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‘INSTRUMENTS TO LAY HOLD OF SPIRITS’: TECHNOLOGIZING THE BODIES OF VICTORIAN SPIRITUALISM

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I: INTRODUCTION

Can machines establish the existence of disembodied spirits? Many Victorians thought so. In the second half of the nineteenth century, several leading British scientific practitioners, engineers, spiritualists, and journalists used simple mechanical contraptions, precision electrical apparatus, vacuum tubes, photographic plates, and self-recording instruments to try to establish whether the striking physical phenomena produced through spiritualist mediums derived from known or unknown causes. In the seventeenth and eighteenth centuries mechanical measures of immaterial entities and spirits had been criticised as self-contradictory, dangerous, and risible, but by the mid-nineteenth century, ‘spirits’ appeared to be manifesting themselves in such gross physical ways—from coded raps on tables to materialised figures—that they were seen as plausible subjects for close scrutiny with the material resources of laboratories.¹

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¹ For seventeenth and eighteenth century controversies over mechanical measures of spirit see Steven Shapin and Simon Schaffer, *Leviathan and the Air Pump: Hobbes, Boyle, and the Experimental Life* (Princeton: Princeton University Press, 1985), 207–24; Simon Schaffer, ‘Priestley and the Politics

The complex relationship between nineteenth century cultures of spiritualism and machines has been the subject of many recent historical studies.² These emphasise experimental and symbolic connections between new technologies for receiving and transmitting signals from distant intelligences and the development of spiritualistic and psychic practices for exchanging messages with the souls of the dead and living. Precision electrical instruments and practical routines for measuring faults in telegraph cables were used to determine the authenticity of spirit manifestations. Just as the electric telegraph annihilated spatial and temporal gulfs between continents, so the ‘celestial telegraph’ was upheld as a bridge between this world and the next; and just as photographs, telephones, and phonographs embodied the voices of the distant living, so mediums were seen as instruments that embodied the appearances and utterances of the distant dead.

Spiritualism was thus no different from other Victorian cultures in which the human body was increasingly represented in terms of such burgeoning technological systems as the electric telegraph and electrical power transmission. Human bodies were not only more closely integrated with and disciplined by such systems but were increasingly represented by medical and scientific practitioners as machines whose performance could be measured by instruments.³ For some historians, it was

of Spirit’, in R. G. W. Anderson and Christopher Lawrence (eds.), *Science, Medicine, and Dissent: Joseph Priestley (1733–1804)*, (London: Wellcome Trust/Science Museum, 1987), 39–53; John R. R. Christie, ‘Laputa Revisited’ in John R. R. Christie and Sally Shuttleworth (eds.), *Nature Transfigured: Science and Literature, 1700–1900* (Manchester: Manchester University Press, 1989), 45–60.

² Richard J. Noakes, ‘Telegraphy is an Occult Art: Cromwell Fleetwood Varley and the Diffusion of Electricity to the Other World’, *British Journal for the History of Science*, 1999, **32**: 421–459; Klaus Staubermann, ‘Tying the Knot: Skill, Judgement, and Authority in the 1870s Leipzig Spiritistic Experiments’, *British Journal for the History of Science*, 2001, **34**: 67–80; Arne Hessenbruch, ‘Science as Public Sphere: X-Rays Between Spiritualism and Physics’, in Constantin Goschler (ed.), *Wissenschaft und Öffentlichkeit in Berlin, 1870–1930* (Stuttgart: Franz Steiner, 2001), 89–126; Bret E. Carroll, *Spiritualism in Antebellum America* (Bloomington: Indiana University Press, 1997), 65–71; Steven Connor, *Dumbstruck: A Cultural History of Ventriloquism* (Oxford: Oxford University Press, 2000), 362–393; Pamela Thurschwell, *Literature, Technology and Magical Thinking, 1880–1920* (Cambridge: Cambridge University Press, 2001).

³ Iwan Rhys Morus, ‘The Measure of Man: Technologizing the Victorian Body’, *History of Science*, 1999, **37**: 249–282; Carolyn Marvin, *When Old Technologies Were New: Thinking About*

disenchantment with such materialistic conceptions of the human body and the effects of technological systems on society that prompted many Victorians to turn to spiritualism and psychical research for solutions to deep moral, intellectual, and religious anxieties.⁴ This chapter shows, however, that this analysis underestimates the extent to which investigators and supporters of spiritualism embraced late-nineteenth century machine cultures. They saw technology as a symbol of social progress but also believed that diverse forms of technology—from simple mechanical contraptions to precision laboratory instruments—had a plausible and important role in the progress of spiritualistic ‘science’.⁵ The period in which spiritualistic investigators pushed hardest for instrumental measures of séance ‘manifestations’—the 1860s–1870s—was not coincidentally that witnessing a dramatic rise in the status of precision measurement and mechanised observation in the sciences. As several studies have shown, the development of highly sensitive instruments and the establishment of teaching laboratories for inculcating expertise in precision measurement were integral parts of Victorian scientists’ strategies to bolster trust in their claims and to furnish Britain with the scientific skills and resources that would reinforce its industrial and economic might.⁶ Leading Victorian scientific investigators of spiritualism such as William Crookes and Cromwell Varley shared their scientific colleagues’ faith in the long-term economic benefits of ‘accurate

Electrical Communication in the Late Nineteenth Century (Oxford: Oxford University Press, 1988), 109–151.

⁴ For spiritualism as an anti-industrial movement see Brian Wynne, ‘Physics and Psychics: Science, Symbolic Action and Social Control in Late-Victorian England’, in Barry Barnes and Steve Shapin (eds.), *Natural Order: Historical Studies of Scientific Culture* (Bath: Sage, 1979), 167–186

⁵ For a typical example of a spiritualist appreciation of technological progress see [Anon.], ‘Review of Recent Progress’, in Hudson Tuttle and J. M. Peebles, *The Year-Book of Spiritualism for 1871* (Boston: William White and Co., 1871), 60–61.

⁶ Simon Schaffer, ‘Late Victorian Metrology and its Instrumentation: a Manufactory of Ohms’, in Robert Bud and Susan Cozzens (eds.), *Invisible Connections: Instruments, Institutions and Science* (Bellingham, 1992), 23–56; Graeme Gooday, ‘Precision Measurement and the Genesis of Physics Teaching Laboratories in Victorian Britain’, *British Journal for the History of Science*, 1990, 23: 23–51.

investigation' and moreover, insisted that employing the same techniques in the séance would produce evidence of phenomena that would be of long-term intellectual and spiritual benefit to mankind.⁷

This chapter builds on much recent scholarship demonstrating the importance of the proper conduct of investigators' bodies in controversies over scientific knowledge.⁸ Disputes about the constituents of natural knowledge were also fights over the bodily gestures and conventions considered appropriate to the making of such knowledge. As this paper suggests, this was especially true in Victorian spiritualism where disagreements between spiritualists and their critics over the reality of manifested spiritual bodies were also conflicts over what constituted proper scientific conduct of bodies in the séance. Spiritualists sought to defend the conventions of the spirit circle by appealing to analogies between séance bodies and scientific instruments although, as Sections III–IV show, this did little to thwart spiritualism's fiercest opponents. Magicians and popular showmen sought to show that mediumistic performances could be replicated and debunked by stage machinery, optical illusions, and simple conjuring. Physiologists and medical men, on the other hand, developed sophisticated theories of mental mechanism which appeared to explain the sloppy procedures that underpinned physical scientists' evidence for spiritualistic manifestations. Facing such criticism, scientific investigators of the séance recognised that the authority of their claims had to shift from the troublesome bodies of the séance to instruments. Several studies have illustrated the importance of

⁷ Cromwell Varley, 'Evidence of Mr. Varley', in *Report on Spiritualism of the Committee of the London Dialectical Society* (London: J. Burns, 1873), 157–172, 164.

⁸ Simon Schaffer, 'Self-Evidence', *Critical Inquiry*, 1992, **18**: 327–62; Simon Schaffer, 'Experimenters' Techniques, Dyer's Hands and the Electric Planetarium', *Isis*, 1997, **88**: 456–83; Alison Winter, *Mesmerized: Powers of Mind in Victorian Britain* (Chicago: Chicago University Press, 1999), esp. 60–108; Morus, 'Measure of Man'.

self-recording instruments in the nineteenth century sciences.⁹ Simon Schaffer has stressed how these technologies ‘distract attention from the person of the experimenter’ and promise to produce more robust evidence of the external world.¹⁰ Similarly, Lorraine Daston and Peter Galison have argued that evidence produced in this way offered ‘freedom from will—from the wilful interventions that had come to be seen as the most dangerous aspects of subjectivity’.¹¹ The quest for objective evidence of psychic and spiritualistic manifestations, devoid of ‘interventions’ from tricky mediums or deluded investigators, characterises the troubled enterprises of William Crookes and William Henry Harrison that are discussed in Sections V–VI. These practitioners used precision instruments and routines of physics laboratories to produce disembodied and therefore more trustworthy measures of spiritualistic powers. However, it was this shift from the individual to the instrument that many spiritualists found objectionable and I will be suggesting that this helps explain why laboratory technology fulfilled only a limited role in their sciences of the séance.

II: THE TROUBLED BODIES OF SPIRITUALISM

Questions of bodies dominated ‘Modern Spiritualism’ which spread from America to Britain and the Continent in the early 1850s. By the 1870s millions of people worldwide were believed to be convinced that their experiences of spiritualism, from domestic séances to public lectures given by entranced mediums, had convinced them of the truth of spiritualism’s controversial claims: that the spiritual body survived the death of the natural body which was itself a mere ‘machine’ of the spiritual body, that

⁹ Schaffer, ‘Self-Evidence’; Lorraine Daston and Peter Galison, ‘The Image of Objectivity’, *Representations*, 1992, **90**: 81–128; Thomas L. Hankins and Robert J. Silverman, *Instruments and the Imagination* (Princeton: Princeton University Press, 1995), 113–14; Soraya de Chadarevian, ‘Graphical Method and Discipline: Self-Recording Instruments in Nineteenth-Century Physiology’, *Studies in History and Philosophy of Science*, 1993, **24**: 267–91.

¹⁰ Schaffer, ‘Self-Evidence’, 362.

spirits progressed in the ‘other world’ at a rate commensurate with earthly sins, and that spirits of the dead could, under certain conditions, manifest themselves to the living.¹² Spiritualism’s claims and practices threatened many religious, intellectual, and social positions: it abolished hell-fire, it suggested that evidence for the spiritual body and the ‘future life’ could be gained through the natural as well as the supernatural faculties, and most significantly, by emphasising ‘personal experience’ of spirit, it threatened the authority of the Christian establishment.¹³

Despite agreement between spiritualists on these claims, Victorian spiritualism was extremely heterogeneous. It appealed to men and women from all classes for diverse, and often contradictory, reasons: it furnished people of all classes with evidence of the survival of deceased relatives and of personal immortality; it provided Christians with welcome evidence of the plausibility of Biblical miracles; anti-Christian plebeian autodidacts used it to forge democratic and empirical routes to spiritual salvation independently of the national church; women mediums used their skills to gain power and independence within and without the stifling domestic sphere; enterprising conjurors and showmen exploited spiritualism as a lucrative topic for exposure and ridicule; and some bourgeois Victorian physiologists and physicists seized on séance occurrences as fertile territory for probing new forces and powers of the mind.¹⁴

The most spectacular and controversial aspect of spiritualism was undoubtedly the physical and mental phenomena associated with professed spirits of the dead and

¹¹ Daston and Galison, ‘Image’, 83.

¹² For bodies as spirit ‘machines’ see, for example, [Anon.], ‘The Spirit and the Body’, *Spiritualist*, 1872, 2: 65–67, 65.

¹³ [James Burns], Editorial Note, *Medium and Daybreak*, 1873, 3: 39.

¹⁴ Janet Oppenheim, *The Other World: Spiritualism and Psychical Research in Britain, 1850–1914* (Cambridge: Cambridge University Press, 1985); Logie Barrow, *Independent Spirits: Spiritualism and the English Plebeians, 1850–1910* (London: Routledge and Kegan Paul, 1986); Alex Owen, *The Darkened Room: Women, Power, and Spiritualism in Victorian England* (London: Virago, 1989).

the spiritualist ‘mediums’. These became more complex as the century progressed. In the 1850s, they included tables that turned, furniture that rapped, and objects and mediums that levitated under the apparent influence of spirits, and mediums who had clairvoyant visions and became channels for spirits that wrote, spoke and administered cures. By the 1870s, spiritualism boasted spirit-photography, spirits who wrote and spoke directly without the need of mediums, and most spectacular of all, spirits that materialised in darkened wooden cabinets and emerged as fully formed human figures that walked, chatted, and interacted with séance participants. For many séance-goers, trickery, hallucination, self-deception and a host of other mundane explanations offered by scientific, religious, and intellectual critics, were insufficient to account for all the ‘facts’ of the séance and supported the plausibility of the existence of disembodied spirits. Although spiritualists emphasised the long-term importance of the ‘higher’ mental phenomena of spiritualism, the grosser and thus more controversial physical phenomena still furnished the very ‘evidence of the senses’ with which spiritualists believed they could combat materialism and make the spiritual body amenable to physical measurement.¹⁵

The practices developed by spiritualists to convince their publics of the credibility of their claims were strongly dependent on bodies, both that of the séance-goer and the medium, whose peculiar constitution and ‘sensitivity’ were held to make them especially ‘instruments’ for relaying intelligence and displaying physical effects.¹⁶ The séance was the undoubtedly the most revered institution in spiritualism and spiritualists worked hard to negotiate and enforce ‘rules and conditions’ of séances which would improve the chances of contacting, exhibiting, and investigating

¹⁵ Newton Crosland, *Apparitions: An Essay, Explanatory of Old Facts and a New Theory to which is Added Sketches and Adventures* (London: Trübner and Co., 1873), 9–10.

¹⁶ For mediums as instruments see [William Henry Harrison], ‘Spirit Forms’, *Spiritualist*, 1873, 3: 451–54, 451.

spirits who appeared to be as capricious and ‘self-willed’ as living humans or who might, as the medium Daniel Dunglas Home warned, ‘choose not to manifest themselves’.¹⁷ The basic thrust of many published séance rules is best summed up by the spiritualist Newton Crosland who pointed out in 1873 that the ‘behaviour and disposition’ at the séance determined ‘the character of the manifestations’.¹⁸ The best sitters were polite, passive and friendly because their sympathetic mental and bodily states created the harmonious stream of imponderable ‘elements’ with which the spirits were believed to manifest themselves.¹⁹ For this reason, genial conversation, singing in unison, and praying were encouraged as the most important first steps in achieving communion with capricious spirits. The worst sitters, according to the leading spiritualist publisher James Burns, were the ‘dogmatic’, the ‘vicious and crude’, or those whose ‘temperaments’ conflicted with those in the circle, and these were generally held to cause manifestations of a correspondingly unsatisfactory or low character.²⁰ For this reason, spiritualists scorned scientific investigators of spiritualism more for their arrogant, prankish and generally ‘unscientific’ behaviour in the séance (notably towards mediums) than their verdicts on ‘manifestations’.²¹ Since most mediums were women and individuals of delicate health, spiritualists also berated séance goers who did not treat the focus of spiritualistic activity with the civility that women and the sick enjoyed outside the darkened room. Published rules and conditions also emphasised that some experimenting with the order of the ‘spirit circle’ and other arrangements might be required for the best results.

¹⁷ Cromwell Fleetwood Varley, ‘Mr. C. F. Varley and the “Times” Discussion’, *Spiritualist*, 1873, 3: 75–76, 75; Daniel D. Home, ‘Spiritualism and Science’, *Times*, 31 December 1872, 10.

¹⁸ Crosland, *Apparitions*, 14.

¹⁹ [James Burns], ‘The Philosophy of the Spirit-Circle’, *Medium and Daybreak* 1 (1870), 308.

²⁰ James Burns, ‘How to Investigate Spiritual Phenomena’, in *Report on Spiritualism of the Committee of the London Dialectical Society* (London: J. Burns, 1873), 399–403, 401.

²¹ See, for example, William Henry Harrison’s attack on John Tyndall’s séance antics: [William Henry Harrison], ‘Professor Tyndall at a Spirit Circle’, *Spiritualist*, 1871, 1: 156–57.

Spiritualists' claim that spirits used electrical and magnetic powers to manifest themselves informed their choice of metaphors for managing bodies in the séance room. Thus, one leading spiritualist insisted that participants of opposite temperaments constituted the 'positive and negative elements' of a spiritualistic battery and suggested that a 'strongly positive temperament or disposition' should be excluded 'as any such magnetic spheres emanating from the circle will overpower that of the spirits'.²² Similarly, spiritualists not only spoke in terms of the 'celestial telegraph' to the spirit world and used a 'telegraphic' alphabet of raps to communicate with spirits, but also believed that reliable interactions between terrestrial and spiritual intelligences depended on a well-managed séance 'apparatus' as much as successful telegraphic communication required proper working instruments. As one spiritualist saw it:

If your apparatus for telegraphing is imperfect—if there is “contact” or “deflection of needles”, how liable the receiver is to misunderstand the messages, although the sender may transmit it as correctly as he possibly can under the circumstances; but who would condemn the sender of the message because the apparatus was imperfect? And just so I apprehend the messages from the spirit-world are defective, or are often considered false, because the right conditions are not provided.²³

Over twenty years later William Fletcher Barrett, the experimental physicist who helped launch the Society for Psychical Research (SPR) in 1882, used a similar instrumental analogy to defend the role of mediums. He insisted that

Physical science affords abundant analogies of the necessity for a medium, or intermediary, between the unseen and the seen. The waves of the luminiferous ether require a material medium to absorb them before they can be perceived by our senses; the intermediary may be a photographic plate, the rods and cones of the retina, a blackened surface, or the so-called electromagnetic resonators, according to the respective length of those waves; but *some* medium, formed of ponderable matter, is absolutely necessary to render the chemical, luminous, thermal, or electrical effects of these waves perceptible to us.²⁴

²² Emma Hardinge [Britten], 'Rules to be Observed for the Spirit Circle', *Human Nature*, 1868, 2: 49–52.

²³ 'H. S.', 'Magneto-Electricity and the Spirit-Circle', *Medium and Daybreak*, 1872, 2: 303.

²⁴ William Fletcher Barrett, 'Science and Spiritualism', *Light*, 1894, 13: 583–585, 585.

The power of sensitive photographic plates to mediate between the seen and the unseen was doubly useful in spiritualism. It not only made plausible the claim that photographic plates could reveal spiritual entities invisible to the naked eye but justified spiritualist notions of mediums as human analogues of those plates.²⁵

Spiritualists worked hard to create the séance environment in which mediums could work best although critics held that these were the very conditions that were designed to prevent fair enquiry. An anonymous *Saturday Review* journalist spoke for many disenchanted Victorian spiritualistic investigators when, in 1871, he lamented the fact that séances were

never performed in a straightforward open way, like any honest experiment. They are either done in the dark, or only before known believers and confederates, or within a specially prepared place; and even when they are done in the daylight, the operator is full of tricks to distract attention, and to produce mysterious bewilderment.²⁶

Indeed it was because the success of séances appeared to be so contingent on the specific bodies and conditions that other critics could emphasise differences between séances and technology. Henry Dircks, a civil engineer, and as we will see in the following section, co-inventor of a famous phantasmagorical illusion, made this point succinctly in 1872 when he pointed out that nothing was performed in spiritualism

without a *séance*, and an amazing amount of childish jugglery. If I promised to convulse a man's joints, I produce a small battery at any time and in any place, and the thing is done, even though every man should be a profound disbeliever and inveterate opponent. Besides, I never fail. Man, woman, or child, old or young, alike are all convulsed on their connecting the poles of the galvanic battery. Let spiritualists take this for their guidance, and if they then succeed they will never after have to complain of irritating and taunting discussions and correspondence.²⁷

²⁵ For mediums as photographic plates see, for example, Napoleon Bonaparte Wolfe, *Startling Facts in Modern Spiritualism*, 2nd edn, (Chicago: Religio-Philosophical Publishing House, 1875), 461. For spirit photography see Jennifer Tucker, 'Photography as Witness, Detective, and Impostor', in Bernard Lightman (ed.), *Victorian Science in Context* (Chicago: Chicago University Press, 1997), 378–408.

²⁶ [Anon.], 'Spiritualism', *Saturday Review*, 21 October, 1871, 518–19, 519.

²⁷ Henry Dircks, 'Spiritualism and Science', *Times*, 2 January, 1873, 12.

The very alacrity with which spiritualists promulgated rules of the séance rules illustrates their ongoing struggles to manage this aspect of their culture and to convince sceptics that adherence to the rules would eventually give séances the reliability on which Dircks insisted. Reports of séances in Victorian spiritualist periodicals testify to the frequent occasions when order broke down in the darkened room. This was often caused by disagreements between séance-goers over the balance between conditions needed for conducting satisfactory tests and those demanded by the medium for producing her phenomena. For some séance-goers, the latter conditions were so contrived that they had to be broken in the interests of truth. In 1873, for example, the lawyer and spiritualism William Volckman attended a séance in Hackney given by the young medium Florence Cook, whose *pièce-de-resistance* was the production of a fully-formed materialised spirit, ‘Katie King’, from within a darkened cabinet adjoining the séance room.²⁸ At one point during the séance Volckman grew so suspicious of the physical similarity between Miss Cook and ‘Katie King’ that he seized the spirit form and declared it to be the medium masquerading as her ghost. For Volckman and his allies, this constituted a satisfactory exposure of a star medium, but Miss Cook’s supporters, who had established confidence in her genuineness over a long series of séances, vigorously defended their medium and denounced Volckman. Miss Cook’s supporters were as outraged by Volckman’s behaviour as his sensational revelation about the medium. Since Volckman had broken his agreement to behave in a civil and polite fashion in the séance and decided to grab the female ‘spirit form’ he had disqualified himself as a credible investigator and undermined the reliability of his evidence. His actions

were not only judged improper but dangerous: since spiritualists believed that the materialisation process involved spirits borrowing energy and matter from the medium, intrusions (whether by people or rays of light) on the bodies of the spirit or medium were thought to seriously harm or even kill the medium. This hypothesis was frequently invoked by spiritualists to explain why the spirit manifestations looked suspiciously like their mediums and bore such gross and crude physical attributes as beating hearts, illiteracy, and onion-smelling breath. Few critics, however, were convinced by this argument and found it hard to reconcile these attributes with their notions of the refined ‘spiritual’ body.²⁹

Despite their confidence in Miss Cook’s credibility and Volckman’s disingenuousness, Miss Cook’s supporters were deeply wounded by the incident and needed to produce and promulgate more satisfactory evidence that the medium and her spirit form were bodily distinct. Their chief strategy was to appeal to the authority of William Crookes, the distinguished analytical chemist and scientific journalist who, as we will see in Section V, had by 1873 already established himself as one of the least hostile scientific investigators of spiritualism. Crookes developed a close friendship with Miss Cook, ‘Katie’, and her allies and convinced them that, unlike Volckman, his strategies for investigating the medium and spirit would respect the fact that both needed to be treated as ‘ladies’. Indeed, he was so effective at convincing spiritualists of the honour of his intentions, that he was able to bend séance rules to meet his own notions of adequate testing: he gained Miss Cook and Katie’s consent to enter the darkened cabinet where he claimed to see the spirit form

²⁸ For this episode and extensive discussion of the fraught relationship between Victorian spiritualistic investigators and women mediums see Owen, *Darkened Room*, esp. 41–74.

²⁹ For cynical treatments of the physicality and crudities of spirit manifestations see John Nevil Maskelyne, *Modern Spiritualism: A Short Account of its Rise and Progress, with Exposures of So-Called Media* (London: Frederick Warne & Co., 1876), 70–79; Charles Maurice Davies, *Mystic London; Or, Phases of Occult Life in the Metropolis* (London: Tinsley Brothers, 1875), 319.

standing next to the medium, he was allowed to clasp and kiss the spirit form and observe how its body differed from Miss Cook's, and he took a series of photographs of 'Katie' illuminated by powerful electric light.³⁰

While this achievement raised Crookes's status among Miss Cook's defenders and many other spiritualists, it threatened it in other quarters. What provoked scorn was Crookes's dubious behaviour towards the medium. The friendship and intimacy with Miss Cook which Crookes believed was crucial for conducting important spiritualistic experiments caused numerous rumours to spread within and without spiritualist circles regarding the propriety of his actions. While many spiritualists believed he had, unlike most scientific men, treated mediums with the proper respect, others feared this was at the cost of proper experimental practice. Charles Maurice Davies, the nonconformist clergyman and wry *Times* commentator on Victorian London's 'mystic' cultures, saw many Crookes-Cook séances and thought the 'effusive Professor' had developed an intimacy and dangerous 'prejudice' towards his experimental subject that was 'scarcely becoming a F.R.S'.³¹ The Victorian conjuror John Nevil Maskelyne was more savage and thought Crookes's account of the 'Katie's' physical beauty revealed that the scientist was 'too far gone for "investigation"'.³² As in early Victorian cultures of mesmerism, the performance of investigators was at least as important in public judgements of spiritualism as the startling phenomena itself.³³

³⁰ William Crookes, 'Spirit-Forms', *Spiritualist*, 1874, 4: 157–158; idem, 'The Last of Katie King: The Photographing of Katie King by the Aid of the Electric Light', *Spiritualist*, 1874, 4: 270–271.

³¹ Davies, *Mystic London*, 319.

³² Maskelyne, *Modern Spiritualism*, 145. For Crookes and Florence Cook see Trevor H. Hall, *The Spiritualists: The Story of Florence Cook and William Crookes* (London: Gerald Duckworth & Co., 1962); R. G. Medhurst and K. M. Goldney, K. M., 'William Crookes and the Physical Phenomena of Mediumship', *Proceedings of the Society for Psychical Research*, 1964, 54: 25–156, 48–74.

³³ Winter, *Mesmerized*, 64–66.

Despite their efforts to regulate the behaviour of séance-goers and to defend the genuineness and innocence of mediums, spiritualists faced mounting criticism that the bodies on which they depended could not be trusted. At no period was this more acute than in the 1860s and 1870s which witnessed the development of the grossest materialisations of the spirit body, a string of exposures of celebrity mediums, and the most savage attacks on the reliability of Crookes and other scientific investigators of the spirit world. As we shall see in the following section, the most potent attacks on spiritualisms' bodies concerned their relationship with and similarity to machines.

III: MACHINES AND ILLUSIONISTS/GHOSTS AND MEDIUMS

In 1858 an American Unitarian minister explained that his conviction in the genuineness of spiritualistic manifestations was partly based on the fact that despite searching for 'machinery, jugglery, or imposture' in the séance room where he witnessed the manifestations, he failed to 'find something mundane a sufficient cause for all these wonders.'³⁴ His reference to machinery undoubtedly alluded to the fact that since their first appearance in ante-bellum America, spiritualistic phenomena had not only been widely compared to the tricks of ancient and modern wizards, but had been explicitly imitated by illusionists and showmen using clever 'machinery'. Some of the greatest magicians and showmen of the nineteenth century—including P. T. Barnum, Robert Houdin, 'Professor' John Henry Pepper, 'Professor' John Henry Anderson, John Nevil Maskelyne and George Cooke—exploited Victorian audiences' taste for spectacle, mystery, and the supernatural and staged fake spiritualist phenomena that they believed were not only more thrilling than mediums' dark

³⁴ Allen Putnam cited in Robert Hare, *Experimental Investigation of the Spirit Manifestations, Demonstrating the Existence of Spirits and their Communion with Mortals* (New York: Partridge & Brittan, 1855), 59.

séances but more honest because, unlike mediums, they drew attention to the technology behind spirits.

The performances of the celebrated nineteenth century Scottish conjuror, ‘Professor’ Anderson, the ‘Wizard of the North’, powerfully illustrate the uses to which Victorian showmen put machinery in their bid to destroy the livelihoods of mediums.³⁵ During an American tour in the late 1840s, Anderson vowed to ‘discover the mechanism’ of what he regarded as the spiritualistic ‘imposture’ and on returning to Britain, practised what he preached in numerous shows that purported to reveal the chicanery behind mesmerism, table turning and spirit-rapping.³⁶ As suggested by the following account of a performance in London, Anderson believed that by replicating spiritualistic phenomena with visible machines, he could distinguish himself from ‘conjurors in disguise’ who concealed the machinery by which they produced ‘spirit’ manifestations for fee-paying customers.

Suspending two glass bells from the ceiling, placing a table on a platform extended across the centre of the pit, and setting up an automaton figure on the stage, [Anderson] made each in turn answer every question that he put as to the number of letters composing a given word, or the number of pips on a card drawn from the pack. The bells answered by ringing, the table by raps, and the automaton by signs. The means by which the replies were obtained was not stated. Anderson merely informed the audience that they were purely mechanical, and not more so than those employed by the Spiritualists, whom he denounced as impostors.³⁷

To protect their livelihoods, however, conjurors could not be completely open about their stage mechanisms and this encouraged speculation on the source of their astonishing skills. Although they claimed to show how spiritualism was done with simple prestidigitation and such resources as ropes, wires, false doors, mirrors, and phosphorescent powder, many spectators were still puzzled by the extraordinary performance. Indeed, many spectators found it difficult to distinguish between

³⁵ Cited in Dawes, *Great Illusionists*, 112.

³⁶ Thomas Frost, *The Lives of the Conjurors* (London: Tinsley, 1876), 249–50.

³⁷ For Anderson see Dawes, *Great Illusionists*, 108–17. Frost, *Conjurors*, 252.

conjurers and mediums and some spiritualists even believed magicians were mediums in disguise.³⁸ Charles Maurice Davies summed up these dilemmas when, after attending several séances and magic shows in the mid-1870s, he reflected that one conjuror's mechanical imitation of spiritualistic phenomena was 'quite as wonderful as anything I have ever witnessed at a séance', another was too 'lumbering' to count as a satisfactory 'reproduction', but that both the conjuror and the spiritualist 'claims to be Moses, and denounces the others as mere magicians'.³⁹

Davies's remarks were part of a much broader commentary on the anti-spiritualist illusionists of Victorian London many of whom, like 'Professor' Pepper and Maskelyne and Cooke, made machines central to their acts. The immensely successful phantasmagorical apparatus that Pepper billed as 'Pepper's Ghost' was a joint invention with Henry Dircks whose primitive 'Dircksian Phantasmagoria' Pepper helped Dircks turn into a popular stage effect.⁴⁰ The invention involved shining a bright lamp onto an actor who played out their role in a compartment beneath the main stage. Light from the actor was projected onto a large pane of glass held at an angle to the front of a stage where, from the perspective of audience members, there appeared a spectral image that appeared to manifest itself out of nowhere [Figure 1]. It was first demonstrated in 1862 at London's Royal Polytechnic Institution, a popular metropolitan hall of science where Pepper also enjoyed fame for spectacular displays of optical illusions, magic lanterns, chemical reactions, and electrical machines.⁴¹ Despite their later fierce priority dispute, Pepper and Dircks

³⁸ See, for example, the views of the spiritualist Benjamin Coleman cited in Maskelyne, *Modern Spiritualism*, 67.

³⁹ Davies, *Mystic London*, 355–56, 359.

⁴⁰ Dawes, *Great Illusionists*, 83–90.

⁴¹ [John Henry] Pepper, *The True History of the Ghost; and all About Metempsychosis* (London: Cassell & Company, 1890); Dawes, *Great Illusionists*, 83–90. For the Royal Polytechnic Institution see Richard D. Altick, *The Shows of London* (Cambridge MA: Harvard University Press, 1979), 375–89; Iwan Rhys Morus, *Frankenstein's Children: Electricity, Exhibition, and Experiments in Early-Nineteenth Century London* (Princeton: Princeton University Press, 1998), 75–83.

agreed that ‘The Ghost’ served their mutual interests in promoting rational entertainment and to distinguish them from what Pepper called ‘traders in spirits’. For Dircks, ‘The Ghost’ fitted squarely within the tradition of David Brewster’s *Letters on Natural Magic* (1833) and other eighteenth and nineteenth century works which reduced apparently supernatural phenomena and miraculous machines to discernable operations of light, sound and other natural forces.⁴² Unlike ancient wizardry and modern spiritualism, the natural magic embodied in the ‘Ghost’ made no pretension to an occult science, but on the contrary tends to dissipate many vulgar errors, by disabusing the public mind, even on matters long considered supernatural. Concave mirrors, magic lanterns, phantasmagoria, and similar optical instruments, afford ample illustration of the happy tendency of modern investigation over the once degrading employment of superior knowledge only to impose on rather than enlighten the public.⁴³

Like the conjurors with whom they competed for audiences, Dircks and Pepper mechanised and demystified phenomena that spiritualists claimed were genuinely novel.⁴⁴ However, it was audiences’ understanding of the mechanism of the ‘Ghost’ that appears to have led, in the early 1870s, to its fall in popularity and eventual demise. However, this did not stop Dircks from continuing his war against spiritualism and other ‘Chimerical Pursuits’, or Pepper from his alternative theatrical strategies of upstaging spiritualism with bogus ‘manifestations’.⁴⁵

Pepper’s principal venue for performances of ‘fake séances’ was the Egyptian Hall, Piccadilly, ‘England’s Home of Mystery’ whose tradition of mechanising spirits

⁴² Pepper, *True History*, 28. For this tradition see Altick, *Shows*, 211–20; Terry Castle, ‘Phantasmagoria: Spectral Technology and the Metaphorics of Modern Reverie’, *Critical Inquiry*, 1988, 15: 26–61; Hankins and Silverman, *Instruments*, 37–71; Simon Schaffer, ‘Deus et Machina: Human Nature and Eighteenth Century Automata’, *La Lettre de la Maison Française*, 1997, 9: 30–58.

⁴³ Henry Dircks, *The Ghost! As Produced in the Spectre Drama, Popularly Illustrating the Marvellous Optical Illusions Obtained by the Apparatus Called the Dircksian Phantasmagoria: Being a Full Account of its History, Construction, and Various Adaptations* (London: E. & F.N. Spon, 1863), 41.

⁴⁴ For discussion of a comparable situation in 1890s Berlin see Hessenbruch, ‘Science as Public Sphere’.

would be continued by late-Victorian Britain's most celebrated illusionist double-act, Maskelyne and Cooke. The 'Royal Illusionists and Anti-Spiritualists', Maskelyne and Cooke, established their reputation for unmasking mediums in the mid-1860s when they used clever conjuring to replicate the public performances of the Davenport brothers, two American mediums who caused a sensation in mid-Victorian society with their apparent ability to levitate objects outside a darkened cabinet in which the performers were tied to chairs. A watchmaker by training, Maskelyne spent much of his career 'constructing apparatus for scientific, optical, and mechanical illusion' and with the help of Cooke, an ex-cabinet maker, used similar apparatus to replicate levitations, disembodied hands, materialised figures and a host of other séance phenomena [Figure 2].⁴⁶ Maskelyne and Cooke prided themselves on the fact that, unlike mediums, many of their 'séances' occurred under bright illumination and that they allowed audience members to inspect whether there were any tricks or non-mechanical agencies involved in the production of the astonishing effects. Although Maskelyne and Cooke were ridiculed by spiritualists for producing poor imitations of spiritualistic manifestations, the immense and sustained popularity of their performances raised the reputation of conjurors among Victorian intellectual and scientific circles as important experts to consult on the performances of mediums. By collapsing the distinction between spirit 'manifestations' and machine-generated spectacles, they shifted attention from what mediums appeared to do using allegedly supernatural means to what conjurors could accomplish with deft bodily skills and the technological resources of a magician's cabinet. This cultural shift is powerfully illustrated by the activities of the intellectuals and scientists who ran the early SPR.

⁴⁵ Henry Dircks, *Scientific Studies: Or Practical in Contrast with Chimerical Pursuits; Exemplified in Two Popular Lectures* (London: E. and F.N. Spon, 1869). For Pepper's mock séances see [Harrison], 'Professor Pepper'.

In their investigations into the ‘physical’ phenomena of spiritualism, they appealed to the authority of Maskelyne and other conjurors whose analyses of mediums’ performances were valued as much as the ‘accurate’ investigations of the physical scientists in the Society.

IV: SPIRITS OF MENTAL MACHINERY

The similarity between mediums and conjurors was given considerable intellectual respectability by leading Anglo-American physiologists, psychologists, and medical practitioners who, throughout the mid- to late-Victorian period, developed the most potent scientific arguments against the credibility of the evidence for spiritualism. Developing early nineteenth-century medical and philosophical works that reduced apparitions and other ‘supernatural’ occurrences to hallucinations, nervous disorders and other mundane causes, they developed sophisticated psycho-physiological theories which stressed the ways in which the involuntary actions of the mind and body made spiritualistic witnesses unable to distinguish fact from fancy and which were exploited by wily mediums in their allegedly supernatural feats of mind and body.

One of the most outspoken and eloquent defenders of this position, and the savant whose psycho-physiological researches formed the core of the Anglo-American medical and scientific bulwark against late-Victorian spiritualism was the physiologist and physician William Benjamin Carpenter.⁴⁷ As Alison Winter has shown, from the late 1840s Carpenter plied his physiological expertise in phenomena

⁴⁶ George A. Jenness, *Maskelyne and Cooke, Egyptian Hall, London, 1873–1904* (Enfield: G. A. Jenness, 1967), 31.

⁴⁷ For this reaction see S. E. D. Shortt, S. E. D., ‘Physicians and Psychics: The Anglo-American Medical Response to Spiritualism, 1870–1890’, *Journal of the History of Medicine*, 1984, **39**: 339–355; Oppenheim, *Other World*, 236–49.

of altered mental states.⁴⁸ Building on Marshall Hall's claim that many bodily actions responded involuntarily to sensory stimulation via a separate 'excito-motory' nervous system centred on the spinal column, Carpenter, Thomas Laycock and other early Victorian physiologists, developed analogous accounts of mental reflexes. Carpenter argued that many mental responses to ideas or intellectual stimuli took place without the guidance of will and led to involuntary 'ideo-motor' actions centred on the cerebrum. As Carpenter put it in 1852, an individual subjected to such involuntary actions had become a 'mere *thinking automaton*, the whole course of whose ideas is determinable by suggestions operating from without'.⁴⁹ Carpenter believed his theory satisfactorily accounted for a range of abnormal mental phenomena including hysteria, somnambulism, 'trance' behaviour, mesmerism, electrobiology, and table-turning. These were not the result of some external agency such as the mesmeric fluid, electricity, or spirits, but involuntary mental activity caused by concentrating on an idea or external suggestion provided by a mesmerist, electrobiologist, or medium. Carpenter fought harder to vanquish what he believed was the public's delusion about table-turning and at the height of its popularity in 1853, he sought to demonstrate, with the help of a simple mechanical apparatus designed by Michael Faraday, that the force of table-turning derived not from disembodied spirits but from the table-turners themselves who involuntarily pushed the table in response to the strong expectation or wish that the table would move. Not everybody judged Faraday's demonstration and Carpenter's theories to be a decisive explanation of spiritualism.⁵⁰ Indeed, much to Carpenter's disgust, table-turning was just a prelude to the 'epidemic delusion' of

⁴⁸ Winter, *Mesmerized*, 276–305.

⁴⁹ William B. Carpenter, 'On the Influence of Suggestion in Modifying and Directing Muscular Movement, Independently of Volition [1852]', *Proceedings of the Royal Institution of Great Britain*, 1851–54, 1: 147–53, 147.

⁵⁰ Winter, *Mesmerized*, 290–94.

spiritualism.⁵¹ From this period until the early 1880s, in reviews in periodicals, public lectures, his best-selling textbook *Principles of Mental Physiology* (1874) and other forums, Carpenter used his theories of mental mechanism to indict the credibility of spiritualism's witnesses. One of the key problems was that evidence of spiritualistic manifestations derived from individuals who erroneously regarded their bodies as unproblematic instruments for gauging the external world. As he argued 1875:

Nothing is more common at the present time, than for the advocates of Spiritualism to appeal to the "the evidence of their own senses" as conclusive in regard to anything done by "the spirits"; and to claim that their testimony and that of other witnesses to what Common Sense rejects as altogether preposterous and incredible: such persons being altogether ignorant of the fact well known to the Physiologist and Psychologist, that, when the Mind has been previously possessed by a "dominant idea", *nothing is more fallacious* than the "evidence of the senses".⁵²

For Carpenter, most spiritualistic witnesses entered séances already possessed by the expectation that spirits would appear. It was this mental fixation that weakened the regulating power of the will or common sense over the senses and left séance goers unable to make informed judgements of what they experienced. In this condition, séance goers were more likely to deceive themselves, hallucinate, suffer from crucial lapses in concentration, and fall prey to mediumistic legerdemain. Given that spiritualism contradicted such well-established or 'Common Sense' notions as the laws of gravity and that the necessarily overwhelming evidence in its favour was decidedly wanting, it was more likely that the senses of spiritualists than the sense of their scientific critics was at fault, and that 'so-called spiritual communications come from *within*, not from *without*, the individuals who suppose themselves to be the

⁵¹ William B. Carpenter, *Principles of Mental Physiology, with Their Applications to the Training of the Mind, and the Study of its Morbid Conditions*, (London: Henry S. King, 3rd edn, 1875), 312–15.

⁵² Carpenter, *Principles*, 628. Carpenter's emphasis.

recipients of them’ and ‘that they belong to the class termed ‘subjective’ by physiologists and psychologists’.⁵³

Carpenter’s theories allowed him to protect the honour of spiritualistic witnesses, many of whom were esteemed scientific colleagues such as the Crookes, the telegraphic engineer Cromwell Varley, and the naturalist Alfred Russel Wallace. These savants had not wilfully deceived their audiences but had fallen victim to unconscious mental processes that, to one degree or another, were present in everybody. The difference between good and bad scientific investigators of spiritualism was a difference of mental discipline. Carpenter insisted that physiologists and medical practitioners were ‘fully qualified for the task by habits of philosophical discrimination, by entire freedom from prejudice, and by a *full acquaintance with the numerous and various sources of fallacy which attend this particular department of inquiry*’.⁵⁴ Crookes and many other scientists, on the other hand, only had a narrow technical education which may have served them well in their own scientific fields, but signally failed to prepare them for the study of mediumistic and self-deception. Their limited mental training explained why they had accepted the ‘spiritual’ theory of manifestations on shaky evidence and had woefully misplaced notions of the relationship between experimenter and subject in the séance. As Carpenter warned in 1876, the trouble with most physical investigators of spiritualism was their ‘ignorance of the nature of *their instruments of research*; putting as much faith in tricky girls or women, as they do in their thermometers or electroscopes’.⁵⁵ The most significant instrument of research for Carpenter and many other medical men, however, was the physical scientist himself

⁵³ [William Benjamin Carpenter], ‘Spiritualism and its Latest Converts’, *Quarterly Review*, 1871, **131**: 301–53, 308. Carpenter’s emphasis.

⁵⁴ Carpenter, *Principles*, 626. Carpenter’s emphasis

whose failure to conduct himself in a manner appropriate to the scientific study of tricky mediums spectacularly demonstrated the effects of wrongly regulated mental machinery.

Carpenter's long campaign against spiritualism drew frequent and violent responses from spiritualists and non-spiritualists. In their opinion, there were plenty of manifestations that could not be attributed to the bodily and mental actions of witnesses or to mediumistic deception. Indeed the launch and steadily rising membership of the SPR suggests that not all British scientists and intellectuals were satisfied that Carpenter's was the last word on spiritualism. But in their quest to give intellectual respectability to the investigation of psychic, spiritualistic and other abnormal psychological phenomena, the SPR leaders forged a midway position between Carpenter and spiritualism that appropriated physiologists' and psychologists' language of mental machinery and left a place for spiritual agencies. Like Carpenter, they held that mediums or what they strategically called 'automatists' did experience motor and mental actions that were beyond their conscious will, but believed psychical research revealed how a 'subliminal' or subconscious part of the medium's self as well as discarnate spiritual agencies could take temporary control over the medium's sensory and motor functions.⁵⁶ The SPR's collapse of so much 'spiritual' phenomena into mental mechanisms exasperated most spiritualists. But as we shall see in the next section, they were also sceptical of attempts to collapse 'spiritual' truths into real machines.

⁵⁵ William Benjamin Carpenter, 'Spiritualism', *Spectator*, 14 October, 1876, 1281–1282, 1282. Carpenter's emphasis.

⁵⁶ Frederick W. H. Myers, *Human Personality and its Survival of Bodily Death*, 2 vols, (London: Longmans, Green, and Co., 1903), I, 220–97, II, 139–188. For discussion see Alan Gauld, *The Founders of Psychical Research* (New York: Schocken Books, 1968), 288–93.

V: SPIRITUALISM WITHOUT MEDIUMS: WILLIAM CROOKES'S INSTRUMENTS OF PSYCHIC FORCE

We have seen that the bodies and machines posed thorny problems for Victorian investigators of spiritualism. Investigators had to regulate their bodies in conformity with séance conventions which were designed to produce reliable evidence of new powers associated with the body of the medium. However, this kind of self-control was also criticised for threatening the bodily performances necessary for making séance investigations objective and scientific. More damaging, the performances of the human and spiritual bodies of the séance were replicated, explained, and ridiculed by the real and metaphorical machinery of conjurors, physiologists, and medical men. By the 1870s, however, there were many scientific practitioners who attacked conjurors and physiologists because their explanations of spiritualism were not based on scrupulous investigation or a comprehensive knowledge of all the ‘facts’ of the séance. Few articulated such arguments more vociferously than William Crookes and William Henry Harrison, two experimental scientists whose forays into the séance are among the most significant nineteenth century examples of technology being used to resolve the troubles of spiritualism’s bodies. Their researches spectacularly show how laboratory instruments could be pitted against the machines of the stage and mind in the cause of demonstrating spiritualistic facts.

Crookes’s notorious investigations into spiritualism have attracted much attention from scientists, spiritualists, psychical researchers and historians since their inception in the late 1860s.⁵⁷ By this time, Crookes was widely recognised as an analytical chemist of considerable skill and a leading science journalist. Trained at

⁵⁷ Compare Frank Podmore, *Modern Spiritualism: A History and Criticism*, 2 vols, (London: Methuen & Co., 1902), ii, 140–60; Hall, *Spiritualists*; Oppenheim, *Other World*, 338–354; Richard J. Noakes, ‘“Cranks and Visionaries”: Science, Spiritualism, and Transgression in Victorian Britain’, (Unpublished Ph.D. dissertation, University of Cambridge, 1998), Chapter 4.

the Royal College of Chemistry in his native London, Crookes built his scientific reputation by plying chemical expertise in the rapidly growing fields of photography, spectroscopy, science journalism, and industrial chemistry. In the 1860s his enterprises had secured him a Royal Society Fellowship for the spectroscopic discovery of the chemical element thallium, and power and income as editor of the widely circulated *Chemical News*. The thallium researches informed his strong conviction that scientific discovery, especially of new elements and forces, was a promising if risky way of raising his standing in Victorian science. There was more than just a purely intellectual or altruistic reason for Crookes insisting, in 1871, that ‘New forces must be found, or mankind must remain sadly ignorant of the mysteries of the universe’.⁵⁸

Crookes’s decision to investigate spiritualism may have been prompted by the tragic death of a younger brother although it owed a great deal to the testimony and example set by such respected chemist colleagues as Robert Angus Smith and Walter Weldon. As he explained to John Tyndall in late 1869, one such colleague had ‘witnessed phenomena alleged to be spiritual, which he was unable to explain by any known physical force, and advised me to take the first opportunity of witnessing such things for myself and forming my own judgement upon them’.⁵⁹ By this time Crookes was in fact already attending séances in London and returning with a similar verdict but unlike his chemist colleagues, he was convinced the phenomena were too important to be left to private scientific discussion.

Crookes was in a powerful position to make spiritualism a topic for public scientific debate. As editor of the best-selling *Quarterly Journal of Science (QJS)*, he

⁵⁸ William Crookes, *Psychic Force and Modern Spiritualism: A Reply to the “Quarterly Review” and Other Critics* (London: Longmans, Green, and Co., 1871), 5.

⁵⁹ Crookes to Tyndall, 22 December 1869, cited in M. R. Barrington (ed.), *Crookes and the Spirit World* (London: Souvenir Press, 1972), 232–34, 232.

was used to publicising the exciting new frontiers of scientific research and the importance of scientific expertise in solving host of pressing social problems, and in July 1870 he outlined a similar solution to the burgeoning problem of spiritualism. Crookes urged that it was ‘duty of scientific men who have learnt exacts modes of working, to examine phenomena which attract the attention of the public, in order to confirm their genuineness, or to explain if possible the delusions of the honest and to expose the tricks of deceivers’. What qualified the ‘scientific man’ above the ‘pseudo-scientific spiritualist’ and anybody else was his insistence on ‘precautions and tests’ in matters ‘marvellous and unexpected’, and the ‘delicacy of the instrumental aids’ which far surpassed the ‘natural senses’ in providing ‘experimental proof’ of spiritualist phenomena.⁶⁰

By this time Crookes had already secured the help of one of the few mediums whom he judged trustworthy enough to conduct ‘careful scientific testing experiments’.⁶¹ The medium was Daniel Dunglas Home who, despite being the subject of fierce criticism and ridicule in Victorian periodicals, enjoyed patronage and testimonials from several British and European savants including the astronomer Lord Lindsay and Crookes’s colleague, the chemist Alexander Boutlerow. From April 1870 Home gave a long series of séances in the dining room of Crookes’s London residence and performed many of his usual feats including self-levitation and the handling of hot-coals. By holding his séances in the light of gas-lamps and allowing male investigators to conduct thorough searches of his body, Home gradually convinced Crookes that the kinetic and gravity-defying phenomena were associated with a strange wavering force associated with his body. What particularly impressed

⁶⁰ William Crookes, ‘Spiritualism Viewed by the Light of Modern Science’, *Quarterly Journal of Science* 7 (1870), 316–21. Citations from 317–19.

⁶¹ William Crookes, ‘Experimental Investigation of a New Force’, *Quarterly Journal of Science* 1 (New Series) (1871), 339–49, 339.

Crookes was that despite accepting Home's invitation to be searched as if he were a conjuror, the mediums did not appear to employ 'simple instrumental aids' and displayed phenomena that would 'baffle the skill' of such conjurors as Houdin and Anderson 'backed with all the resources of elaborate machinery and the practice of years'.⁶² In late May 1871 Crookes began a series of test sésances in which he sought to produce evidence fit for presentation to scientific audiences. His most dramatic step was transforming the topology of the séance. From the small physical laboratory next to his dining room, he brought several simple machines and instruments for making crude measurements of the wavering force, notably a self-registering spring-balance which produced an automatic record of the greatest measured weight while enabling the experimenters to scrutinise other parts of the apparatus. Equally important, he invited his friend, William Huggins, the eminent astronomer and Royal Society Vice-President, to share the tasks of closely observing and recording what happened. Crookes's main goal was to examine Home's apparent skills in exerting a force at a distance without any mechanical aid. Having verified and further investigated Home's ability could levitate and play an accordion without touching the instrument, the experimenters proceeded to the principal part of the test. This involved observing the mechanical effect of Home's force thin wooden board, one end of which rested on a piece of wood on a table edge, while the other was suspended from a self-registering spring-balance. After inviting Home to place his fingers lightly on the table end of the board, Crookes and Huggins watched the medium carefully and observed that the automatic register initially oscillated slowly and then registered a maximum downward weight of 6½ pounds. To bolster his conviction that Home could not have done this by simple lever action, Crookes

⁶² William Crookes, 'Notes of an Enquiry in to the Phenomena Called Spiritual, During the

calibrated his machine against his own body: he ‘stepped upon the table and stood on one foot at the end of the board’ and even when he ‘jerked up and down’ on it, he saw that he could only cause the spring balance to display one third of the maximum force that Home had exerted. This bolstered Crookes’s conviction that he had ‘conclusively’ established ‘the existence of a new force, in some unknown manner connected with the human organisation, which for convenience may be called the Psychic Force’.⁶³

Crookes eagerly sent detailed reports of his experiment to the Royal Society and prepared a version for the July 1871 *QJS* that, according to one commentator, ‘set all London on fire, and the Spiritualists rabid with excitement’.⁶⁴ Crookes’s researches certainly divided circles of spiritualists and non-spiritualists. Many scientists, spiritualists and medical practitioners were impressed by his courage and evidence, although many spiritualists insisted that he had only demonstrated what they already knew from domestic séances. James Burns, the editor of the leading spiritualist weekly, *Medium and Daybreak*, was much more sceptical. He agreed that Crookes’s investigations would raise the profile of spiritualism among non-spiritualists but denied that they were of the ‘slightest assistance to Spiritualists’, or that they were ‘scientific’ because they more resembled normal séance procedures than laboratory practices. Burns’s position reflected what he perceived to be sharp differences between what he held to be proper spiritualist science and that practised by the likes of Crookes. In 1870 he argued that since the principal goal of spiritualistic science was elucidating the ‘psychological’ cause of manifestations, then laboratory apparatus were of limited use in this ‘science’. ‘Could all the

Years 1870–73’, *Quarterly Journal of Science*, 1874 (New Series), 3: 77–97, 80–81.

⁶³ William Crookes, ‘Experimental Investigation of a New Force’, *Quarterly Journal of Science* 1 (New Series) (1871), 339–49, 339.

paraphernalia of Mr. Crookes's workshop reveal to him the presence of a spirit?, Burns asked rhetorically, and insisted that 'The chemist and electrician may be of great service in investigating the nature of the means used and the material phenomena developed', but the 'cause of the Spiritual phenomena' required 'mind-power and mind-appliances in the form of those highly developed organisms wherein spiritual consciousness and psychological function bring the sentient being into relation with the natural facts far above the apprehension of the senses'.⁶⁵ Burns was not alone in upholding the medium as the only instrument with the requisite psychological sensitivity to ascend to the 'natural' facts of spiritualism. In 1869 the eminent American spiritualist Epes Sargent doubted whether 'scientific men' were 'best qualified' because they

have no instruments to lay hold of spirits, no chemical tests by which to detect their presence. Retorts and galvanic batteries are here of no avail. A simple woman, like Joan of Arc or the Seeress of Prevorst, may be the true expert here.⁶⁶

From the perspective of spiritualists *and* such redoubtable spiritualistic assailants as Carpenter, physical scientists lacked the proper mental appliances for discerning the truth of spiritualism.

While Burns and his supporters made the body of the medium the most important instrument of the scientific séance, other critics of Crookes's researches believed it was one of the biggest liabilities. Most telling were the views of George Gabriel Stokes, the physicist and powerful Royal Society Secretary to whom Crookes had sent his psychic force researches, and whose support was crucial in the chemist's

⁶⁴ The editor of the *Birmingham Morning News* reported in [Anon.], 'Spiritualism and the Newspapers', *Spiritualist*, 1871, 1: 189.

⁶⁵ [James Burns], 'About Scientific Spiritualism', *Medium and Daybreak*, 1870, 1: 201–02, 201.

⁶⁶ Epes Sargent, *Planchette; Or, the Despair of Science* (Boston: Roberts Bros., 1869), 26.

ongoing struggles to build his reputation.⁶⁷ Stokes warned Crookes that his apparatus did not preclude the possibility of Home using lever action to achieve the ‘psychic’ effects and only agreed to inspect the apparatus in the medium’s absence. Stokes, however, does not appear to have kept his promise and this owed much to the fact that he, like many Victorian scientists, had ‘heard too much of the tricks of Spiritualists’ to consider mediums legitimate instruments of scientific research.⁶⁸ Others were more concerned with the body of the experimenter himself. The physicist Balfour Stewart told *Nature* that it was likely that Home had exerted an ‘electro-biological’ influence over Crookes who had subsequently mistaken a subjective for an objective impression of psychic force.⁶⁹ In the most damning of all responses, William Benjamin Carpenter agreed with many critics that Crookes’s choice of apparatus and protocol were totally inadequate for evading Home’s trickery, and denied that ‘psychic force’ was a reality and threatened existing medical and scientific knowledge of bodily powers. But as we have seen, Carpenter went further than anybody else in linking Crookes’s failure as a competent séance scientist to wrongly disciplined judgement, an attack which prompted Crookes’s fiercest defences of the importance of his physical expertise in the séance.⁷⁰

Judging by his subsequent *QJS* publications on spiritualism, it was the criticisms from fellow scientists that Crookes took most seriously. They put his experimenter’s body on trial as much as Home’s mediumistic one, and forced Crookes to develop several strategies for shifting the evidential context of psychic

⁶⁷ On the Crookes-Stokes relationship see David B. Wilson, *Kelvin and Stokes: A Comparative Study in Victorian Physics* (Bristol: Adam Hilger, 1987), 191–209.

⁶⁸ Stokes, ‘Report on Mr. Crookes’s Paper’, published in Crookes, ‘Some Further Experiments on Psychic Force’, *Quarterly Journal of Science*, 1871, **1**: 471–493, 481–482, 482.

⁶⁹ Balfour Stewart, ‘Mr. Crookes on the “Psychic Force”’, *Nature*, 1871, **4**: 237.

⁷⁰ [Carpenter], ‘Spiritualism’; Crookes, *Psychic Force*.

force away from these troublesome bodies.⁷¹ Responding to Stokes's worry that Home could have secretly used lever action, he told the physicist that he was 'fitting up an apparatus in which contact is made through water only, in such a way that transmission of mechanical movement to the board is impossible; and I am also arranging an experiment in which Mr. Home will not touch the apparatus at all'.⁷² This first change in apparatus probably owed a great deal to the early nineteenth American chemist and spiritualist Robert Hare who had built an apparatus in 1858 to counter Michael Faraday and William Benjamin Carpenter's argument that the mechanical forces exerted by 'spirits' derived from unconscious muscular action of séance participants.⁷³ Crookes was satisfied that any muscular power exerted by Home on the board could be eliminated by placing a copper vessel filled with water between Home's hands and the board, and with this arrangement again observed the end of the board oscillating slowly under the influence of a strange force. In a second, and more dramatic change in strategy, Crookes constructed an instrument in which Home held his hand well above a lever whose responses to the fluctuating psychic force were inscribed on a smoked-glass plate that was moved horizontally by a clockwork mechanism [Figure 2]. With this instrument, Crookes believed he had answered Stokes's, Stewart's and Carpenter's grave doubts, because it ensured no contact between medium and machine and produced physical records of the fluctuating 'psychic force' that could not be called subjective impressions due to Home's 'influence' or weak judgement.

Crookes's third strategy was arguably the most significant. Sensitive to Stokes's aversion to mediums, he explained in late June 1871 that he proposed 'to

⁷¹ Cf. Schaffer, 'Self-Evidence'. For 'evidential context' see Trevor J. Pinch, 'Towards an Analysis of Scientific Observation: The Externality and Evidential Significance of Observational Reports in Physics', *Social Studies of Science*, 1985, **15**: 3–36.

⁷² Crookes to Stokes, 20 June 1871, cited in Crookes, 'Some Further Experiments', 478.

make a delicate apparatus, with a mirror and reflected ray of light, to show fractions of grains. Then I hope to find this [psychic] force is not confined to a few, but is, like the magnetic state, universal'.⁷⁴ In other words, this instrument would allow Crookes to demonstrate psychic force in everybody and remove the need for the mediums who were greatly endowed with the force. Crookes appears to have made rapid progress on this front because by November he entered an *Echo* controversy about his psychic force experiments with the news that:

Some recent experiments in my laboratory lead me to believe that I have compassed an instrument as purely physical as a thermometer or electroscope, which will enable me to detect the presence of some hitherto unknown form of force or emanation from the fingers of everyone with whom I have tried it.⁷⁵

The 'recent experiments' to which Crookes referred were his intense investigations of an apparently new force associated with radiation that appeared to alter the weight of or repel bodies, investigations which were themselves prompted by his acclaimed attempt to produce an accurate measurement of the atomic weight of thallium in a vacuum.⁷⁶ At this stage, Crookes was convinced that *both* spiritualistic and radiation researches would fulfil his quest for a new force that modified gravity and which would further his scientific reputation. In January 1872, having recently suffered the humiliation of having his psychic force papers rejected by the Royal Society, it was even more important that Crookes embody the capricious force in a non-mediumistic instrument. Accordingly, Crookes used the skills and material resources that had proved so successful with the atomic weight researches—notably glass blowing techniques and powerful Sprengel vacuum pumps—to construct highly evacuated glass vessels in which he suspended delicate pith indicators [Figure 4]. Satisfied that

⁷³ Hare, *Experimental Investigation*, esp. plates I–IV.

⁷⁴ Crookes to Stokes, 20 June 1871, cited in Crookes, 'Some Further Experiments', 478.

⁷⁵ William Crookes, 'Mr. Crookes's "Psychic Force"', *Echo*, 10 November, 1871, 2.

⁷⁶ Robert K. Dekosky, 'William Crookes and the Quest for Absolute Vacuum in the 1870s', *Annals of Science*, 1983, 40: 1–18; Noakes, "'Cranks and Visionaries'", Chapter 4.

there was insufficient gas inside the vessels to produce the convection currents by which bodily radiation normally transmitted force to the indicator, Crookes still observed that the indicators were deflected when approached by the body. By March, Crookes was eagerly inviting fellow scientists to demonstrations of the new instrument. One spectator was the biometrician Francis Galton who told his cousin Charles Darwin that

What will interest you very much, is that Crookes has needles (of some material not yet divulged) which he hangs *in vacuo* in little bulbs of glass. When the finger is *approached* the needle moves, sometimes [?] by attraction, sometimes by repulsion. It is not affected at all when the operator is jaded but moves most rapidly when he is bright and warm and comfortable after dinner. Now different people have different power over the needle and Miss F[ox] has extraordinary power. I moved it myself and saw Crookes move it, but I did not see Miss F[ox] (*even* the warmth of the hand cannot radiate through glass). Crookes believes he has hold of quite a grand discovery and told me and showed me what I have described quite confidentially, but I asked him if I might say something about it to you and he gave permission.⁷⁷

Although there was still a medium present during this trial (Kate Fox), what undoubtedly impressed Galton, Darwin and many others was the possibility of a machine for displaying a force without mediums and dark séances and which would remove spiritualism from a world of quacks and impostors. ‘If Mr. Crooks [sic] succeeds in making his apparatus’, Darwin replied to Galton,

& can get some instrument-maker to sell it, then everyone could buy one & try for himself. This would settle the question at once, whether any power does come out of the human body of certain or many individuals. It w^d undoubtedly be a very grand discovery.⁷⁸

With this instrument, Crookes could have sanitized and commodified a spiritualistic truth. However, still smarting from the Royal Society’s rejection of his work, he sought harder evidence that the bodily force moving the ‘delicate needles’ was

⁷⁷ Galton to Darwin, 28 March, 1872, cited in Karl Pearson (ed.), *The Life, Letters and Labours of Francis Galton*, 3 vols. in 4 (Cambridge: Cambridge University Press, 1914–30), ii, 63–64, 63.

completely novel. By mid-1873, Crookes had used a wide range of inorganic sources—thermal, electrical, and magnetic—to see if he could imitate the effect of the body on his instruments. As he explained in 1875, these procedures ultimately convinced him that there was not the ‘slightest action exerted by my own or any other person’s hand which I could not entirely explain by an action of heat’.⁷⁹ While upholding his evidence for psychic force, he now believed his delicate instruments were registering something more mundane and not necessarily associated with the body. The ‘grand discovery’, Crookes concluded, was an anomalous action of radiation, and it was his attempt to explore and display this action that led to his construction of his famous radiometer. As Darwin shrewdly anticipated, Crookes sold copies of his radiometer to the public through instrument-makers and thereby sparked another scientific debate about strange forces. Although some spiritualists were keen to emphasise the ‘psychic’ ancestry of this radiation instrument, Crookes shrewdly emphasised distinctions between his physical and psychical enterprises and enjoyed the fact that the Royal Society, once so sceptical of psychic force, awarded him accolades and funds for pursuing what he regarded as an equally mysterious radiation force.⁸⁰

As I have shown elsewhere, this was not Crookes’s only attempt to make workshop ‘paraphernalia’ the means of generating reliable evidence of spiritualistic phenomena.⁸¹ In 1874 he borrowed an electrical apparatus that Cromwell Varley had built for testing the mediumship of Florence Cook and in early 1875 adapted it for assessing Annie Eva Fay, an American medium notorious for her ability to levitate

⁷⁸ Darwin to Galton, 21 April [1872], Robert M. Stecher Collection, Dittrick Medical History Centre, Case Western Reserve University.

⁷⁹ William Crookes, ‘On Repulsion resulting from Radiation – Part II’, *Philosophical Transactions of the Royal Society of London*, 1875, **165**: 519–547, 526.

⁸⁰ [Anon.], ‘A New Discovery by Mr. Crookes’, *Medium and Daybreak* **6** (1875), 298.

⁸¹ Noakes, ‘Telegraphy’, 450–58.

musical instruments and other objects outside a darkened cabinet.⁸² In Varley's test, the medium was placed in an electrical circuit comprising many of the resources of new physics laboratories and electrical engineering workshops—a mirror-galvanometer, a battery, and resistance coils calibrated in British Association units. Her bodily movements—notably, whether she broke the circuit and faked spirit manifestations—could thus be monitored on the galvanometer by observers placed well outside the darkened cabinet where the medium sat.⁸³ Before the test séances, Varley and Crookes took the crucial step of calibrating the apparatus against the body: they invited mediums and scientific colleagues to attempt to escape from the circuit and concluded that this was impossible without causing violent motions of the galvanometer. What impressed Crookes about the test was not simply that Florence Cook and Annie Fay performed their feats without causing suspicious galvanometrical readings, but that not even two fellows of the Royal Society, with their greater knowledge of precision instruments, could evade the test.⁸⁴ His results, which appeared in several spiritualist periodicals, impressed few scientific practitioners but many spiritualists, who believed he had provided an 'experimental demonstration' of the spiritual provenance of Mrs Fay's powers.⁸⁵

Crookes's association with Miss Fay, however, was deeply troublesome. Like Florence Cook, she was one of the 'tricky girls' that Carpenter and several leading conjurors publicly claimed had evaded Crookes and his apparatus with clever legerdemain. Although Crookes stood by the results of this and earlier experimental

⁸² [James Burns], 'A Scientific Séance—The Electrical Test for Mediumship', *Medium and Daybreak*, 1875, 6: 161–63, 161.

⁸³ Cf. Gooday's chapter in this volume which discusses the bodily techniques used by nineteenth century physicists and engineers to 'read' galvanometers.

⁸⁴ William Crookes, 'A Scientific Examination of Mrs. Fay's Mediumship', *Spiritualist*, 1875, 6: 126–28.

⁸⁵ [Burns], 'A Scientific Séance'; [William Henry Harrison], 'Electrical Tests Popularly Explained', *Spiritualist*, 1875, 6: 135–36.

séances, these attacks compounded his growing disillusionment with ‘fruitless’ spiritualistic controversy whose effects on his scientific reputation were proving dangerous.⁸⁶ After mid-1875 Crookes significantly toned down his private spiritualistic investigations and avoided too many references to such work in public. Although he later participated in the activities of the SPR, his campaigns to elucidate strange forces now focused on such delicate instruments as the radiometer rather than mediums’ bodies.

VI: WILLIAM HARRISON AND THE NATURAL LAWS OF MEDIUMSHIP

The considerable impact of Crookes’s spiritualistic investigations on late Victorian public debate owed at least as much to Crookes’s association with widely circulated periodicals as the controversial content of his work. Crookes not only adapted experimental reports for his *QJS*, but enjoyed the fact that his researches were regularly championed by William Henry Harrison of the *Spiritualist*. Historians have recognised Harrison’s prominent role in the organisation of late-Victorian spiritualism—notably his famous newspaper and his part in the launch and running of Britain’s first national spiritualist society, the British National Association of Spiritualists—but they have overlooked the ways in which his notorious organising zeal extended to creating a scientific spiritualism that drew heavily on the routines and resources of late-Victorian spaces for the sciences.⁸⁷

Born in London in 1841, Harrison initially worked as a clerk and manager for a telegraph station at Haverfordwest where he began his life-long career in journalism. Harrison quickly established himself as a major photographic expert and combined his talents to become a prominent contributor to the *British Journal of*

⁸⁶ Medhurst and Goldney, ‘William Crookes’, 115.

Photography and other scientific periodicals. His telegraphic work brought him in contact with Cromwell Varley who, in 1868, gave him opportunities of witnessing the spiritualistic phenomena produced through the mediumship of Varley's wife.⁸⁸ These experiences convinced him of the reality and spiritual provenance of the phenomena, and further experience of the cultures of spiritualism prompted him to launch, in November 1869, the monthly (later weekly) *Spiritualist: A Record of the Progress of the Science and Ethics of Spiritualism*. One of the most successful spiritualist newspapers of the 1870s, the *Spiritualist*, as its subtitle suggests, boasted vastly more scientific content than its rivals, notably articles by scientific practitioners on spiritualism, reports of scientific meetings, extracts of and correspondence on scientific researches that seemed to give credence to the possibility of unknown forces and powers. In 1871, for example, it featured Varley's description of experiments (using the sensitive galvanometer he had used in his telegraphic work) designed to refute the common spiritualist claim that the human body could produce electricity and that this was one of the forces involved in spiritual manifestations.⁸⁹ Varley's report was soon criticised in the *Spiritualist* by Henry Collen, who insisted that Varley's experiments were inconclusive. But like many spiritualists seeking scientific authority for their claims regarding the possibilities of bodily forces, Collen appealed to the warning made by the eminent German physiologist Emil Du Bois Reymond in an 1866 Royal Institution lecture that it would be "rash" to dismiss the notion of "electricity being concerned, and even playing a prominent part in the internal mechanism of the nerves". For Collen this illustrated the dangers of drawing firm conclusions about 'recondite phenomena' of the human body because the body was

⁸⁷ Harrison is discussed in Podmore, *Modern Spiritualism*, ii, 168–69; Oppenheim, *Other World*, 45–46.

⁸⁸ [Anon.], 'The Presentation of the Harrison Testimonial', *Spiritualist*, 1876, **8**: 53–57.

‘so complex in its construction, the actions going on it so infinitely delicate’ and because ‘we are so totally unconscious of many of them’.⁹⁰

With a strong background in science journalism, Harrison worked harder than most Victorian spiritualists to encourage this kind of scientific debate and to promulgate scientific approaches to spiritualism. Harrison set the scientific agenda in his very first editorial where he boasted that ‘Systematic scientific research’ would establish the ‘physical and mental laws’ governing manifestations and he envisioned an “‘Institution of Scientific Spiritualists’” which would ‘collect a large mass of authenticated facts’ about spiritualism including the type and causes of manifestations.⁹¹ Although he eagerly publicised the steps that Crookes and other scientific practitioners appeared to be making in this direction, Harrison’s plans were underpinned by deep dissatisfaction with the attitude of the ‘scientific world’ towards spiritualism. Like most spiritualists, he regularly scorned scientists for their poor conduct in the séance and for taking the unscientific step of denouncing spiritualism without having first-hand experience of it. Other opponents of spiritualism were equally unscientific and disingenuous in his view. In 1873, for example, he described his visit to a fake séance staged by Maskelyne and Cooke at the Crystal Palace. Turning the tables on the conjurors, he presented mechanical and optical explanations of how he believed their ‘clumsy’ imitations were produced, and waspishly noted that the bogus scientific information presented during the performance was ‘as reliable and scientific, as Dr. Carpenter’s explanation of spiritual phenomena’.⁹²

⁸⁹ Cromwell F. Varley, ‘Electricity, Magnetism and the Human Body’, *Spiritualist*, 1871, 1: 137.

⁹⁰ Henry Collen, ‘Electricity, Magnetism, and the Human Body’, *Spiritualist*, 1871, 1: 159. For further discussion of an earlier manifestation of this debate see Winter, *Mesmerized*, 293–94.

⁹¹ [William Henry Harrison], ‘Opening Address’, *Spiritualist*, 1869, 1: 5.

⁹² [William Henry Harrison], ‘Stage Imitations of Spiritual Phenomena’, *Spiritualist*, 1873, 3: 136–39, 138.

Throughout the 1870s Harrison elaborated on how ‘Systematic scientific research’ could ‘push on Spiritualism as a science’.⁹³ His 1872 suggestions for work to be conducted by a ‘psychological society’ in séances for producing disembodied voices demonstrates the prominence of instruments in his campaign.

At voice circles considerable changes in the temperature of the hands and feet of the sitters often take place, and more especially is this the case with the medium. The amount and order of these changes require observing and registering, and as some of the most remarkable of the physical manifestations take place in the dark, the changes of temperature from minute to minute could perhaps be registered by means of thermo-piles let into the woodwork of the table under the hands of the sitters, with conducting wires communicating with reflecting galvanometers and self-recording photographic cylinders fixed in another room.⁹⁴

These suggestions do not appear to have been adopted by spiritualists, although Harrison’s uses of his photographic apparatus and expertise were more substantial. In 1872 he caused a sensation in spiritualist circles by exposing the fraudulence of the spirit-photographer William Hudson, but this reflected Harrison’s interest in protecting the credibility of photography in spiritualism rather than his desire to denigrate spirit-photography *per se*.⁹⁵ Indeed, in 1875 he collaborated with Varley on an (unsuccessful) experiment to photograph the luminous ‘odic’ flames that the early nineteenth century German chemist Karl von Reichenbach claimed that only ‘sensitive’ people could see around magnets. What was so appealing about this was that, like Crookes’s ‘delicate apparatus’, this promised to produce objective records of spiritualism independently of darkened séances, sensitives and mediums. ‘If such action could be proved’, Harrison insisted,

we Spiritualists would then be able to go the scientific world and say, “You have hitherto denied the reality of the emanation from magnets revealed by Baron

⁹³ William Henry Harrison, ‘The Scientific Research Committee of the National Association of Spiritualists’, *Spiritualist*, 1876, 9: 193–94, 193.

⁹⁴ William Henry Harrison, ‘The Work of a Psychological Society’, *Spiritualist*, 1871, 1: 206–207, 206.

⁹⁵ [William Henry Harrison], ‘Real and Sham Spirit Photographs’, *Spiritualist*, 1872, 1: 75–76.

Reichenbach's sensitives half a generation ago, but these flames can now be photographed at any time by the process which is laid before you".⁹⁶

Measuring mediums was nevertheless an important part of Harrison's project. Harrison shared the common spiritualist assumption that mediums could be regarded as instruments for transmitting manifestations but believed this analogy had to be pushed further. He was acutely aware of the suspicions aroused by the corporeality of 'spirit forms' and their bodily similarity to their mediums, and recognised that the contributions of the medium and spirit to manifestations had to be distinguished. Harrison's proposed solution drew implicitly upon the example of the 'personal equation' in astronomical observation, a measure of the error introduced into an observer's judgement of transit times caused by his personality.⁹⁷ The only way of determining the 'message of the communicating spirit in its original purity' was to establish 'the amount of error introduced by the transmitting instrument'.⁹⁸ Harrison's analysis appears to have informed a more elaborate argument of the American spiritualist William Gunning. In 1871 Gunning argued that *'To give these revelations from the unseen world any scientific value, we must, as in the revelations from material worlds through the astronomer, get the personal equation of the medium, and correct the manifestation by it'*. Just as Hermann van Helmholtz and F. C. Donders could produce accurate determinations of the personal equation of an astronomer so, Gunning insisted, similar practitioners could weigh, measure, and time a medium and clearly distinguish between the forces and manifestations deriving from within and those 'assimilated in Nature from without'.⁹⁹

⁹⁶ William Henry Harrison, 'New Experiments on Odic Flames from Magnets', *Spiritualist*, 1875, 7: 97–98, 97.

⁹⁷ Schaffer, 'Astronomers Mark Time'.

⁹⁸ [William Henry Harrison], 'Seeing Mediumship', *Spiritualist*, 1870, 1: 69.

⁹⁹ W. D. Gunning, 'The New Sciences—Their Bearing on Spiritualism', in Peebles and Tuttle, *Year-Book*, 32–47, 42, 45. Gunning's emphasis.

Victorian spiritualism may not have got its Helmholtz or Donders but between 1878–79 Harrison and his colleagues at the Scientific Research Committee of the British National Association of Spiritualists (BNAS) did take up Gunning’s challenge to weigh mediums using the kind of self-recording instruments promoted by Helmholtz in physiological research.¹⁰⁰ Harrison had played prominent roles in the foundation of the BNAS (founded 1873) and its research committee (founded 1876). The latter was established to fulfil the Association’s aim to provide spiritualists with the ‘positive results’ of ‘systematic investigation into the facts and phenomena called Spiritual [and] Psychic’ and was run by Cromwell Varley, Desmond Fitzgerald and other scientific practitioners with spiritualistic interests.¹⁰¹ Thanks to donations from such wealthy BNAS members as Charles Blackburn, the Committee paid several well-known instrument makers—notably, James Prescott Joule’s assistant, John Benjamin Dancer, and Varley’s brother, Frederick—to build self-recording instruments or ‘machinery’ that would register the weight changes of medium when he was materialising a spirit.

Similar to the Varley and Crookes electrical tests, Committee members believed their weight test would provide an indirect way of establishing the bodily relationship of medium and spirit, without breaking such séance conditions as entering the darkened cabinet. The weight test involved suspending a darkened cabinet from a two-armed scale beam to one end of which was attached a spring balance [Figure 5]. The self-recording apparatus rested on a stand behind the cabinet

¹⁰⁰ My account is based on Harrison’s *Spiritualist* reports of the experiments: ‘Weighing a Medium During the Production of Spiritual Manifestations’, *Spiritualist*, 1878, **11**: 210–16; ‘Variations in the Weight of a Medium During Manifestations’, *Spiritualist*, 1878, **11**: 235; William Henry Harrison, ‘Weighing Mediums During Séances’, *Spiritualist*, 1878, **11**: 268–70; ‘Self-Registering Apparatus for Weighing Mediums During Manifestations’, *Spiritualist*, 1878, **12**: 115; William Henry Harrison, ‘New Discoveries in Spiritualism’, *Spiritualist*, 1879, **13**: 186–191. For Helmholtz and self-recording instruments see Chadarevian, ‘Graphical Method’.

¹⁰¹ Minute Books of the British National Association of Spiritualists, College of Psychic Studies, Book 1, 17 August 1874.

and its pencil was connected to the indicator of the spring balance. Changes in weight of the cabinet were thus transmitted to a pencil which traced a curve on paper calibrated in minutes and pounds. During the test séances, the medium sat on a chair in his darkened cabinet, committee members vocalised their observations from chairs near the cabinet, and a ‘recorder’ sat in another sealed cabinet in the room where by the light of a lamp, he noted the content and time of such observations. Shortly after the medium entered the cabinet, the lights were extinguished in the room, the clock mechanism of the self-recording instrument started, and committee members began to describe a range of physical phenomena including the occasional appearance of fully-formed materialised spirits which moved some distance in front of the medium’s cabinet.¹⁰²

The most important part of the investigation was the interpretation of the fluctuating graph of weight change and its correlation with the recorded observations. Committee members emphasised that the appearance of the spirit correlated with periods when the weight of the medium was lowest. Moreover, they emphasised that the residual weight never reached zero (as it might have done had the medium left the cabinet to masquerade as his spirit form) but was at least a substantial fraction of the medium’s original weight. These trials raised the confidence of Harrison and his colleagues in the interpretations that they had reached using less sophisticated versions of the apparatus on other mediums. As Harrison informed a BNAS audience, they established that the materialised spirit was not bodily identical to its medium but temporarily borrowed ‘more or less of the healthy living organism’ of the medium so that it could manifest itself ‘on the plane of matter’. Harrison was as keen to confirm spiritualists’ faith in materialisation mediums as to counter potent

¹⁰² Harrison, ‘New Discoveries’.

scientific arguments materialisation *per se*. Noting how physicists had objected to the fact that spiritualistic phenomena appeared to breach energy conservation laws, he insisted that the weight trials had shown the ‘when phenomena are presented at one part of the séance-room, weight and energy are correspondingly abstracted from the medium’, and this pushed a spiritualistic ‘fact [...] from the region of miracle into the domain of law’.¹⁰³

Given that Harrison only seems to have presented these researches to spiritualist audiences, it is unsurprising that they had little impact among physicists, let alone other scientific practitioners. But the weighing instruments were not much more successful among spiritualists. Far from providing ‘a superior method of testing genuine phenomena’ they appear to have fallen into disuse by early 1881.¹⁰⁴ I suggest that there were at least three reasons for this. First, some spiritualists suggested ways in which the test could have been evaded by a wily medium—the latter possibility becoming more plausible when one of the tested mediums (Charles Williams) was exposed as a fraudster shortly after the BNAS trials.¹⁰⁵ Second, Harrison’s principal means of propagating his science of spiritualism were wrecked during the period 1879–81: his fierce disagreements with and eventual expulsion from the BNAS lost him wealthy and powerful allies and, owing to fierce competition from the spiritualist weekly *Light*, the *Spiritualist* finally collapsed in 1881. But a third and arguably most telling reason for the failure of Harrison’s programme is that much as spiritualists valued scientific investigator’s evidence for the physical phenomena of spiritualism, they still harboured grave reservations about the place of such investigators’ machines

¹⁰³ Harrison, ‘Weighing Mediums’, 269.

¹⁰⁴ Harrison, ‘Weighing Mediums’, 270. Minute Books of the British National Association of Spiritualists, College of Psychic Studies, Book 2, 8 March 1881.

¹⁰⁵ Podmore, *Modern Spiritualism*, ii, 110–11.

and instruments in the séance. In 1874, for example, the editor of the *Spiritual Magazine* warned that, however satisfactory Varley's electrical tests had been, they can only be employed by men of science, with scientific appliances; and it would be still more satisfactory if simpler and equally effective tests could be devised which could be more generally applied; and for the majority of investigators no tests are so satisfactory as the ordinary ones of sight and touch.¹⁰⁶

Even if spiritualists could have had greater access to such devices as Crookes's 'delicate apparatus', they would have raised the strong objection, voiced most eloquently by Burns and Sargent, that it was the humble medium, not the precision laboratory instrument, that was ultimately the best appliance for elucidating the psychological cause of manifestations. In many ways, spiritualists' scepticism of machines and instruments reflects what Logie Barrow and Perry Williams regard as a deep conflict between spiritualists' 'democratic' epistemology and the elitist 'liberal' epistemology promulgated by scientific and academic investigators of spiritualism, many of whom founded and dominated the SPR.¹⁰⁷ With its emphasis on the personal and intuitive, the 'democratic' epistemology was at odds with the 'liberal' epistemology, which upheld impersonal, bureaucratic, and machine-mediated systems of producing evidence of strange mental and bodily powers. Like the scientific experts at the SPR with whom spiritualists increasingly came into conflict, machines and instruments subverted the authority of the individuals to make judgments about their personal experiences of spirit.

¹⁰⁶ [Anon.], 'Electrical Tests with Miss Cook when Entranced', *Spiritual Magazine*, 1874, 9 (New Series): 161–68, 167.

¹⁰⁷ Barrow, *Independent Spirits*; John Peregrine Williams, 'The Making of Victorian Psychical Research: An Intellectual Élite's Approach to the Spirit World', Unpublished Ph.D. Dissertation, University of Cambridge, 1984.

CONCLUSION

This chapter has demonstrated the important extent to which the heterogeneous world of Victorian spiritualism overlapped with the contemporary cultures of machines and instruments developed in the new spaces for scientific research and teaching. My focus on bodies and machines is also an attempt to develop a more satisfactory framework for understanding the fate of ‘spiritualism and science’ in the nineteenth century. The ultimate exclusion of spiritualism from cultures of scientific practice and learning has usually been attributed to the inherently ‘pseudo-scientific’ nature of spiritualistic enquiry.¹⁰⁸ There is now a growing literature demonstrating the implausibility of such stories about spiritualism and a range of other ‘fringe’ sciences.¹⁰⁹ This chapter shows that conflicts between spiritualism’s supporters, investigators and adversaries were disputes over competing notions of scientific practice and authority in the séance as much as the existence of disembodied spirits. Questions of practice and authority were in turn questions of how bodies should perform in the séance, what constituted the proper mental discipline for an investigator, and whether laboratory apparatus were better at mediating the spirit world than mediums.

Crookes and Harrison were unable to produce solutions to these questions that would satisfy notions of proper séance science promoted by spiritualists and their adversaries. As we have seen, this reflected the increasing epistemological differences between spiritualists, who privileged the personal experience of mediumistic instrument, and ‘orthodox’ scientists, who privileged the testimony laboratory apparatus and scientifically trained experts. This difference was present in the radically opposed notions of experimental subject promulgated in spiritualism and

in the different experimental psychologies being developed in late nineteenth century America and Europe.¹¹⁰ Despite their differences, experimental psychologists held that reliable psychological evidence derived from experimental subjects whose responses were standardised by careful training or who were completely subordinate to the experimenter. It was just this mechanisation and subordination of the body of the psychological subject to which spiritualists were so abhorrent. For them, the bodies of spiritualism could only be technologised so far—they could be represented but not replaced by technology.

In many ways, the limited scientific appeal of the enterprises of Crookes, Harrison and other séance scientists owed much to their failure to control their uncertain and ‘tricky’ experimental subjects to the extent demanded by psychologists and practitioners of other scientific disciplines. Nonetheless their enterprises may have informed the technological strategies by which early twentieth century practitioners sought to make psychical research more appealing to scientific audience. In 1920, for example, the enterprising American inventor, Thomas Alva Edison, planned to furnish psychic investigators with an apparatus worked on the electric valve principle that was ‘so delicate’ that it could be ‘operated on by personalities which have passed on to another existence’.¹¹¹ In the same year, the German engineer and psychical researcher Fritz Grünewald designed a precision automatic electric

¹⁰⁸ Oppenheim, *Other World*; Ruth Brandon, *The Spiritualists: The Passion for the Occult in the Nineteenth and Twentieth Centuries* (London: Weidenfeld & Nicolson, 1983).

¹⁰⁹ Winter, *Mesmerized*; Noakes, “‘Cranks and Visionaries’”.

¹¹⁰ Kurt Danziger, *Constructing the Subject: Historical Origins of Psychological Research* (Cambridge: Cambridge University Press, 1990); Deborah J. Coon, ‘Standardising the Subject: Experimental Psychologists, Introspection, and the Quest for a Technoscientific Ideal’, *Technology and Culture*, 1993: **34**: 753–83. For penetrating discussion of the complex relationship between late-nineteenth century German experimental psychology and scientific investigations of spiritualism see Stauber, ‘Tying the Knot’.

¹¹¹ Edison cited in Austin C. Lescarabour, ‘Edison’s Views on Life and Death: An Interview with the Famous Inventor Regarding His Attempt to Communicate with the Next World’, *Scientific American*, 1920, **123**: 446, 458–60, 446. See also Matthew Josephson, *Edison* (London: Eyre & Spottiswoode, 1961), 439–40.

balance to produce better measures of an entranced medium's weight changes. And in 1923, Harry Price, founder-manager of Britain's National Laboratory for Psychical Research (a rival to the SPR), built an 'electrical chair' in which he controlled and measured mediums throughout séances.¹¹² Although these strategies did not produce the decisive results sought by scientific audiences, they illustrate how, in a period when most psychical researchers favoured psychological tests of abnormal mental powers over investigations of physical 'manifestations', others, like such Victorian predecessors as Crookes and Harrison, believed that laboratory instruments had become so precise that they could produce unrivalled measures of the spirit body or replace mediums altogether.¹¹³

¹¹² Harry Price, *Fifty Years of Psychical Research* (Longmans, Green, and Co., 1939), 234–240.

¹¹³ For the investigative priorities of nineteenth and twentieth century psychical researchers see Gauld, *Founders*; Brian Inglis, *Science and Parascience: A History of the Paranormal, 1914–39* (London: Hodder and Stoughton, 1984).