

Revealing sparks: John Wesley and the religious utility of electrical healing

PAOLA BERTUCCI*

Abstract. In the eighteenth century, dramatic electrical performances were favourite entertainments for the upper classes, yet the therapeutic uses of electricity also reached the lower strata of society. This change in the social composition of electrical audiences attracted the attention of John Wesley, who became interested in the subject in the late 1740s. The paper analyses Wesley's involvement in the medical applications of electricity by taking into account his theological views and his proselytizing strategies. It sets his advocacy of medical electricity in the context of his philanthropic endeavours aimed at the sick poor, connecting them to his attempts to spread Methodism especially among the lower classes. It is argued that the healing virtues of electricity entailed a revision of the morality of electrical experiment which made electric sparks powerful resources for the popularization of the Methodist way of life, based on discipline, obedience to established authorities and love and fear of God.

At a time when sparks entertained the upper classes with thrilling shows of electrified ladies proffering prickling kisses, electrified gentlemen turning themselves into haloed saints and electrified swords setting spirits on fire, the German professor Johann Gottlob Krüger recalled the electricians of the Republic of Letters to the utilitarian mission of the Enlightenment. In 1745 he concluded laconically that since 'electricity must have usefulness and it cannot be looked for either in theology or law, there is obviously nothing left but medicine'.¹ Though it was because of its lack of connection with the theological domain that, according to Krüger, electricity would find some sort of application in medicine, a few years later John Wesley's involvement in medical electricity would be motivated by radically different reasons. Wesley's practice as an electric healer had a distinctive 'religious utility', tightly connected

* CIS, Dipartimento di Filosofia, University of Bologna, Via Zamboni 38, 40126 Bologna, Italy. Email: paola.bertucci@unibo.it.

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¹ Johann Gottlob Krüger, *Zuschrift an seine Zuhörer, worinnen er Gedanken von der Electricität mittheilt und Ihnen zugleich seine künftigen Lectionen bekannt macht*, 2nd edn, Halle, 1745. I am grateful to Elizabeth Ihrig for attracting my attention to this quote. For an overview of the history of electricity see John Heilbron, *Electricity in the 17th and 18th Centuries: A Study of Early Modern Physics*, Berkeley, 1979. On the public dimension of electrical experiments see Simon Schaffer, 'Natural philosophy and public spectacle in the eighteenth century', *History of Science* (1983), 21, 1–43.

with his theological views and his attempt to gain new proselytes for his Methodist way of life.²

The interplay between Wesley's medical and religious work has only recently begun to be brought to light by historians. In the first half of the twentieth century, when electrotherapists were concerned about the public reception of their practices, Wesley was either blessed as a 'godparent' of electrotherapy or blamed as an 'unqualified practitioner' with 'prejudice against the medical profession'. In the latter half of the last century his medical or scientific work continued to be seen as pertaining to a domain that had nothing to do with his religious concerns and it was still reviewed with the intention of either enhancing or playing down its importance for later developments in medicine or, more specifically, electrotherapy.³ His religious commitment was regarded as an obstacle to serious scientific pursuits.⁴

Recent works have begun to connect Wesley's involvement in the art of healing to his 'practical theology', blurring the border between Wesley's natural philosophy and his religious ideals. Set in the context of eighteenth-century medical and moral reform, Wesley's activity in the art of healing has been presented as inextricably linked to the principles of charity and philanthropy advanced by the Primitive Christians.⁵ These works have cast fresh light on Wesley's commitment to medical practice, yet they have unproblematically included his support of medical electricity within his philanthropic concerns about health and hygiene. This paper aims to demonstrate that Wesley's interest in electrical healing calls for a deeper look into the features that turned

2 I am borrowing the term 'religious utility' from John Brooke, *Science and Religion: Some Historical Perspectives*, Cambridge, 1991, 152–91. By showing that the relationship between science and religion unfolded in various ways, of which conflict (traditionally the most insisted upon) is only one, Brooke highlights the 'religious utility' of science, during the Enlightenment, to counter threats to Christianity coming from deism, materialism and agnosticism.

3 W. J. Turrell, 'Three electrotherapists of the eighteenth century: John Wesley, Jean Paul Marat and James Graham', *Annals of Medical History* (1921), 3, 361–73, 361, 367; also *idem*, *John Wesley: Physician and Electrotherapist*, Oxford, 1938. Turrell, who wrote extensively about Wesley, was the president of the Duchenne Society for the Advancement of Electrical Therapy. Along similar lines see A. Wesley Hill, *John Wesley among the Physicians*, London, 1958. More recent works adopting similar perspectives include F. Schiller, 'Reverend Wesley, Doctor Marat and their electric fire', *Clio Medica* (1981), XV, 159–76; S. J. Rogal, 'John Wesley's "curious and important subject"', *Eighteenth-Century Life* (1989), 13, 79–90; W. Haas, 'John Wesley's views on science and Christianity: an examination of the charge of antisience', *Church History* (1994), 63, 378–92; H. Newton Malony, 'John Wesley and the eighteenth-century therapeutic uses of electricity', *Perspectives on Science and Christian Faith* (1995), 47, 244–54; Ruth Richardson, 'From the medical museum – John Wesley's ethereal fire', *The Lancet* (2001), 358, 932.

4 Robert Schofield, 'John Wesley and science in 18th-century England', *Isis* (1953), 44, 331–40, 331.

5 See especially Deborah Madden, 'Medicine and moral reform: the place of practical piety in John Wesley's *Art of Physic*', *Church History* (2004), 73, 741–58; *idem*, 'Enlightened empiricism of John Wesley's *Primitive Physick*', *British Journal for Eighteenth-Century Studies* (2003), 26, 41–53; *idem*, 'Contemporary reactions to John Wesley's *Primitive Physick*: or, the case of Dr William Hawes examined', *Social History of Medicine* (2004), 17, 365–78. Also H. D. Racks, 'Doctors, demons and early Methodist healing', in *The Church and Healing* (ed. W. J. Sheils), Oxford, 1982; John Cule, 'The Rev. John Wesley, M.A. (Oxon), 1703–1791: "The Naked Empiricist" and orthodox medicine', *Journal of the History of Medicine* (1990), 45, 41–63. Methodist scholars have also insisted on the religious dimension of Wesley's interest in the art of healing: Phillip W. Ott, 'Medicine as metaphor: John Wesley on therapy of the soul', *Methodist History* (1995), 33, 178–91; Randy Maddox, 'A heritage reclaimed: John Wesley on holistic health and healing' (forthcoming).

electrical sparks and other manifestations of the electric fire into both contested and contended evidence for the existence of a natural power whose role in the operations of nature was crucial to theological and philosophical schemes.⁶

As a branch of eighteenth-century natural philosophy, electricity was not theologically neutral – and consequently neither were its medical applications.⁷ Recent scholarship has extensively explored the intertwining of theological and political discourses in eighteenth-century natural philosophy. Larry Stewart has shown that Newton's Scholium to the 1713 edition of the *Principia* was perceived by contemporary readers as a clear attempt to link together the new experimental philosophy and Newton's anti-Trinitarian views.⁸ Newtonian philosophers who claimed that in the book of nature there were proofs for the existence of an immanent God inflamed those who invoked secondary material causes as the means by which God acted in the world.⁹ The diffusion of Newtonian experimental philosophy by means of public lectures and demonstrations was perceived as a threat to the authority of the established Church and aroused heated attacks from High Church Trinitarians. The electric fire became a crucial element in this context.¹⁰

This paper interprets Wesley's support for medical electricity in the light of these debates. It situates Wesley's concept of 'primitive physic' within his attempt to call the lower classes in particular to a 'holy life' based on moderation, temperance of the passions and passive obedience to political and religious authority. It starts with an examination of the early diffusion of medical electricity and of the change in the composition of the audiences for electrical experiments that it entailed. Being advertised as a cheap treatment that could be afforded by the lower classes, medical electricity fitted well into the philanthropic concerns of Methodism, a 'religion for the poor'. Wesley's advocacy of the healing virtues of electricity is set in the context of the ongoing debates over the theological significance of the electric fire and related discussions over the moral effects of public lectures and demonstrations. The paper argues that Wesley's inclusion of medical electricity within 'primitive physic' implied a revision of the morality of experiment that served to promote the popularization of his way of life. If natural sparks were to be seen as signs of God's wrath, and of human imperfection, healing sparks displayed divine benevolence, and could reveal to the faithful the path to salvation.

6 Simon Schaffer, 'The consuming flame: Electrical showmen and Tory mystics in the world of goods', in *Consumption and the World of Goods* (ed. John Brewer and Roy Porter), London, 1993, 489–526.

7 Schaffer, op. cit. (1). Jonathan Barry, 'Piety and the patient: medicine and religion in eighteenth century Bristol', in *Patients and Practitioners: Lay Perceptions of Medicine in Pre-industrial Society* (ed. Roy Porter), Cambridge, 1985, 145–75.

8 Larry Stewart, 'Seeing through the scholium: religion and reading Newton in the eighteenth century', *History of Science* (1996), 36, 123–65, also *idem*, 'The trouble with Newton in the eighteenth century', in *Newton and Newtonianism: New Studies* (ed. J. E. Force and S. Hutton), Dordrecht, 2004, 221–37.

9 Schaffer, op. cit. (6); Brooke, op. cit. (2); Chris Wilde, 'Hutchinsonianism, natural philosophy and religious controversy in eighteenth-century Britain', *History of Science* (1980), 18, 1–24; also *idem*, 'Matter and spirit as natural symbols in eighteenth-century British natural philosophy', *BJHS* (1982), 15, 99–131; Geoffrey Cantor, 'Revelation and the cyclical cosmos of John Hutchinson', in *Images of the Earth: Essays in the History of the Environmental Sciences* (ed. L. Jordanova and R. Porter), British Society for the History of Science monographs 1, Chalfont St Giles, 1979.

10 Schaffer, opera cit. (1) and (6).

‘A medicine so shockingly cheap and easy’¹¹

Wesley became interested in medical electricity at a time when itinerant lecturers were transforming natural philosophy into a commodity. Among the experiments they performed as a complement of their courses, the electrical ones were favourite entertainments for the upper classes. Spectacular electrical soirées were frequently hosted in the darkened salons of aristocratic palaces where amazed spectators would see their hair rise, their silver-embroidered clothes glitter and their gold buttons spark, and other amusing effects of the electric fire. The Fellows of the Royal Society also helped make a spectacle of electricity. In the 1730s Stephen Gray invented the famous ‘flying boy’ experiment, while in 1748 the leading electrician William Watson made electricity cross the Thames in an attempt to measure its speed.¹² Dramatic electrical experiments were also popular in the rest of Europe. The leading French electrician Abbé Nollet made a fortune out of the electrical divertissements he conceived for the French aristocracy. Starting in the 1750s, his rival Benjamin Franklin proposed a well-received notion of the electric fluid which linked dramatic atmospheric events such as lightning, thunderstorms, earthquakes and volcanic eruptions together with the vivid matter revealed by electrical machines. The controversial medical virtues of this electric matter, while engendering heated disputes in the Republic of Letters, added to the fashionability of electrical performances. Regardless of popular enthusiasm, however, the Royal Society maintained a sceptical attitude towards medical electricity.¹³ Yet, as recent studies have incisively argued, the Royal Society’s activities did not accurately reflect the interests of London society, or British society more generally.¹⁴ In spite of this cautious attitude, public lecturers such as Benjamin Rackstrow, Benjamin Martin and James Ferguson exploited the fascination exerted by the healing power of electricity and included medical electricity in their repertoires of ‘portable’ experimental philosophy.¹⁵

11 John Wesley, *The Journal of the Rev. John Wesley, A.M.* (ed. Nehemiah Curnock), 8 vols., London, 1910, iv, 51.

12 On the spectacularization of electrical experimental philosophy see Schaffer, *op. cit.* (1) and (6). On medical electricity see Schaffer’s works quoted above. Also see M. Rowbottom and C. Susskind, *Electricity and Medicine: History of Their Interaction*, San Francisco, 1984; Paola Bertucci and Giuliano Pancaldi (eds.), *Electric Bodies: Episodes in the History of Medical Electricity. Bologna Studies in the History of Science*, Vol. 9, Bologna, 2001; Geoffrey Sutton, ‘Electric medicine and mesmerism’, *Isis* (1981), 72, 375–92; Marco Bresadola and Giuliano Pancaldi (eds.), *Luigi Galvani International Workshop: Proceedings. Bologna Studies in the History of Science*, Vol. 7, Bologna, 1999; Marco Piccolino and Marco Bresadola, *Rane, Torpedini e Scintille. Galvani, Volta, e l’elettricità animale*, Turin, 2003; Paola Bertucci, ‘Sparking controversy: Jean Antoine Nollet and medical electricity south of the Alps’, *Nuncius* (2005), 20, 153–87.

13 Paola Bertucci, ‘The electrical body of knowledge’, in Bertucci and Pancaldi, *op. cit.* (12), 43–68. On Nollet see Lewis Pyenson and Jean-François Gauvin (eds.), *The Art of Teaching Physics: The Eighteenth-Century Demonstration Apparatus of Jean Antoine Nollet*, Sillery, Quebec, 2002. See also Heilbron, *op. cit.* (1).

14 See the collection of essays in the issue entitled ‘Did the Royal Society matter in the eighteenth century?’, *BJHS* (1999), 32.

15 J. Millburn, ‘The London evening courses of Benjamin Martin and James Ferguson: eighteenth-century lectures on experimental philosophy’, *Annals of Science* (1983), 40, 437–55. Also *idem*, *Benjamin Martin: Author, Instrument-Maker and Country Showman*, Leyden, 1976; *idem*, *Wheelwright of the Heavens: The Life and Work of James Ferguson, FRS*, London, 1988. See also A. Q. Morton and J. A. Wess, *Public and Private Science: The King George III Collection*, Oxford, 1993.

The thriving market for experimental philosophy provided fertile ground for a number of self-styled ‘medical electricians’ who spread the new therapy in London and the English provinces. It proved crucial to Richard Lovett, a lay clerk at Worcester Cathedral, who, after years of practice, published the first English textbook on medical electricity, *Subtil Medium Prov’d* (London, 1756), which soon became essential reading for any electrical healer. Wesley himself drew from it extensively. Lovett owed most of his knowledge of experimental philosophy to the flourishing world of public demonstrations and popular magazines. In 1739 he attended John Theophilus Desaguliers’s lectures in London and was struck by his electrical demonstrations. Ten years later he bought an electrical machine that enabled him to ‘ascertain some remarkable Cures performed on the human Body by the electrical Virtue’.¹⁶

The spread of electrical healing deserves some attention since the change in the composition of electrical audiences that it caused played an essential role in attracting Wesley’s interest. Lovett played a pivotal role in the process. One of his correspondents was John Reddall, ‘an ingenious Gentleman in London’, who asked his advice for planning a course of lectures on medical electricity. Reddall’s London lectures proved so popular as to attract more than a hundred people a day, some of whom came from the countryside. Encouraged by the result, Reddall was convinced that ‘electricity in a little time will be generally practis’d’ and that ‘we shall be such a means of publishing its Usefulness by Facts, that it will be brought into universal Practice’.¹⁷ His attempt to make electrical treatments widespread and so cheap as to be affordable to the lower classes would be a theme of the earliest medical electricians in London, including Wesley. It was one of the main concerns of John Read, a cabinet-maker’s apprentice later to become a mathematical instrument-maker in Knightsbridge. He trained himself by attending Lovett’s demonstrations and soon afterwards, as his friend Reddall enthusiastically reported to Lovett, started his own business, practising and lecturing on medical electricity ‘at the other end of town’.¹⁸ Making electrical healing cheap could prove lucrative and, in some cases, helpful for social mobility. Read, a former patient of Wesley, realized the importance of making the apparatus portable and less expensive.¹⁹ He put his manual skills to work and designed low-price portable electrical machines that could be bought by people living in the same neighbourhood:

He [Read] has just invented a smaller One, that will take to Pieces, and pack up in a Box of about a Foot Square, and is endeavouring to reduce them to a very low Price, in order to make them as public as possible.²⁰

Read’s electrical machine became a standard instrument and was acknowledged by Joseph Priestley as especially practical for medical purposes (Figure 1). Years later,

16 Richard Lovett, *Philosophical Essays*, Worcester, 1766, p. iv.

17 Richard Lovett, *The Reviewers review’d*, London, 1760, 35.

18 Lovett, op. cit. (17).

19 John Wesley, *The Desideratum, or Electricity Made Plain and Useful*, London, 1760, 60.

20 Lovett, op. cit. (17), 40. On Read’s and Wesley’s electrical machines see Willem Hackmann, *Electricity from Glass*, Alphen aan den Rijn, 1978, 126–9; *idem*, ‘The medical electrical machines of John Wesley and John Read’, in *Musa Musaei: Studies on Scientific Instruments and Collections in Honour of Mara Miniati* (ed. M. Beretta, P. Galluzzi and C. Triarico), Firenze, 2003, 261–77.

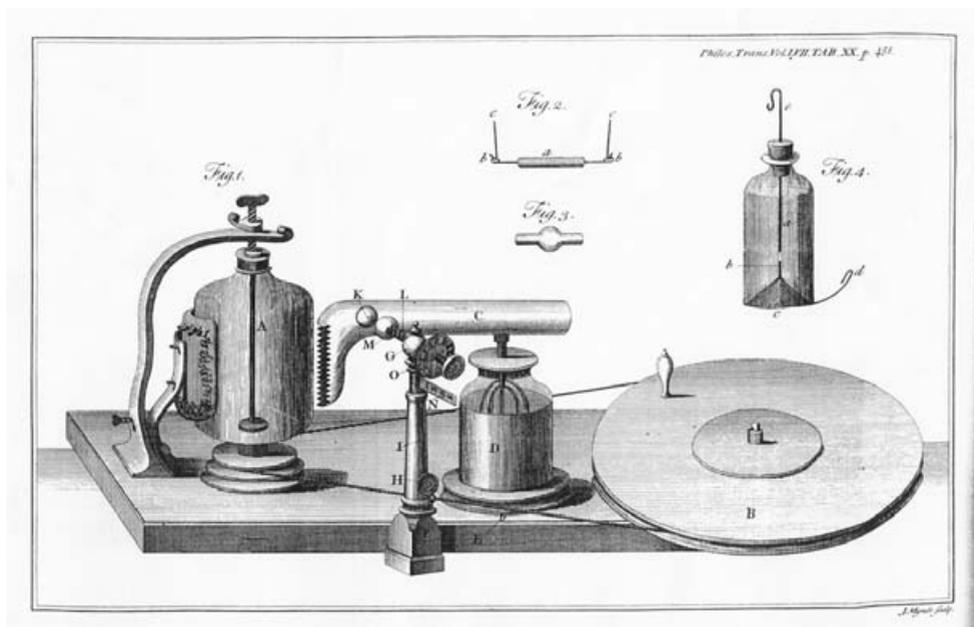


Figure 1. John Read's electrical machine with Timothy Lane's discharging electrometer. From Timothy Lane, 'Description of an electrometer invented by Mr Lane', *Philosophical Transactions*, 57 (1767), 451–60, 431, Table XX. Courtesy of the Bakken Museum for Electricity in Life.

Read would publish his meteorological journal in the *Philosophical Transactions* and would perform experiments on the electricity of the atmosphere for the Royal Society.²¹

As Roy Porter and other historians have argued, the eighteenth-century medical market offered patients many alternatives to professional medicine. According to their pockets and preferences, patients could choose between 'regular' healers (doctors, surgeons, apothecaries) or 'irregular' ones. They could also opt and indeed often did opt for self-treatment. Numerous magazines and cheap booklets offered useful information on how to preserve one's health or on how to produce home-made remedies, for those who chose to be 'their own physician'.²² The diffusion of medical electricity was

21 Joseph Priestley, *History and Present State of Electricity*, London, 1767, 530. John Read, *A Summary View of the Spontaneous Electricity of the Earth and Atmosphere*, London, 1793; *idem*, 'A meteorological journal, principally relating to atmospheric electricity', *Philosophical Transactions* (1791), 31, 185–212 and 32 (1792), 225–56; *idem*, 'Experiments and observations made with the doubler of electricity', *Philosophical Transactions* (1794), 34, 266–74.

22 On the perception of medical professionals in eighteenth-century society see Roy Porter (ed.), *Patients and Practitioners: Lay Perceptions of Medicine in Pre-industrial Society*, Cambridge, 1985; Dorothy and Roy Porter, *Patient's Progress: Doctors and Doctoring in Eighteenth-Century England*, Oxford, 1989; Joan Lane, *A Social History of Medicine: Health, Healing and Disease in England, 1750–1950*, London, 2001; Irvine Loudon, *Medical Care and the General Practitioner: 1750–1850*, Oxford, 1986; Roy Porter (ed.), *Medicine in the Enlightenment*, Atlanta, 1995; A. Cunningham and R. French (eds.), *The Medical Enlightenment of the Eighteenth Century*, Cambridge, 1990.

geared to such a do-it-yourself ethos. While electrical shows continued to entertain the upper classes, ‘electricity made useful’ – as medical electricity was often labelled – also reached the lower classes of society. Lovett suggested that neighbours and communities could share the cost of the apparatus and so benefit from the healing virtues of electricity. Reddall informed him that ‘several are getting Apparatuses in London’ and concluded that it would be ‘worth while, for any paralytic person, who can afford it, and has conveniency, to have an electrical machine in their house’.²³ Electrical treatments were advertised as cheap, safe and easy. They could be applied by anyone who had good knowledge of the electrical apparatus and familiarity with Lovett’s or, a few years later, with Wesley’s texts.

By offering healing sparks and therapeutic shocks to the lower classes, self-styled ‘medical electricians’ extended electricity’s audience beyond polite society. In social contexts that interacted little, if at all, with salon culture, theatrical performances and public entertainment, electrical healing was advertised as a therapy for the poor, just as Methodism was a religion of the poor. This change in the composition of electrical audiences played an essential role in attracting Wesley’s attention to the medical applications of electricity as it matched his ban on all manner of entertainment and his concern for the sick poor as recipients of both physical and spiritual assistance.²⁴

Physic, proselytism and salvation

As has been pointed out, charity and philanthropy stood at the core of Wesley’s commitment to the art of healing. The cheapness of electrical treatments added to their appeal. Wesley’s involvement in electrical healing followed a series of previous activities concerning healthcare, which give precious insights into the relationship between his philanthropic endeavours and his efforts to spread the Methodist way of life – based on personal discipline, austere lifestyle and passive obedience to the Crown – especially among the lower classes.²⁵

In 1747 he published *Primitive Physick, or an Easy and Natural Way of Curing Most Diseases*, a successful pamphlet addressed to the lay public that contained a list of over nine hundred recipes for medical remedies and practical directions on how to cure a large number of disorders. Costing only one shilling, it differed from similar texts that were ‘too dear for the poor man to buy, and too hard for plain men to understand’.²⁶ The booklet, which went through twenty-three revised editions during Wesley’s lifetime, also contained his views on health and sickness and their religious significance. He presented a genealogy of sickness that began with the Fall. Original sin was the event that breached the pristine state of universal spiritual and physical health. Diseases spread as the result of divine punishment. Healing was the manifestation of God’s

23 Lovett, op. cit. (17), 40.

24 On Methodism as a ‘religion for the poor’ and its political inclinations see E. P. Thompson, *The Making of the English Working Class*, London, 1980; David Hempton, *Methodism and Politics in British Society, 1750–1850*, London, 1984.

25 Hempton, op. cit. (24), Chapter 2. On Wesley’s philanthropy see Madden, ‘medicine and moral reform’, ‘Enlightened empiricism’, op. cit. (5).

26 John Wesley, *Primitive Physick*, London, 24th edn, 1792, p. ix.

mercy that allowed man to restore the pristine purity, so had to be understood as both a physical and a spiritual process. The intertwining of physical and spiritual experiences had already been emphasized by another High Church ‘medico-religionist’, the physician George Cheyne, whose work had exerted a strong influence on the earlier Methodists.²⁷ Cheyne’s emphasis on diet and regimen was fully endorsed by Wesley, who firmly opposed the use of compounded medicines. Quoting from Psalms, Wesley reminded his readers that ‘God, not man, is the Physician of souls; that it is he, and none else, who “giveth medicine to heal” our natural “sickness”’.²⁸ The natural world was a repository of cheap, easy and safe remedies that made compounded medicines superfluous. *Primitive Physick* offered a list of such remedies in relation to the disorder that they would cure. In order to complete the list, Wesley emphasized, he consulted only ‘Experience, common Sense, and the common Interest of mankind’.²⁹

Opposing ‘primitive’ to contemporary medicine, Wesley launched an attack on medical professionals who, basing their knowledge on dissections and natural philosophy, had corrupted the primitive art of healing. In pursuit of profit and self-interest, physicians deliberately tried to differentiate themselves from the rest of mankind as if endowed with ‘something more than human’; they compounded medicines that nobody else could compound, and based their knowledge on natural philosophy, rather than on experience, ‘till at length physic became an abstruse science, quite out of the reach of the ordinary men’.³⁰

Primitive Physic has been the object of recent analyses which have brought to light Wesley’s debts to ‘orthodox’ medicine and have questioned his ‘naked empiricism’, interpreting instead Wesley’s ‘involvement in the art of healing as the expression of practical piety and of Christian enlightened values’. Deborah Madden in particular has explored the Anglican roots of Wesley’s involvement in practical piety, calling attention to the influence of the Society for the Reformation of Manners and the Society for Promoting Christian Knowledge on early Methodism. Both societies placed great emphasis on medical care as a charitable duty that, while spreading Christian values, would contribute to the reformation of morality and manners. Wesley’s conception of primitive physic resulted from the alliance of the principles promoted by the societies with Primitive Christianity. Inspired by the acts of charity of the Primitive Christians, Madden argues, Wesley participated in contemporary medical reform by offering the poor the means for self-improvement. His medical philanthropy was therefore the result of his sense of duty towards the less fortunate to whom he offered spiritual and physical guidance with a view to the creation of cleaner, safer and healthier communities.³¹

27 On Cheyne’s conception of physical and spiritual healing see Anita Guerrini, *Obesity and Depression in the Enlightenment: The Life and Times of George Cheyne*, Norman, OK, 2000; also David Shuttleton, ‘Methodism and Dr George Cheyne’s “More Enlightening Principles”’, in R. Porter, op. cit. (22). See Cule, op. cit. (5).

28 John Wesley, Sermon 95: ‘On the education of children’, in *The Works of John Wesley* (ed. Albert C. Euler), 33 vols., Nashville, 1984, iii, 349.

29 Wesley, op. cit. (26), p. ix.

30 Wesley, op. cit. (26), pp. vi–vii.

31 See the essays by Madden cited in note 5 above; also Cule, op. cit. (5).

Other works, however, have given different interpretations of eighteenth-century medical philanthropy. In particular, they have highlighted its role in moulding the relation between the rich and the poor according to the ethics of religious groups. They have also emphasized the role of philanthropy in the High Church campaign against Dissent and deism.³² If Wesley's cultural mediation can be seen as an attempt to empower the lower classes by teaching them how to improve the hygienic conditions of their environment, it was nonetheless associated with the diffusion of a political theology which had passive obedience and social subordination among its main tenets and the maintenance of social order as one of its main concerns.³³ With its insistence on the connection between physical and spiritual health and on sin as an omnipresent temptation, Wesley's *Primitive Physick* emphasized the necessity for proper behaviour and prescribed moderation as the most effective preventive medicine: temperance of the passions, prayer and regimen were the recommended remedies to prevent sickness, just as passive obedience to the king was necessary to prevent political turmoil.³⁴

The attempt to link together medicine and moral instruction emerges even more clearly from the examination of Wesley's other medical philanthropic activities: the foundation of dispensaries and visits to the sick. Dispensaries were charities especially designed to deliver medical remedies to the poor. They depended on voluntary subscriptions and patients could benefit from the institution upon presentation of a letter of recommendation from one of the governors. As has been shown, such institutions played an important role in spreading the religious persuasion of the governors. In the course of the eighteenth century numerous dispensaries opened in London and the provinces, often as a result of Dissenters' philanthropy. Excluded from most professions, as well as from Oxbridge, Dissenters often envisaged a medical career as the path to social advancement. The exclusion tightened bonds of apprenticeship and patronage within the 'Dissenting intellectual network', whose members were aware that charitable institutions could be effective means for spreading political and religious beliefs.³⁵ The labouring poor were the target of their philanthropy, strictly linked to their utilitarian vision of a commercially prosperous society. Healthy labourers were crucial to such a society. Robert Kilpatrick has highlighted how the London General Infirmary, founded in 1770 by the Quaker John Lettsom, had as its primary concern the offer of medical assistance and of moral advice to the 'industrious poor'.³⁶

32 Adrian Wilson, 'The politics of medical improvement in early Hanoverian London', in Cunningham and French, op. cit. (22); Bronwyn Croxson, 'The public and private faces of eighteenth-century London dispensaries', *Medical History* (1997), 41, 127–49.

33 J. C. D. Clark, *English Society 1688–1832*, Cambridge, 1985, 235–47; Thompson, op. cit. (24); Hempton, op. cit. (24).

34 Wesley, op. cit. (26), Preface. *Idem.*, *A Calm Address to our American Colonies*, Bristol, 1775.

35 Francis Lobo, 'John Haygarth, smallpox and religious dissent in eighteenth-century England', in Cunningham and French, op. cit. (22). On the relationship between science and Dissent see Paul Wood, ed., *Science and Dissent in England, 1688–1945*, Aldershot, 2004. I. Loudon, 'The origins and growth of the Dispensary movement in England', *Bulletin of the History of Medicine* (1981), 55, 322–42; Lane, op. cit. (22), especially Chapter 5.

36 R. Kilpatrick, '"Living in the light": dispensaries, philanthropy and medical reform in late eighteenth-century London', in Cunningham and French, op. cit. (22).

In a medical market that was largely patient-dominated, Wesley's participation in the dispensary movement is indicative of his attempts to gain the trust of the sick poor in competition with Dissenters' philanthropy. Starting in 1746, Wesley opened several dispensaries both in London and in Bristol. Ten years later he also began to offer free electrical treatments. However, if Wesley's criticism of corporate medicine and his concern for the poor had much in common with Dissenters' criticism, he was far from forming alliances with them. As an Oxford-educated man and an ordained High Church Tory Anglican who always opposed the schismatic tendencies in the movement he had founded, he was fervently hostile to Dissent both at the religious and at the political level.³⁷ In the aftermath of the American colonies' revolt his political disagreement with Dissenters became heated and his advocacy of passive obedience to the Crown enraged a number of Dissenters at Bristol.³⁸

Although beyond the scope of this paper, the attack that William Hawes, an elder in Abraham Rees's Presbyterian Church, launched against *Primitive Physic* in 1776 could probably also be interpreted in the context of religious and political controversy.³⁹ With the Dissenting physician Thomas Cogan, Hawes was one of the founders of the Humane Society for the Resuscitation of the Apparently Drowned (1774) and in 1794 also founded the London Electrical Dispensary. He attacked Wesley not only by exposing what he regarded as 'ignorance of the medical art' but also with reference to his 'untenable doctrine of Christian Perfection and Primitive Physic'.⁴⁰ He took sides with the Bristol Dissenter Caleb Evans during the public controversy that followed Wesley's *A Calm Address to Our American Colonies* (1775).⁴¹ At a time of revolt Wesley's insistence on temperance of the passions, non-resistance and moderation was perceived as inextricably connected with the ideal of obedience to established authority which Dissenters generally opposed.

The connection between medical assistance and the diffusion of Methodism is particularly evident in the third kind of philanthropic activity that Wesley recommended to his followers: visiting the sick. In an attempt to involve the upper classes, he acted on their sensitive nerve of humanitarianism and benevolence, reminding them that visiting the sick poor was a moral duty, and it could help save their souls:⁴²

37 David Hempton, *The Religion of the People: Methodism and Popular Religion c. 1750–1900*, London and New York, 1996, Chapter 4. On Methodism and Dissent see Thompson, op. cit. (24).

38 On which see Clark, op. cit. (33), 216–47.

39 Madden, following G. S. Rousseau, recognizes that Hawes's 'hair-splitting' critique of Wesley's work was aimed more at the 'cloth' than at the remedies proposed in *Primitive Physick*. This interpretative line is not pursued further in their papers. Madden, 'Contemporary reactions', op. cit. (5). G. S. Rousseau, 'John Wesley's *Primitive Physick* (1747)', *Harvard Literary Bulletin* (1968), 16, 242–56, 250–2.

40 William Hawes, *An Examination of the Rev. Mr. John Wesley's Primitive Physic*, 2nd edn, London, 1780. On Hawes and the 'benevolent reformers' see Carolyn Williams, "'The luxury of doing good": benevolence, sensibility, and the Royal Humane Society', in *Pleasure in the Eighteenth Century* (ed. Roy Porter and Marie Mulvey Roberts), Basingstoke, 1996. Also Paul Langford, *A Polite and Commercial People: England 1727–1783*, Oxford, 1989, 481–93.

41 Hawes, op. cit. (40), pp. iii–iv. On the public dispute see Clark, op. cit. (33), 239.

42 Donna Andrew, *Philanthropy and the Police: London Charity in the Eighteenth Century*, Princeton, 1989. Also Williams, op. cit. (40).

Being superior in rank to them, you have the more influence on that very account. Your inferiors, of course, look up to you with a kind of reverence. And the condescension which you show in visiting them, gives them a prejudice in your favour, which inclines them to hear you with attention, and willingly receive what you say. Improve this prejudice to the uttermost for the benefit of their souls, as well as their bodies.⁴³

Sickness made people more receptive to spiritual guidance, hence visiting the sick was a work of mercy, 'a labour of love' that the believer was to perform with humility and with firmness. At times he or she could be confronted with 'the deep ignorance of some, the dullness, the amazing stupidity of others', which should not intimidate their educational goals.⁴⁴

The actual process of the visit, as Wesley directed it, casts light on the connections between spiritual and physical healing that he intended to establish. The visit would begin by showing the sick 'that you have regard for their bodies', by taking care of their practical or physical needs, and then it would proceed with enquiries 'concerning their souls'.⁴⁵ 'Lovingly and gently' the visitor would ascertain whether the visited was a sinner or a worshipper of God, then he or she would explain that 'except a man be born again, he cannot see the kingdom of God'.⁴⁶ After convincing the sick of the necessity for a new birth, and when they 'begin to fear God', the visitor would educate the new born by giving them 'one after another some plain tracts, such as the *Instructions for Christians, Awake, thou that sleepest*, and the *Nature and Design of Christianity*', and they would 'enforce what they understand, and, if possible, impress it on their hearts'.⁴⁷

As John Cule has argued, the intimate relationship with the sick that Wesley and his followers promoted also served as an effective means to popularize his views on salvation, which he tried to simplify so as to make them understandable to the lesser educated.⁴⁸ His interpretation of salvation put great emphasis on conduct and behaviour, which underpinned his ideal of 'holy life'. One of the main tenets of Anglican doctrine, salvation by faith, was by no means denied by Wesley. However, human 'proneness to evil', the 'tendency of the flesh to lust against the spirit', the love of the world, of ease, of honour, of pleasure, all conjured to lead man towards sin.⁴⁹ This view of sin as an omnipresent temptation informed Wesley's proposal of a 'method', a way of life that would give the faithful the guidelines for proper behaviour and moral conduct and therefore prevent their going astray.

In his preaching Wesley promulgated a concept of salvation that went beyond the promise of eternal happiness in the guise of an afterlife in heaven and entailed some

43 John Wesley, Sermon 98: 'On Visiting the Sick', III: 3, in *Works*, op. cit. (28), iii, 389, 390.

44 Wesley, op. cit. (43), II: 1.

45 Wesley, op. cit. (43), II: 4.

46 Wesley, op. cit. (43), III: 3; Wesley quotes from John 3: 3.

47 Wesley, op. cit. (43), III: 3., II: 5. The editor of Wesley's *Works* reminds us that the first 'tract' that Wesley quoted was his revised English extract of *Les Principes solides de la religion et de la vie chrétienne* (1705) by the French mystic Pierre Poiret (1646–1719). The second was another of his sermons, the third his abridged extract from William Law's *Christian Perfection*. See *Works*, op. cit. (28), iii, 391–2.

48 Cule, op. cit. (5).

49 John Wesley, Sermon 43: 'The Scripture Way to Salvation', III: 6, in *Works*, op. cit. (28), ii, 165.

reevaluation of the doctrine of good works.⁵⁰ Salvation, as he presented it, was a gift of God's mercy to be obtained in present life. Invoking the Scriptures in support of his views, Wesley explained that 'faith is the condition, and the only condition, of justification',⁵¹ yet it was 'incumbent on all that are justified to be zealous of good works'.⁵² Adding a practical dimension to his theology, he reminded his followers that 'if a man willingly neglects them [good works], ... he cannot grow in grace ... he cannot retain the grace he has received; he cannot continue in faith, or in the favour of God'.⁵³ Although he agreed with the Anglican doctrine on the fact that good works were not sufficient to be saved from hell, he actively promulgated the necessity of proper behaviour, based on obedience and repentance from sin. Hence the way to holiness implied practical work, among which there were works of piety and works of mercy, 'whether they relate to the bodies or souls of men'.⁵⁴

Wesley's involvement in the art of healing was therefore both a practical example of active faith and a means of spreading his credo. The personal relationships that he established with his healthy or sick brothers and sisters in the faith responded to the spiritual and physical needs of the lower classes of society, often left unattended by the established Church. Such negligence on the part of the Church made them particularly receptive to Wesley's active presence.⁵⁵ This also applied to the electrical therapies that he fervently advocated. The social composition of the patients that were cured by electricity in Wesley's dispensaries indicates that the treatment did reach the lower classes.⁵⁶ Wesley's offers in the medical market were multifaceted. Addressing primarily the lower classes, his *Primitive Physick* responded to the needs of those who would look for self-remedies, whereas both dispensaries and visits to the sick were acts of philanthropy aimed at the poor. In addressing the lower classes he was both reaching people who would not be cared for by the medical establishment and also offering a High Church alternative to Dissenters' philanthropy.

As a cheap and easy treatment, electrical therapy fitted squarely in Wesley's medical programme. In 1760 he included electricity among the home remedies listed in *Primitive Physick*, whereas the dispensary at Moorfields had begun to offer electrical treatments in 1756. It proved a great success; in the span of three years the number of patients increased so much as to induce Wesley to offer it in his other dispensaries.⁵⁷

As a 'lover of mankind' who advocated 'the virtue of this surprising medicine', Wesley was not an exception.⁵⁸ As outlined already, since its first appearance in London

50 Cule, op. cit. (5).

51 John Wesley, op. cit. (49), III: 1.

52 John Wesley, op. cit. (49), III: 5.

53 John Wesley, op. cit. (49), III: 5.

54 John Wesley, op. cit. (49), III: 9.

55 On the attitude of the social classes to Methodism see Thompson, op. cit. (24), Hempton, opera cit. (24) and (37), Langford, op. cit. (40), chapter 6.

56 Among his patients there was a rope-maker, a quilter, a warper, a mantuamaker, a leather-pipe maker, a chairmaker, a silk-winder, a weaver, a plaister, a gardener, a chairwoman, a gunmaker's daughter, two female servants, three cabinet-makers and a tallow-chandler's wife. Other patients listed in his book are indicated only by their names or simply as 'a man', 'a woman', 'a boy', 'a girl'. Wesley, op. cit. (26), 43-69.

57 Wesley, op. cit. (11), iv, 191.

58 Wesley, op. cit. (11), iv, 191.

and the provinces medical electricity was advertised as a remedy for, though not exclusively for, the sick poor. Wesley was probably the first to offer electrical treatments in his dispensaries, but in 1794 his rival William Hawes founded the London Electrical Dispensary, a charity especially conceived to offer free electrical treatment to the poor. While such an institution undoubtedly addressed the sick poor, philanthropic endeavours were good credentials for advertising one's private practice to the benevolent upper-class supporters of the charity. After years spent at the Foundry, the surgeon Henry Bemrose was invited by the governors of the Electrical Dispensary to serve there as the 'electrician to the poor'. Bemrose accepted the offer and became, with Hawes, a member of the committee that governed the institution. He published an appeal to the 'Humane and Benevolent' to support a 'Public Institution of this invaluable Remedy, for the Benefit of the afflicted Poor', which was also a means of advertising his private practice as a medical electrician; in case the benevolent supporters were curious to try the virtues of electricity in a setting that was appropriate to their status, he reminded them that they could command his attendance at their house.⁵⁹

Bemrose's case is indicative of the variegated audience for electrical therapy. In the latter half of the century medical electricity became increasingly fashionable. In spite of the general diffidence of the medical establishment, a number of self-styled electricians made a living out of it, attracting patients from both ends of the social spectrum. A few examples give a flavour of the variety of patients and practitioners. The notorious quack James Graham, who made electricity the most trumpeted remedy on offer in his flamboyant Temple of Health in London, obtained the patronage of Georgiana, Duchess of Devonshire among other wealthy patrons, yet he also boasted of the hundreds of poor people he cured in the Temple.⁶⁰ John Fell, who invested a considerable amount of money in textbooks and instruments for electrotherapy, balanced his expenses in a few months by curing forty-three patients.⁶¹ The surgeon Miles Partington ran a successful business in London, while in 1780 John Birch directed the Electrical Department at St Thomas's Hospital.⁶² The numerous publications on medical electricity, with their reports of successful cures, testify to it having spread to provincial towns as well. The growing success of electrical therapy prompted Tiberius Cavallo, one of the leading electricians at the Royal Society, to put aside his scepticism about the healing virtues of electricity and publish *An Essay on the Theory and Practice of Medical Electricity*, a successful textbook that became essential reading for any medical electrician.⁶³ Meanwhile, instrument-makers, such as George Adams, Edward Nairne and John Read, together with the previously mentioned popular demonstrators

59 Henry Bemrose, *Observations on Medical Electricity*, London, 1794.

60 Roy Porter, 'The sexual politics of James Graham', *British Journal for Eighteenth-Century Studies* (1982), 5, 199–206.

61 Wellcome Library for the History of Medicine, London, MS 1175.

62 On Partington see Tiberius Cavallo, *An Essay on the Theory and Practice of Medical Electricity*, London, 1780; John Birch, *Considerations on the Efficacy of Electricity in Removing Female Obstructions*, London, 1780.

63 Cavallo, op. cit. (62).

Benjamin Martin and James Ferguson, designed and marketed new instruments especially designed for electrical therapy.⁶⁴

The diffusion of medical electricity was geared to the thriving market of experimental philosophy. Historians have shown that by bringing natural philosophy out of elitist clubs or academies, entrepreneurial demonstrators provoked the alarmed reaction of High Church theologians who realized the potentially dangerous moral effects linked with ‘the rise of public science’.⁶⁵ Wesley’s advocacy of medical electricity was a contribution to such a reaction, though it entailed a revision of the High Church criticism of experiment.

The morality of healing sparks

Crucial to the diffusion of standard instruments, of shared protocols for assessing controversial testimony, of common languages and procedures for replicating experiments, the marketing of natural philosophy was also pivotal in disputes about the morality of public performances. With their displays of active powers, popular lecturers were inevitably tying together natural theology and experiment, offering moral lessons to their audiences. Eighteenth-century natural philosophy was characterized by the convergence of theological, moral and political issues. If the natural world were divine creation, there could be no clear border between natural philosophy, theology and morality. The practice of experiment was one and the same thing as the display of God’s powers. Hence the demonstrator conveyed to his audience lessons that were linked with his religious and moral beliefs. High Church theologians detected a challenge to established authority, both religious and political, from the diffusion of experimental philosophy. Their reaction often resulted in attacks on the public display of natural powers, which they regarded as morally illegitimate because dictated by thirst for profit, or because, as the future bishop of Norwich George Horne put it, they degraded ‘the philosopher into the mechanic’.⁶⁶

Wesley became acquainted with electricity in the years of the public dispute between the anticlerical electrical demonstrator Benjamin Martin and the High Church surgeon and FRS John Freke. The controversy epitomized the contrasts between a business-oriented approach to natural knowledge and a pietist attitude that equated public performances with conjuring shows. Freke’s electrical philosophy, indebted to the work of the German mystic Jakob Boehme, was intended as a process of spiritual enlightenment

64 George Adams, *An Essay on Electricity*, London, 1785. In 1782 Nairne obtained a patent for his medico-electrical machine. See Paola Bertucci, ‘A philosophical business: Edward Nairne and the patent medical electrical machine (1782)’, *History of Technology* (2001), 23, 41–58. See also Hackmann, op. cit. (20).

65 Schaffer, opera cit. (1) and (6); Stewart, opera cit. (8); *idem*, *The rise of Public Science: Rhetoric, Technology and Natural Philosophy in Newtonian Britain, 1660–1750*, Cambridge, 1992; Jan Golinski, *Science as Public Culture: Chemistry and Enlightenment in Britain*, Cambridge, 1992.

66 George Horne, *A Fair, Candid, and Impartial State of the Case between Sir Isaac Newton and Mr. Hutchinson*, Oxford, 1753, 54, quoted by Stewart, ‘Seeing through the scholium’, op. cit. (8), 145. On the general issue of the links between science and religion see Brooke, op. cit. (2); also John Brooke and Geoffrey Cantor, *Reconstructing Nature: The Engagement of Science and Religion*, Edinburgh, 2000. On the specific theme of the interplay between experimental natural philosophy, theology and morality in the eighteenth century see Schaffer, opera cit. (1) and (6); Stewart, op. cit. (8).

and contrasted sharply with the seemingly deist experimental philosophy that Martin was successfully marketing. Freke, who boasted of never having performed any experiment, criticized Martin's display of the electric fire as mischievous trickery whose only aim was to make experiments for money. In the belief that the electric fire in the fallen world was the manifestation of God's wrath, he also regarded the public exhibition of electric fire as morally illegitimate.⁶⁷

Supporters of electrical healing with theological preoccupations, such as Wesley, had to confront the issue of the morality of experiments. At a practical level, the applications of electricity as a medical therapy did not differ much from the most popular electrical experiments. The apparatus with which medical electricians administered their treatments was to a significant extent the same as was employed by electrical showmen to perform their spectacular demonstrations.⁶⁸ The problem of the morality of electrical healing was clearly perceived by Lovett, who was keen to shield his interest in electricity from the accusations of pursuing profit:

That mercenary view may not be thought the chief Motive of my saying so much in favour of Electricity, I should advise one of these Machines to be kept in most families that have Conveniency, Opportunity, and Leisure to make Experiments of this kind.⁶⁹

In contrast to those who made experiments for money, Lovett advocated medical electricity as a healing therapy that matched the Christian values of charity and reciprocal help. Since no medical knowledge was required in order to benefit from electricity, anyone could provide assistance to those affected by diseases. Hence, he stressed, the apparatus needed to be cheap, so that communities of people – neighbours, for example – could share its cost and easily afford a therapy that proved successful in the treatment of almost any kind of disease.⁷⁰

Wesley also emphasized the cheapness of electrical treatments and insisted that everyone should provide themselves with a cheap electrical machine. Ornament was superfluous, whereas practical details that would make it portable were to be most sought-after (Figure 2). He escaped the accusation of promoting medical electricity in search of profit and turned it against those who objected to the curative virtues of electricity. It was they who pursued mere self-interest: 'who can wonder that many gentlemen of the faculty, as well as their good friends, the apothecaries, decry a medicine so shockingly cheap and easy, as much as they do quicksilver and tar-water?'⁷¹

There was, however, more to electricity than just its cheapness. In the second half of the eighteenth century the electric fire became a controversial issue in theological debates over the moral legitimacy of public performances. Wesley was aware of the debates and his reference to tar-water hints at his sympathies for the Trinitarian natural philosophy with which Bishop Berkeley's *Siris* provided the High Church.⁷² As recent

67 Schaffer, *op. cit.* (6), especially 506–15.

68 Bertucci, *op. cit.* (13).

69 Richard Lovett, *Subtil Medium Prov'd*, London, 1756, 131.

70 Lovett, *op. cit.* (17), 40–1.

71 Wesley, *op. cit.* (11), iv, 51.

72 Marina Benjamin, 'Medicine, morality and the politics of Berkeley's tar-water', in Cunningham and French, *op. cit.* (22).



Figure 2. One of Wesley's portable electrical machines. The glass cylinder is about 30 cm in length and 11 cm in diameter. The metallic conductor is about 25 cm long. From Wesley's Chapel and Museum in City Road, London.

studies have demonstrated, Newton's religious heterodoxy and his anti-Trinitarian inclinations were no secret to his contemporary readers. In particular, the diffusion of Newtonian experimental philosophy by means of public lectures and demonstrations was perceived by the High Church as a perilous threat to its hegemony.⁷³ During his years at Oxford, Wesley became acquainted with John Hutchinson's opposition to Newton's natural philosophy and with his alternative Trinitarian cosmology based on the elements of air, light and fire as three modifications of one created ether.⁷⁴ Although the influence of Hutchinson on his works changed in the course of time, Wesley was attracted to his insistence on the Bible as the only source of true knowledge, which remained a constant theme in his works.⁷⁵ In the mid-eighteenth century the electric fire began to be incorporated in such Trinitarian cosmologies. Freke's *Essay to Shew the Cause of Electricity* provided a Trinitarian interpretation of the electric fire, adapting

⁷³ On Newton's religious heterodoxy see the essays in J. E. Force and S. Hutton (eds.), *Newton and Newtonianism: New Studies*, Dordrecht, 2004.

⁷⁴ On Hutchinson's cosmology and his criticism of Newtonian natural philosophy see Cantor, op. cit. (9); Wilde, op. cit. (9).

⁷⁵ J. C. English, 'John Wesley and Isaac Newton's "System of the world"', *Proceedings of the Wesley Historical Society* (1991), 47, 69–86.

Boerhaave's concept of fire and Berkeley's interpretation of ether to Behmenist views.⁷⁶ In Bicester the surgeon Francis Penrose, who had connections with the Hutchinsonian clergy at Oxford, published a *Treatise on Electricity* (1752) in which he criticized Newton's theory of gravitation, counterposing the alternative Trinitarian explanation in terms of the motion of a single fluid that manifested itself in the three forms of (electric) fire, light and air, which he borrowed from Hutchinson.

Meanwhile, supporters of the Newtonian experimental programme welcomed with enthusiasm the perspectives opened up by electrical philosophy. In 1752 an experiment on atmospheric electricity carried out in the French village of Marly-la-Ville offered evidence in support of Benjamin Franklin's theory, according to which the matter of lightning and that of electric sparks were one and the same thing. The episode engendered strong optimism for the advantages that would derive from the experimental manipulation of such an active power of nature:

Here Sr is a further step towards the discovery of that wonderful matter which Nature has kept hid from us ever since the creation of the world. ... The fable of Prometheus is verifd – What after this can mortals find difficult.⁷⁷

Sharing such confidence in future progress, Joseph Priestley praised the combination of business, utility and entertainment that would ensue from electrical practice. As a Dissenter with radical political inclinations, he was convinced that the 'rapid progress of knowledge' would put 'an end to all undue and usurped authority in the business of religion as well as of science'.⁷⁸

If Wesley too was 'amazed' by Franklin's results, his advocacy of medical electricity distinguished itself neatly from Priestley's interpretation.⁷⁹ He wrote his *Desideratum* drawing on a heterogeneous range of sources which included both Promethean electricians such as Franklin, Wilson, Watson and Martin and the pietist John Freke. With the disclaimer that he was 'not greatly concerned for the philosophical part, whether it stand or fall',⁸⁰ he clarified that he wanted to 'collect together the Substance of the most celebrated Writings on the Subject; and to place them in one connected View, for the Use of those who have little Time or Money to Spare'.⁸¹ His readers would thus understand the electric fire as a God-created, all-pervasive natural power that acted as the vivifying principle of an inert mechanism, responsible for destructive phenomena such as thunder, lightning, volcanic eruptions and earthquakes.

Contrary to other High Church theologians such as Freke or Horne, Wesley did not attack experiment in itself. As he made clear, the theories of electricity were derived from 'a thousand experiments', some of which he described so that any reader could

76 On Berkeley see Benjamin, op. cit. (72).

77 British Library, Add Mss 30094, ff. 78–9 (Mazéas to Benjamin Wilson, 19 November 1752).

78 Joseph Priestley, *Experiments and Observations on Different Kinds of Airs*, London, 1774, Vol. 1, p. xiv. See also Dan Eshet, 'Rereading Priestley: science at the intersection of theology and politics', *History of Science* (2001), 39, 277–307; and R. G. W. Anderson and Christopher Lawrence (eds.), *Science, Medicine and Dissent: Joseph Priestley (1733–1803)*, London, 1987.

79 Wesley, op. cit. (11), ii, 54.

80 Wesley, op. cit. (19), p. i.

81 Wesley, op. cit. (19), p. vii.

convince themselves of the amazing power of electricity. Because of its 'primitive' origin, the display of the electric fire could offer them valuable moral lessons. If thunder and lightning were signs of God's wrath, as rightly indicated by Freke, electrical healing was instead the manifestation of God's benevolence and of the possibility given to all sinners to find their way to salvation. In his revision of the morality of experiment, Wesley was responding to the High Church's preoccupation with loss of authority faced with the growing success of Newtonian experimental philosophy and its allegiance to Whig politics. If public performances were inevitably associated with religious and moral instruction, then it was a High Churchman's duty to attach a proper moral significance to them. The electric fire was a powerful resource for this project. In his concoction of electrical theories, Wesley presented the electric fire as a Janus-faced power, able to destroy as well as to heal. If in its pure state it caused dire phenomena, the merciful and 'wise Author of Nature has provided the air to temper and adapt it to our use. So temper'd, it is the grand instrument of life'.⁸² Mixed with air, the dreadful powers of electricity were mitigated and turned into healing ones, just as human passions when tempered according to the dictates of Methodism would result in political obedience and social harmony. While his views involved commonplace notions of the economy of nature, and indeed Wesley never claimed philosophical originality, the moral significance that he attributed to the display of the electric fire entailed a re-evaluation of experiment rather than its stigmatization. By witnessing such an active power of nature his patients-cum-spectators would face the imperfection of human knowledge and could thus find their way to salvation.

Electricity and the imperfection of human knowledge

When on 16 October 1747 Wesley recorded his first impression of electrical experiments, he remarked that they pointed to human ignorance rather than to a Promethean future:

How must these also confound those poor half-thinkers who will believe nothing but what they can comprehend! Who can comprehend how fire lives in water, and passes through it more freely than through air? How flame issues out of my finger, real flame, such as sets fire to spirits of wine? How these, and many more as strange phenomena, arise from the turning round in a glass globe? It is all mystery; if haply by any means God may hide pride from man!⁸³

Experiments, in his view, simultaneously displayed God's wisdom and mankind's lack of knowledge. Theoretical explanations were, on the contrary, the result of human thinking and therefore open to misjudgement and error. In 1758 he collected his thoughts on natural philosophy in *Survey of the Wisdom of God in the Creation: Or a Compendium of Natural Philosophy*, in which he harshly criticized the use of mathematical jargon, 'which is mere heathen Greek to common readers'.⁸⁴ He rejected

⁸² Wesley, op. cit. (19), 41.

⁸³ Wesley, op. cit. (11), iii, 320–1.

⁸⁴ John Wesley, *Survey of the Wisdom of God in the Creation*, Bristol, 1763, 383.

Newton's view of mathematics as an eternal and necessary truth that could even describe the operations of nature, stressing the threat to religion that the mathematical approach represented: 'I am convinced, from many experiments, I could not study to any degree of perfection either mathematics, arithmetic, or algebra, without being a deist, if not an atheist.'⁸⁵

In line with the defenders of the Trinitarian doctrine, Wesley emphasized the deist threat implicit in Newtonian and more generally in experimental philosophy. Yet experiments in themselves were not the target of his criticism. In his view, they displayed some of the less evident operations of God's creation, even though it was not philosophy but faith and knowledge of the Scriptures which could lead to true understanding. Hence, whereas experiments were not anathema in his system of thought, experimental philosophy was potentially dangerous, for it aimed at the elaboration of theories which would explain the mechanism of the world in terms of deterministic laws, dangerously close to deism.

Contrary to Wesley's empiricism, Priestley believed that the electric fire could provide a unifying principle that would connect even apparently unpredictable phenomena such as earthquakes, lightning, volcanic eruptions and aurorae borealis in one philosophical system. This view, underpinned by his conviction that the human mind could comprehend rationally the casual laws that connected natural phenomena, was contested by Wesley, who, after reading *History and Present State of Electricity*, remarked,

But how little is that all! Indeed the use of it we know; at least, in some good degree. We know it is a thousand medicines in one, in particular, that it is the most efficacious medicine, in nervous disorders of any kind, which has ever yet been discovered. But if we aim at theory, we know nothing. We are soon lost and bewildered in the fruitless search.⁸⁶

The sense of bewilderment caused by the 'deep consciousness of this our own ignorance', however, offered 'valuable lessons' about the 'Source of all knowledge and all excellence, the all-wise and all-gracious Creator'.⁸⁷ In particular 'a full conviction of our own ignorance' would teach humility, faith and resignation.⁸⁸ Nature was the place in which man confronted the 'imperfection of human knowledge' and, by contrast, was dazzled by the perfection of divine creation. The natural world was a horn of plenty with mysteries that highlighted human ignorance. Where natural theologians saw evidence of design, hence the possibility of a rational understanding of God's works of creation, Wesley insisted on humans' lack of knowledge of the natural world that ought to 'teach us a full trust in His wisdom'.⁸⁹ Overturning the rhetoric of natural theology, he presented to his followers the natural world as the place where humans' boundless desire for knowledge met its own limits. All that is beyond the fixed stars, the

85 John Wesley, Sermon 50: 'The Use of Money', I: 2, in *Works*, op. cit. (28), ii, 270.

86 Wesley, op. cit. (11), v, 247.

87 John Wesley, Sermon 69: 'The imperfection of human knowledge', IV: 1, in *Works*, op. cit. (28), ii, 584, 568.

88 Wesley, op. cit. (87), IV: 1-3.

89 Wesley, op. cit. (87), IV: 2.

seas and continents still to be discovered, the nature of light, or of electricity, pointed directly to human ignorance:

But of innumerable things above, below, and round about us, we know little more than that they exist. And in this our deep ignorance is seen the goodness as well as the wisdom of God, in cutting short his knowledge on every side, on purpose to 'hide pride from man'.⁹⁰

From this point of view, experiments were deprived of the evil connotation that Freke had emphasized decades earlier. They contributed instead to illuminating man's ignorance. Microscopes revealed the complexity of the smallest creatures, a complexity that was hidden to the human eye alone. Telescopes revealed the immensity of the created world. Electrical machines revealed the existence of a power whose meaning was unsearchable just as the wisdom of God was unsearchable.⁹¹ The vigour of electric phenomena pointed directly to the omnipotent powers of the Godhead, a feature that served Wesley's advocacy of electrical healing. Since nature was the work of God, the electric fire placed electrical practitioners at the threshold of the divine. With their small-scale display of divine powers, electrical machines bridged the gap between the natural and the artificial, for they allowed humans to re-create phenomena that occurred in nature as the expression of God's will. Electrical healers were thus mediators between the infinite powers of God and the needs of humankind. Their mission as spiritual healers found its highest expression in their management of the electric fire, which in their hands became tangible evidence of God's infinite benevolence. Primitive healing proved that the natural world still maintained some traces of the pristine Eden, unspoilt by sickness or sin. Electrical sparks revealed these traces, making them visible. Of all remedies, the electric fire could not be corrupted by any means and so 'it comes to the nearest an universal medicine, of any yet known in the world'.⁹²

Conclusion

The parable of the electric fire contained an important lesson for Wesley's followers. Natural philosophers and theologians had long debated whether nature's extraordinary phenomena should be regarded as signs of God's direct intervention in the world. Wesley was resolute in embracing a providential view of all natural phenomena:

In short, the world around us is the mighty volume wherein God hath declared himself. ... The firmament everywhere expanded, with all its starry host, declares the immensity and magnificence, the power and wisdom of its Creator. Thunder, lightning, storms, earthquakes and volcanoes, shew the terror of his wrath.⁹³

In 1755, after the Lisbon earthquake, Wesley published *Serious Thoughts Occasioned by the Late Earthquake at Lisbon*, in which he emphasized that it was pointless to investigate the natural causes of earthquakes. He claimed that the disruptive phenomenon

⁹⁰ Wesley, op. cit. (87), III.

⁹¹ Wesley, op. cit. (87), III: 2.

⁹² Wesley, op. cit. (26), p. xvii.

⁹³ John Wesley, *A Survey of the Wisdom of God in the Creation*, new edn, 5 vols., London, 1809, ii, 125.

was the clear expression of divine will, which intended to punish the Portuguese Inquisition, 'the scandal not only of all religions, but even of human nature, stood to insult both heaven and earth'.⁹⁴ There was a general warning there and it concerned the appropriate way of learning from the natural world. Being God's handiwork, nature conveyed to humankind divine directions for the right way of life, whereas abstract philosophical systems deprived the natural world of its role as a mediator between the human and the divine.⁹⁵ The difference between Wesley's view and Priestley's is striking. While Wesley emphasized the sense of bewilderment deriving from witnessing experimental performances, Priestley campaigned against the love of the marvellous that distracted philosophers from the pursuit of truth. If Wesley insisted on the cheapness of the apparatus, Priestley acclaimed the business opportunities that derived from electrical practice. Wesley interpreted earthquakes as manifestations of the divine will; but Priestley saw them as one of the various interconnected phenomena that could be explained by deterministic laws. Such differences derived from the different theological functions they believed natural philosophy would serve. Priestley's monistic determinism emphasized the power of reason to understand the works of nature, a process that would result in progress and improvement. In line with his Dissenting theology, he believed that the study of nature would feed critical views of the political and religious establishment. On the other hand, Wesley's insistence on the sense of awe towards divine power that the performance of electrical experiment provoked aimed at reminding his audience that obedience to political and religious authority was a virtue of the good Christian.⁹⁶

In his scheme, sparks revealed the divinity, but which divine attributes did they make visible? The deity that acted upon the world by means of disruptive electric fire was not unquestionably benevolent. As signs of God's wrath, electric manifestations gave humans a glimpse of the terrifying prospect of eternal punishment. At the same time, it was because of divine benevolence that the power of the electric fire was available to humankind as a healing agent. Electric sparks were powerful resources for Wesley's attempt to link together healing and moral instruction, for they simultaneously displayed the light of Heaven and the fire of Hell. Janus-like, electricity could either heal or bring destruction. It was up to the individual to follow the right path. Harshly criticizing the Newtonian conception of a providence whose action in the universe was limited to the preservation of God's creation, Wesley insisted on a personal providence that provided spiritual guidance to each individual. During his visits to the sick he would explain that temperance was the virtue required in order to avoid God's wrath and he would recommend they lead a life free from every kind of excess. When born again, they would be obedient to established authorities, both in politics and in society.⁹⁷ In his advice on nutrition and daily exercise, he insisted on sobriety and moderation, combined with 'that old Medicine: prayer and love of God'.⁹⁸ The love

94 John Wesley, *Serious Thoughts Occasioned by the Late Earthquake at Lisbon*, Bristol, 1755, 5.

95 Wesley, *op. cit.* (94), 17.

96 See note 78 above.

97 Hempton, *op. cit.* (37).

98 Wesley, *op. cit.* (26), p. xi.

of God, in particular, 'effectually prevents all the bodily disorders the passions introduce, by keeping the passions themselves within due bounds'.⁹⁹ Meanwhile, the display of the electric fire reminded believers of how divine omnipotence could manifest itself either in infinite benevolence or in eternal damnation. Awestruck by the visible manifestation of divine power, the healthy as well as the sick would therefore find the way to salvation in the essential spiritual and physical exercises that Wesley unrelentingly advocated: discipline, temperance of the passions, love and fear of God.

Rooted in his philanthropic endeavours to combine medicine and morality, Wesley's enthusiasm for electricity was not merely the result of his optimism for the 'scientific advances recorded by Priestley, Richard Lovett and Benjamin Franklin'.¹⁰⁰ In the variegated medical marketplace, and amidst a wide variety of medico-electrical entrepreneurs, his offers were imbued with moral and religious purports, which distinguished his practice from those of other self-styled medical electricians. Not that he was the only electrical supporter who combined moral instruction and natural philosophy. But the lessons that he wished his followers to draw from the display of the electric fire, and in particular from its healing properties, were radically different from other electrical enthusiasts. He included medical electricity within the primitive remedies that, while healing bodies, also healed souls by showing the sick the path to salvation. The way of life that Wesley campaigned for was informed by concerns for the preservation of the God-given establishment. If Priestley believed that the English hierarchy had reason to tremble at an electrical machine, Wesley's understanding of what electrical sparks revealed was drastically different. It was not radical politics, but the principles of obedience and subordination to religious and political authority, that electrical healing helped him spread.¹⁰¹

99 Wesley, *op. cit.* (26), p. xiv.

100 Madden, 'Enlightened empiricism', *op. cit.* (5), 50.

101 Priestley, *op. cit.* (78).