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The nineteenth-century revival of electrotherapy

by Nancy Roth

The nineteenth century was the era of rational positivism—of faith in the individual, in the supreme power of human reason, in science as the key to understanding nature. The French and American revolutions had brought radical changes in political and social structures throughout the western world, giving the working classes access to educational and cultural privileges as well as political control. Better educated and considerably more affluent, the public was no longer so easily taken in by the wiles of a quack. The nineteenth-century charlatan had to sound like a scientist to gain a following. Medicine was changing from a

mysterious, widely mistrusted profession into a science which relied on advances in physics and chemistry for its subsequent developments.

Electrotherapy attained its greatest popularity during the late nineteenth century, a direct result of the great pioneering work in electrical science by physicists such as Volta, Matteucci, Faraday, Hertz, and Helmholtz. American physicians of the period were, with few exceptions, conservative, orthodox practitioners, who were not interested in such experimental treatments as electrical stimulation,



"Faradization" or treatment with induced currents was investigated and publicized by two American physicians, George Beard and Alphonse Rockwell, during the late nineteenth century. This illustration is from their book, *Medical and Surgical Electricity*, which became a standard textbook of electrotherapy.

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especially because it was still tainted by an old association with mesmerism and perkinsism. By midcentury, however, the science of electrophysiology was on firm footing in Europe, and even the skeptical Americans began to take notice.

Among the first American physicians to write seriously on electrotherapy was William F. Channing. His book entitled *Notes on the Medical Application of Electricity* appeared in 1849, announcing a revival of interest in this mode of treatment. At the time of writing, Channing was not convinced that the "nervous fluid" was identical with electricity, but he did quote Faraday's *Experimental Researches*: "We may be . . . able to reconvert the electric into the nervous force." Channing believed that "electricity has a positive reaction upon the vital force" and that it therefore "has a very important application in suspended animation, narcotism and stupor." He also mentions electrodiagnosis as a promising area of investigation. It is remarkable that Channing could predict so exactly at this early date these two future applications of electricity. Today, the techniques of electroresuscitation (defibrillation, pacing) and electrodiagnosis (electrocardiography, electroencephalography) have become standard practice.

In 1858, the first full-scale textbook of electromedicine appeared. Dr. Alfred C. Garratt had been a general practitioner for 20 years before taking up electrotherapeutics as a specialty. His work entitled *Medical Electricity* is not nearly so theoretical as Channing's but is instead a rather polemic defense of the author's own beliefs and practices. Garratt's writing shows a thorough familiarity with the experiments and conclusions of European physiologists whose work he cites in support of his arguments. He states categorically that "no one member of an educated medical profession can nowadays be uninformed in normal and abnormal nervo-electric phenomena (that is, in electrophysiology and electro-pathology) without discredit to himself and injustice to his patient."

The battle for acceptance was by no means won at this point, however. The next full-time specialists in electrotherapeutics were George M. Beard and Alphonse D. Rockwell, partners in medical practice in New York City. They both devoted much of their time to the investigation of electrotherapy. In 1871 they published their book, *A Practical Treatise on the Medical and Surgical Uses of Electricity*, a work which eventually went into ten American editions and several translations. A short time after the first edition appeared, however, Rockwell asked permission to read a paper before the New York Medical Society and was refused on the grounds that only quacks used electrotherapy. The reputations of both Beard and Rockwell suffered from their association with electrotherapy until 1877 when S. Weir Mitchell published *Fat and Blood* in which he

advocated the use of electricity to provide muscular exercise for patients at rest.

At the time *Fat and Blood* was published, Mitchell was a well-respected research physician, already having made many important contributions to medical literature in the fields of pharmacology, physiology, toxicology, and in particular, neurology. His endorsement of electrotherapy as a method of treatment for nervous disorders constituted the necessary stamp of approval. Thus, Beard and Rockwell were restored to the status of legitimate physicians, and the onus of quackery was removed, for all practical purposes, from electrotherapy.

During the remainder of the nineteenth century, electrotherapy steadily gained popularity as evidenced by the extraordinary proliferation of books and journals on the subject. Those more desirous of personal gain than of curing disease later invaded the field, however, and by the early 1900s, the hard-won acceptance of electricity in medicine was once again in jeopardy.

Various electrodes (from Beard and Rockwell, *A Practical Treatise on the Medical and Surgical Uses of Electricity*, New York, 1878).

