgical uses of electricity, 6th ed. New York, NY: Wm Wood & Co., 1888

unusually open in describing his methods. Most doctors, and especially itinerants, tenaciously guarded their methods as profitable secrets.[6]

The do-it-yourself approach that Gale promoted was especially attractive in an early American republic with a strong anticentralist and anti-elitist bias. The intersection of a nascent medical system, a variety of local independent healing traditions, and a paucity of restrictions on who might practice medicine fostered a flourishing marketplace for both traditional and unorthodox medical therapies in the early United States. The late 18th and early 19th centuries were also a time when medical practices and theories found themselves in flux, and the number of "nervous" disorders was perceived to be on the rise.[6] T. Gale offered himself as the nation's advance agent for electric medicine, championing its healing powers and the personal empowerment that came with the ability to treat oneself.

The end of T. Gale's story, like that of his beginning, is so far unknown, but he was among the first of what would become a tide of American entrepreneurial electrical healers in the 19th century that continued well into the 20th. Even as theories of disease changed throughout the 19th century, the idea of electricity as a great healing force accessible to all people remained just as powerful and hypnotic as it was to Gale in 1802. The germ theory of disease and the introduction of effective medications led to a decline in electrotherapy by the lay public as a cure-all, so that today's nonprofessional electrotherapies have more to do with removing unwanted hair than with restoring our body's ethereal fire. Of course, modern medicine does continue to use electricity, such as with testing of peripheral nerve abnormalities in neurological disorders, and there is active research on electrical stimulation of certain brain areas as treatments for both neurological and psychiatric disorders.

Competing Interests

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