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HEALING THE NATION'S WOUNDS: ROYAL RITUAL AND EXPERIMENTAL PHILOSOPHY IN RESTORATION ENGLAND

Simon Werrett
Max-Planck-Institut für Wissenschaftgeschichte, Berlin

> It is the Glory of God to conceal a thing, but
> It is the Glory of the King to find a thing out.
> Francis Bacon, *The Great Instauration*, aphorism 129.

In a letter to Prince Leopold de Medici of 1668, the Italian courtier Lorenzo Magalotti expressed his dismay on hearing that Charles II, the supposed protector of the Royal Society, out of "kindness" if not "esteem", had taken to calling his "academicians by no other name than *my fools*". When Angelo Fabroni transcribed the letter, however, he misread the word 'fools' and wrote 'ferretts' instead. Editing Magalotti's travel journals, W. E. Knowles Middleton noticed this mistake and wrote a paper surrounding Charles's comments. He did not share Magalotti's surprise, concluding "it was common knowledge ... that the interest that the King took in the Society was very shallow indeed".[1] Until recently, this attitude has been reflected historiographically in a relative indifference to Charles II's role in Restoration science. Michael Hunter has described Charles's experimental interests as "recreational and of no great relevance to government" whilst Steven Shapin's *Social history of truth* makes no mention of the King.[2]

In recent years, however, studies of scientific patronage have emphasized the significance of the prince as a key source of authority in the establishment of experimental sciences in the seventeenth century. Mario Biagioli, for example, has charted the ways in which Galileo could adopt the authority of the Medici in Florence both to legitimate his own persona and to fashion success for his mathematical and astronomical science.[3] For Biagioli, Galileo's self-fashioning as a courtly philosopher ensured his entry into the space of the Florentine court. The proximity of Galilean science to the prince then permitted the kinds of legitimating strategies which ensured the success of Galileo's program. But patronage studies have done little to alter Middleton's position on the role of the prince in England. Elsewhere, Biagioli has compared Italian scientific patronage with the institutional organization of the sciences in England later in the seventeenth century. In contrast to the Italian scenario, he suggests that experimental philosophy in England owed its success not to proximity to the court but to a distancing away from it. Since Charles II was a weak monarch, his authority contested by Parliament after the Civil War, neither he nor the English court was able to provide the kind of legitimation for experimental philosophy which a Medici or a Louis XIV could in Italy or France. Consequently, this weakness made possible the development of forms of 'scientific' etiquette distinctive from those at court. Since "Charles was

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no Roi Soleil", natural philosophers "did not seem ... concerned with attuning their activities to the demands of princely etiquette".[4] Consequently, they drew on alternative institutions as resources for legitimate scientific practice.

Here Biagioli follows others who have identified English scientific practice not with the court, but with the conduct appropriate to institutions such as the gentleman's private residence, the House of Commons or the Old Bailey.[5] These resources, Biagioli suggests, enabled natural philosophers to establish systems of credit and legitimation based on individual authorship and peer recognition which ultimately led to an independent and self-sustaining scientific community in England. In short, the success of the new science in England depended on an epistemological and political *distance* between the Royal Society and the court at Whitehall, making space for knowledge-making practices to be drawn from other locations.

This paper sets out to close the distance between Whitehall and the Royal Society in Restoration London. Re-examining relations between Charles II and his "fools", I argue that the power of the King in 1660s England was key to the legitimation of experimental science. However, I do not propose that Charles's legitimating power might be equated with princes such as Cosimo de Medici or Louis XIV — Charles was indeed no *Roi Soleil*, or at least not most of the time. Studies of scientific patronage have tended to assume fixed levels of princely power, functioning as a permanent credit pool from which legitimacy may be handed out to scientific practitioners. The greater the credit pool, the more likely one is to find connections between the sciences and the court. So with his finances in bad shape, Charles, unlike Louis XIV or Cosimo de Medici, is assumed to be a poor bet for discerning links between the sciences and princely power. It is perhaps for this reason that patronage studies have paid most attention to princes traditionally associated with strong, centralized authority, like the Medici in Italy or Louis XIV in France.[6] But the level of credit is always fluctuating. Patronage studies have been quick to take this into account in the case of natural philosophers, their fortunes depending on a variety of historical contingencies, but have ignored it in the case of the patrons themselves. Yet princes too suffered different levels of popularity and power at different times in their reigns. In what follows, I try to take account of these fluctuations in the careers of Charles II and the Royal Society. I argue that when Charles was powerful at the Restoration, courtly procedures provided resources for structuring and legitimating experimental practices at the nascent Royal Society. But when Charles became weaker in the following decade, the situation was reversed. Now the King used experimental practices to legitimate his own fragile rule. Thus a process of reciprocal legitimation may be identified between prince and academy, but one whose directionality depended on changing circumstances.

My point of entry into this economy in Restoration England is an examination of royal ritual. From being a leading focus in the history of the arts, the study of courtly spectacle has turned out to be a fruitful endeavour for understanding the

sciences. A number of historians have emphasized the centrality of royal ritual in the process of legitimating the sciences during the seventeenth century. Biagioli has shown how Galileo's discovery of the Medicean stars gained authority through their incorporation into Medici court spectacle, appearing in wedding festivals, commemorative medals, ceiling frescoes and court theatricals.[7] Elsewhere, Paula Findlen has examined Francesco Redi's efforts to make natural history "lavish, costly and entertaining" to compete with other entertainment in the court of the Grand Dukes of Tuscany, whilst Michael Wintroub has shown how practices of collecting and natural exhibition were incorporated in the festival politics of royal entries and processions in sixteenth-century France.[8]

Such rituals have not been considered conspicuous in the English court and their relations to natural philosophy have been largely overlooked. So I begin by examining two of the principal forms of royal ritual in Restoration England, the ceremony of the Royal Touch and the Public Execution. I suggest that at the beginning of the 1660s, royal rituals such as these provided valuable resources both for re-establishing the power of the monarchy and for modelling experimental practice. I then explore the implications of the Test Act of 1673 for the ritual of the Royal Touch. As a form of Catholic transubstantiation, the Royal Touch became a controversial practice in light of the Test Act. Yet at just this time, Charles appropriated a series of experiments being undertaken at the Royal Society on a new 'Stiptique liquor' recently sent from France. The use of the liquor helped Charles secure his authority, simultaneously assisting in the legitimation of experimental philosophy, which was facing its own criticisms from diverse groups at this time. In the case examined here at least, Whitehall and Gresham College converged on the epistemological map of London, *because* the King was weak.

1. ROYAL RITUAL AND THE RESTORATION

A variety of political and clerical doctrines supported kingly power in early Stuart England. Most agreed that royal authority derived from God, though the nature of this identity was disputed.[9] But whilst politicians contended the finer aspects of royal authority in writing, for most of the population the King's identification with the divine order was forged through a series of dramatic and spectacular royal rituals. From the coronation to the State funeral, rituals focused on the body of the monarch and made manifest its seemingly miraculous powers and divine privileges. These powers were amplified and refined through a range of other popular festivals, carnivals and rites incorporating the bodies of the monarch's subjects, in masquerades and fireworks displays, civic processions and dramas of corporal punishment.[10]

The Royal Touch and the public execution provide the exemplary rituals here. The execution has received much attention from historians.[11] The Royal Touch, the King's miraculous power to heal the sufferers of scrofula, known as the King's

Evil, by touch, was practised by the kings of England from the time of Henry II. The medieval rite found its origin in the Catholic miracle of transubstantiation. Marc Bloch, the pre-eminent historian of the healing ceremony, noted, "it was an easy step to attribute healing power to everything that ... formed part of the consecration rite. The Host, the communion wine ... the very fingers of the priest — all these were regarded as so many remedies".[12] Such powers, transferred to the hands of kings, helped to consecrate monarchy. Of Henry VI it was written,

> At the touch of his most pure hands ... you can see ... sufferers from the King's Evil ... recovering their longed-for health by divine intervention.... Those who witness these deeds are strengthened in their loyalty to the King, and this monarch's undoubted title to the throne is thus confirmed by divine approval.[13]

The 'royal miracle' was soon enshrined in official pomp and ceremony designed to equate the healing acts of the prince with those of Christ, establishing the King as a human manifestation of God on Earth.[14] In the seventeenth century, healings took place in the Banqueting House at Whitehall, the grandest classical building in London, built by Inigo Jones between 1619 and 1622 for Charles I. Here the healing ceremony transformed the hall into a theatre of royal power. Above, spectacular frescoes by Rubens depicted James I ascending into Heaven. Below, the King was seated on a raised throne in front of rich canopies of state. Courtiers, clergy and dignitaries packed onto the stage behind the King whilst applicants for the touch crowded into the hall in front, pressed back by royal guards. A long and solemn liturgy accompanied sufferers' approaches to the King, the court chaplain pronouncing the words of the Gospel of St Mark, "they shall lay their hands on the sick and they shall recover", as the royal hands pressed once on their face or shoulders. The Clerk of the Closet then handed the King gold 'touch-pieces', coins on ribbons which he placed around the patients' necks, before they left the Banqueting Hall.[15]

All these elements were designed to overwhelm those present with the sacred origin of the King's body. As John Bird proclaimed, "Admiration [of the touch] indeed is the way which God hath ordained for men to look up for a higher workman".[16] They were typical of a society where power was fundamentally theatrical in nature. This theatre continued in the public execution. In many respects, the execution complemented the ritual of the Royal Touch. Like the healings, executions drew great crowds of people to witness a theatre enacted through the body, only now it was the infliction of wounds which constituted the drama. In the carefully articulated meting out of torture and corporal punishments, executions continued the ritual display of princely power over the body.[17] This focus on the body was unsurprising in a society which itself was conceived as corporeal, as a body politic whose organs were the people themselves with the King as their head. Danger or damage to any member of society took on

an anatomical value in addition to a moral or political one. Royal ritual then constituted and reconstituted the body politic by acting on the individual members who composed it.

These rituals, like the doctrine of divine right upon which they rested, were never entirely stable entities in Stuart England, but with the execution of Charles I, the monarchial legitimacy they invoked was dramatically undermined. Throughout the Revolution, the King's powers, miraculous and otherwise, became increasingly contested. As Paul Hammond has argued, the sites of such contests were bodies themselves.[18] Since the traditional social and political order was organized around the unique nature of the sovereign's body, when that body was destroyed, new discourses of power could be mobilized through alternative conceptions of the body. Hobbes's *Leviathan* redefined the constitution of the body natural to redefine the Constitution of the body politic, whilst symbolic nudity and gestural asceticism served to embody the enthusiasms of the Quakers.

Dissenter's sermonizing often worked ingeniously to invert the status of the King's body. Patricia Crawford has noted how accusations of 'blood-guilt' portrayed Charles I's body as polluted and corrupted by the shedding of innocent blood, a corruption extended to Charles's body politic. "Bodies bleed to death, souls bleed to death, all England is giving up", proclaimed Cromwell's chaplain Nicholas Lockyer. Lockyer equated the fallen State with original sin, "Corruption is got into the blood.... Treason stains the blood; the first man proved a traitor ... poisoned his nature, and then begat as he made himself ... and so doth all the posterity to this hour ... a piece of mere putrefaction".[19] Such narratives were successful in extinguishing the sacred aura of the King's body, until his execution no longer seemed an act against God. Charles's death was transformed into a necessity for healing the body politic, a means to "prevent the disease from proving epidemic". Against this inversion, the Royal Touch provided a potent resource for defending the divine status of the King's body. As a prisoner at Holmby House, Charles I sought to secure his sovereignty by touching for the Evil, at which Parliament strove to extinguish the King's sacred aura by spreading pamphlets condemning the touch as popish "superstition". Then there were rumours spread that Cromwell had tried his hand at the royal miracle only to fail.[20]

Connections between transubstantiation and the body politic could also be redefined. In his sermons, the congregationalist Jeremiah Burroughs incited the spilling of Royalist blood through the example of Christ's suffering, "what should we be willing to suffer ... in our bodies ... seeing Christ hath been content to have his precious body broken and his blood shed for us!"[21] The Protestant sacrament was then mobilized to capture this moral for Parliamentary soldiers. Richard Sibbes, Puritan master of St Catharine's Hall, Cambridge, told them: "When you take the bread think of the body of Christ broken.... When the wine is poured out, think of the blood of Christ poured out for sin."[22] In the effort to desacralize the King, Catholic miracles could be transformed to Protestant incitements to spill blood in order to heal wounds. The inversion was made clear when Charles I was

executed in front of the Banqueting House in Whitehall, the traditional location for the ceremony of the Royal Touch.

These reversals had a dramatic effect on the monarchy when the Restoration came in 1660. Now more so than ever before, the discourse of divine kingship became one amongst many languages of power, no longer a natural or revealed mythology but an ideology designed to persuade. Consequently, to counteract the new radical ideologies, the fragile legitimacy of the monarchy was consolidated through a reinvention of tradition, ritual and iconography, represented as acts of recovery and restoration.[23] The Royal Touch provided one resource to assist Charles in re-establishing his rule. In 1660, the King had already set the terms of his new office within a vocabulary of healing wounds caused by Parliament and the Civil War. He began the Declaration of Breda,

> If the general distraction and confusion which is spread over the whole kingdom doth not awaken all men to a desire and longing that those wounds which have so many years been kept bleeding may be bound up, all we can say will be to no purpose.[24]

Royalist sermonizers were then quick to assert the Royal Touch as evidence of the King's desire to restore the health of the Body Politic. John Bird proclaimed in his *Ostenta Carolina* of 1661,

> as the Leprosie in time of the Law, was to typifie the Great Cleanser Christ *Jesus*, our Spiritual King ... [was] made to foreshew that Merciful *Physician*, who from his blood should heal our sins and miseries, and wash us from impurity, was determined to shew *God's Providence* ... to poor *England* by the *Hand* and *Government* of his anointed servant King Charles II.... He is that Physician to cure those wounds ... which our *State-Physicians* ... have made and caused.[25]

Likewise, the Archbishop of Canterbury, William Sancroft, preaching in Westminister in December 1660, hoped for "the healing of the *Wounds of the Daughter of our people*, since they are under the Cure of *those* very *Hands*, upon which God hath entailed a *Miraculous Gift of Healing*" in order that "we shall ow one day to those *sacred Hands*, next under God, the healing of the *Church's* and the *People's* Evils, as well as the *King's*".[26] Such sermonizing was accompanied by a vigorous programme of healing ceremonies. After performances of the full ceremony at Breda in May, Charles healed six hundred in June, three times the traditional number, and healings continued at Whitehall from then on.[27] So in the first years of the Restoration, royal ritual provided one means to consolidate the legitimacy of the monarchy. Other rituals were intended to have the same effect. Attending Charles's procession into London, Samuel Pepys was overcome by a dazzling display, "so glorious was the show with gold and silver, that we were not able to look at it".[28] The public execution also took its place amidst the pomp. Cromwell was executed in effigy no fewer than four times between May and January 1660, whilst in October, the

regicide Thomas Harrison was hung, drawn and quartered at Charing Cross, his heart held up to "great shouts of joy".[29]

Extending the use of royal ritual to assist Charles's claims to power also created problems for the Restoration. The success of theatrical displays depended on drawing huge crowds to witness spectacles. But London's crowds were spontaneous and often dangerous gatherings, a haven for petty theft, brawling, drink and abuse. Such carnivalesque disorder would prove disastrous for the public execution in the eighteenth century.[30] So when the stability of the Restoration order depended on ritual demonstrations of power, keeping order within these rituals became essential. This not only meant controlling the crowds, but also ensuring that the enactment of spectacle was carried out to perfection. As Foucault notes, a bungled execution could often lead to the executioner's punishment or even imprisonment.[31] Consequently, everything was done to displace uncertainty away from the rituals, through a variety of practices which occurred before rituals took place. These strategies operated 'backstage', in private, where uncertainty could be managed and removed from the theatre of power.

From June 1626, a series of royal proclamations established procedures for those wishing to receive the Royal Touch. Applicants were required to "bring with them Certificates under the hands of the Parson, Vicar, or Minister and Church Wardens of those ... parishes where they dwell ... testifying to the trueth, that they have not any time before bene touched by the King".[32] Although certification was explained as a means to avoid fruitless journeys to London, to return to the King implied the failure of a first touch and hence the potential failure of a second, a threat to the success of the royal miracle. Further regulations came in 1638, when certificates required the additional testimony of "one Physician and one Surgeon at least" — an attempt to deny access to applicants not suffering from scrofula.[33] The surgical examination took place within Whitehall, but when multitudes began arriving for examinations at the Restoration, the court was forced to react. A proclamation stated, "whereas many infirm people resort to our court, and first for their probation use to flock to the lodgings of our chirurgions within our house (which is not only noysome, but may be very dangerous in time of infection): we command that henceforth no such resort be permitted within our house".[34] Consequently, the *Mercurius publicus* announced that the public were "to repair to Mr. Knight, his Majesties Chyrurgion, who lives at Great Bridges Street ... Covent Garden ... where they will receive tickets [for the healing]".[35] Thus "noysome" disorder could be displaced from Whitehall, saving the Banqueting House from scenes like that witnessed by John Evelyn some years later, when "there was so great a concourse of people ... to be touched ... that 6 or 7 were crushed to death by pressing at the chirurgeon's doore for tickets"[36] — not an episode to be associated with the celebration of sovereign healing.

Displacing uncertainty was also prerequisite for the public execution. The authorities went to great lengths to ensure the docility and repentance of condemned felons before their appearance on the scaffold for execution. Inside

the private confines of Newgate Prison, jailers made strenuous efforts to break the spirit of felons. Prisoners were confined in cells beside the Press yard, shackled with eight pound fetters and exposed to cold and hunger. John Howard later recorded that "criminals who had affected an air of boldness during their trial and appeared quite unconcerned at the pronouncing sentence upon them, were struck with horror and shed tears when brought to these darksome solitary abodes".[37]

The clergy also participated in the disciplining of the condemned. In 1669, two women were executed at Tyburn after being "much wrought upon while they were in Newgate" to submit to their fate with the assurance of God's salvation.[38] The success of such measures is evident from the 'last dying speeches' made by the condemned from the scaffold before execution. Not simply admissions of guilt, these speeches served as general accounts of, and warnings against, delinquency and sin. The speeches were ubiquitous, made by rich and poor alike, testimony to the importance of the internalization of obedience practised inside Newgate and the significance placed on the elimination of uncertainty from the public execution.

2. EXECUTING EXPERIMENTS

Provided they could be kept under control, the royal spectacles of healing the King's Evil and the public execution helped secure Charles II's reign at the Restoration. It was at this time that the inaugural Royal Society was also striving to secure the legitimacy of its new experimental practices. As noted in the Introduction, it has been argued that the Society drew on the practices of Parliament, the law courts, and the sociability of the gentleman (as opposed to the courtier) to construct procedures for securing experimental knowledge. The court has been excluded from this list of resources owing to its weakness at the Restoration. But *because* of this weakness, the court gave special emphasis to royal ritual as a legitimating technique. Spectacles of royal power proved salient features of the London landscape as the Royal Society began to convene, and such theatre may be included in the list of resources upon which it drew for legitimacy. As Thomas Sprat noted in his *History of the Royal Society*, at the Restoration, "many Worthy Men began now to imagine some greater thing; and to bring out experimental knowledge, from the *retreats*, in which it had long hid itself, to take part in the *Triumphs* of that universal Jubilee".[39]

The organization of experimental knowledge-making attests to this participation. Shapin has argued that the chief characteristic of experimental procedure in the early 1660s was its division into *trying* and *showing*. In the 1660s, trying, or making new experiments work, was inherently unstable — the "trial ... carried with it a sense of indiscipline: the experimenter might not be fully in control of the scene".[40] Trials often failed and so were deemed unfit to be staged in public. Consequently, trying took place in private, usually in Robert Hooke's residence

at Gresham College or in Fellows' residential laboratories. Once experiments did work, they were performed in public before an audience at the Royal Society's assembly rooms in Gresham College. Witnesses, agreeing that experimental results met with their expectations, then provided testimony to the validity of the matter of fact being demonstrated. These experimental demonstrations were referred to as shows, their outcome guaranteed, since trials in private beforehand acted to displace uncertainty away from the show by "disciplining" the experiment.[41] This split between backstage preparation and frontstage demonstration was precisely the order of royal ritual, a theatrical procedure where bodies (natural or human) could be disciplined in private before being shown in public, where they might perform according to expectations and thus demonstrate the powers of those in command of them.[42] Moreover, as theatre, public experimental shows, like the execution and healing, were enhanced through spectacle. As Jan Golinski has argued, the exhibition of rare or unusual phenomena or visually arresting experiments captured audiences' attention and helped aggrandize the power of the experimenter to control and manipulate nature.[43]

In fact, trying and showing were not innovations of the Royal Society — both occurred routinely in gentlemen's private residences, where much experimental work took place in the 1650s and '60s. Natural philosophers like Robert Boyle carried out trials and demonstrated shows to friends and visitors from polite society. In accordance with gentlemanly codes of conduct, philosophers working in residential laboratories were obliged to keep them open to visits from other gentlemen. However, as Marie Boas notes, this meant that "there was always a swarm of idle gentlemen and ladies who wanted to see amusing and curious experiments" ready to interrupt trials.[44] The Royal Society solved this problem by *distancing* the spaces of trying and showing in order to regulate access to the knowledge-making process. Such 'crowd control' meant that from 1660, trying could become a truly private activity, because the new site of Gresham College provided a location for shows to be performed at a distance from gentlemanly residences. Now shows could be orchestrated at set times and with a regulated audience. This development occurred at precisely the time when measures such as the displacement of surgeon's examinations from Whitehall to Covent Garden were becoming salient features in the ritual culture of London.

The architects of experimental procedure moved regularly between Gresham College and Whitehall. In addition to dignitaries recruited to lend prestige to the Royal Society, courtiers such as Sir Paul Neile, Viscount Brouncker, Sir Joseph Williamson, Thomas Henshaw and Sir Kenelm Digby were all active in the experimental programme of the early 1660s.[45] Sir Robert Moray served as acting first president from 1660 to 1662. An intimate of Charles II, the Duke of York and Prince Rupert, Moray had done much whilst an exile in Maastricht and Paris to secure the Restoration, and in 1661 was appointed Lord of the Exchequer for his troubles. Moray headed the King's chemical laboratory in Whitehall, situated below Moray's quarters next to the Banqueting Hall.[46] Moray's influence

at court also helped make the Royal Society itself a part of the new economy of sovereign power. In 1662, Moray and Neile secured the Society's Royal Charter. Experimental philosophy now "bowed down" to the monarch in a "just and manly submission" to "the Authority whose aid it implores". Visitors to the Royal Society noted the mace given by Charles deposited on the table in front of the President, the symbol of the Society's source of power.[47] Thus experimental shows were themselves tied to the demonstration of the King's power.

This link was made most explicit in the drama of public anatomy. From the Renaissance onwards, anatomies had served both judicial and medical functions. Routinely used as an extension of capital punishment, public dissections of executed criminals played on popular fears that dismembered bodies were immune to salvation.[48] Dissection rested well in a political economy where grace and justice were exhibited ritualistically through the body, whilst the anatomy theatre provided a new space where medical knowledge-making and sovereign authority could be demonstrated simultaneously. From April 1663, Charles extended the privilege of performing anatomies on executed felons to the Royal Society, initially under the curatorship of Walter Charleton, and an extensive program of physiological investigations was continued throughout the Restoration.[49] By linking experimental philosophy with the power of law, this privilege, like the Society's Royal Charter, constituted a potent resource for securing knowledge. In 1669, for example, the Cambridge M.D. Nathaniel Johnston proposed anatomy at the Royal Society as the ultimate recourse for resolving controversy over the miraculous capacities of the abstinent Martha Taylor.[50] Again, actors in dissections and examinations for the Royal Touch moved regularly between Whitehall and the Royal Society. Sir George Ent was active in the Society throughout the 1660s and performed public anatomies at the Royal College of Physicians. Though not a Fellow of the Royal Society himself, the King's Sergeant-Surgeon Richard Wiseman, responsible for examining scrofula victims for healings in the Banqueting House, consulted and worked with Thomas Coxe, Thomas Willis, Richard Lower, Walter Charleton and especially Walter Needham, for whom he frequently acted as surgeon and collaborator. Wiseman, alongside Charleton and Thomas Hollier, also attended public dissections read by Needham at Barber-Surgeons Hall, and Needham himself may have assisted in examining patients before the healing ceremony.[51]

The Royal Society's decision to perform public dissections and experiments in the name of the King constituted another example of the corporal politics of the Restoration. Throughout the period natural philosophers also took part in efforts to curb contestation of the power of the King's physical and political body. This is illustrated by the case of Valentine Greatrakes, the 'Irish Stroker', whose claims to cure the King's Evil by the laying on of hands were investigated extensively by natural philosophers in 1666. Different views of the King's powers were implicated in the explanations proposed for Greatrakes's cures.[52] For the Hobbesian physician Henry Stubbe, Greatrakes's cures could be explained by a

purely materialist account. But as the High Churchman David Lloyd pointed out, this implied "that [the King] could do no more than other men" in his healing capacity, a dangerously republican sentiment.[53] Experimental philosophers such as Robert Boyle and Henry More then devised ways of explaining these cures which counteracted accusations of atheism, implicit in purely materialist accounts of Greatrakes's powers. Unwilling to count the cures as miraculous, an explanation equally disastrous for the singularity of the monarch's healing powers, Boyle and More identified in Greatrakes a "sanative virtue", an ability achieved through spiritual devotion to "infect" patients with health, neither miraculous nor purely materialist in operation. Such a course tallied well with the Restoration political order and, like the public anatomy, served to uphold the monarch's corporal powers.

That Greatrakes's powers were so controversial is evidence of how fragile the status of the Royal Touch remained throughout the Restoration. An important point of contention concerned the speed of action of the touch. Those close to the King promoted the view that the miraculous status of the touch hinged on its provision of an instantaneous and perfect cure of scrofula. John Browne, Charles II's Sergeant-Surgeon, assured the readers of his *Charisma basilicon*, that the King "doth *in a moment* send ease to the Sick" who frequently expressed surprise at the quickness of their cure before they left the Banqueting House.[54] In contrast, the Savoy curate and latitudinarian Thomas Fuller, writing in 1659, believed the touch to be only "partly Miraculous ... because a complete Miracle is done presently and perfectly, whereas this cure is generally advanced by Degree and some Dayes interposed".[55] The Royal Touch did not act instantaneously and was not, therefore, truly miraculous — a fact which the moderate Fuller could express only under Parliamentary rule, though he was immediately rebuked by the Laudian Peter Heylyn.[56] In the case of Greatrakes, similar arguments were canvassed to demote the status of his cures. George Rust argued "nothing of all this is miraculous ... the Cure seldom succeeds without reiterated touches, his Patients often relapse [and] he fails frequently".[57] In 1654, Henry More had inquired of another purported healer, Matthew Coker, "whether [Coker's patients] be immediately cured.... For if there be any consyderable space of time required ... it seems to me to be a fallacy, or some mistake of his".[58] Whilst such strategies could defend royal propriety of the miraculous, the instantaneity of the touch also equated it, as Bloch noted, with the miracle of transubstantiation, at once a resource for demonstrating equivalence between Christ and the King, but also potential evidence of Catholic sympathies. As Charles's reign progressed, it seemed inappropriate to many that in an age when miracles had ceased, the monarch should perform such Popish tricks as the miracle of healing by touch. Stubbe was quick to satirize the Catholic nature of the touch, pointing out sarcastically that "Queen Elizabeth did, for some time, discontinue the Touching.... But she soon quitted that Fitt of Puritanisme, when the Papists defamed her, as if God had withdrawn from her the Gift of Healing ... because she had withdrawn herself from the Roman Church".[59]

Such equations were highly charged amidst increasing suspicions of royal sympathies for Catholicism. Tensions surrounding such charges reached a highpoint in the spring of 1673, with the passing of the Test Act. In the previous year, Charles's Declaration of Indulgence had suspended penal laws against Catholics and nonconformists in an effort to appease Louis XIV. In 1670, Louis's secret Treaty of Dover had demanded the conversion of England to Catholicism in return for French military and financial assistance in the Third Dutch War. Outside the court, the Declaration boosted public fears that Charles was turning to Catholicism and absolutism, and formerly positive opinions about the war turned increasingly sour.[60] When Parliament returned in January 1673, hostility towards the Declaration was rife, and the King was asked to explain his unsolicited actions. When no reply was forthcoming, Parliament forced Charles to cancel the Declaration, which took place on 8 March. The Test Act followed on 29 March, ordering all persons in public office to swear allegiance to the Church of England and to renounce the Catholic doctrine of transubstantiation.[61]

The following months saw "the greatest outburst of anti-popery since the early 1640s".[62] Charles responded accordingly, making efforts to appease his critics, or at least to appear to be doing so, if only to secure supply for continuance of the Dutch War. Charles had already begun to appropriate civic and Anglican rituals and discourses to calm both Parliament and public. Richard Ashcraft notes this of the Treaty of Dover of December 1670, which had failed to mention Charles's secret conspiracies with Louis XIV, "the drama had shifted from one of the mysteries of religious and political intrigue to a ... prosaic portrayal of commercial and military preparations... for war".[63] Likewise, John Montaño has shown how Charles doused public suspicions of popery raised by the 1672 Declaration by appearing with the Archbishop of Canterbury and all the bishops of London at the traditional Lord Mayor's Show, "an unmistakable example of the monarch's fidelity to the Anglican church".[64] Following the Test Act, Charles again appears to have recast his public persona. The Royal Touch, as a form of miraculous transubstantiation, would be a highly contentious act to perform for a King responding to accusations of popery. Consequently, Charles may have turned to the experimental programme of the Royal Society to provide another civic alternative to Catholic ritual.

3. THE ROYAL STIPTIQUE LIQUOR

The late 1660s and early 1670s were also a troubled time for the Royal Society, faced with increasingly vociferous attacks from the likes of Henry Stubbe, Meric Causabon and Robert South.[65] Much criticism centred on the Society's propriety over medicine. In 1665, virtuosi became implicated in Thomas O'Dowde's efforts to incorporate a College of Chemical Physicians, drawing angry attacks from the Royal College of Physicians, fearful of losing privileges to experimenters and Helmontians. Combatants in the controversy turned to Whitehall for legitimation.

O'Dowde took advantage of his post as groom to the Privy Bedchamber to enlist prominent courtiers to petition for the proposed College of Chemical Physicians. The Royal Society co-operated in these efforts. Sir Paul Neile and Viscount Brouncker persuaded the Duke of Albemarle and the Earl of Carlisle to become Fellows of the Royal Society. But further manoeuvring at court by the royal physicians persuaded Charles II to refuse O'Dowde.[66] The potency of royal legitimation was revealed in William Johnson's subsequent account of the affair. Defending the Royal College of Physicians, Johnson wrote, "we are all concerned to give our most Humble thanks to our most Gracious Sovereign, that [O'Dowde's] design never went beyond an attempt; but that this Monster was stifled in birth, and proved Abortive, which was like to prey upon, and devour us under the protection of Authority".[67] In other words, Johnson assumed royal assent would have spelled the end for College physick. It was for this reason that opponents of O'Dowde's 'Empiricks' condemned them for quackery, enthusiasm and wishing to "renounce all Order and Government in the State".[68] Such accusations soon reappeared in attacks on the Royal Society by Henry Stubbe, formerly client to the royal physician Sir Alexander Frazier and purportedly in the pay of the ex-Royal College officer Baldwin Hamey. Stubbe again condemned chemical medicine, linking 'Baconical' philosophers to O'Dowde's subversive, but failed, attempts to reject the Aristotelian and Galenic orthodoxy. Stubbe's sustained criticisms caused real damage to the virtuosi. One correspondent reported in 1671 that Henry Oldenburg was "in an agony for feare of an eclipse of the Royal Society".[69] Evidently early in 1673, the Royal Society, like the King, was faced with the need to reassert a fragile authority, particularly when Stubbe was gaining support at court as a propagandist for Shaftesbury, the central player behind the Test Act.

Stubbe had initiated his attacks on the virtuosi in reaction to Joseph Glanvill's claim that traditional physick "never brought the world so much practical, beneficial knowledge, as would help towards the cure of a cut finger".[70] The sentiment proved prophetic in the Society's attempts to re-legitimate itself. On 1 May 1673, Henry Oldenburg received a letter, communicating news of an extraordinary invention. It came from the French physician and Academician, Jean-Baptiste Denis, whose notorious experiments in blood transfusion had ended abruptly in 1669 with the death of a patient. Evidently Denis's interest in blood remained as he now proclaimed the discovery of "an admirable Essence, which being applied to any Artery whatsoever, stops the blood instantly without binding up the wound". Experiments in France had shown the remedy to work "in less times than needs to read this letter". Alluding to the Anglo-Dutch war, Denis asserted that the liquor was sure to prove "useful ... in Armies, where most men die for want of a good remedy to stop the blood". Consequently, Denis offered to sell the secret of the liquor's ingredients to the Royal Society, via Oldenburg, who might in turn sell it on to the English forces. Oldenburg concurred, and was sent a phial of the liquor for testing.[71]

On 30 May, Walter Needham, one of the Royal Society's principal physicians,

began trials with the liquor. They occurred in private, in the Covent Garden home of Richard Wiseman. Perhaps not coincidentally, Wiseman was the King's Sergeant-Surgeon and chief examiner for the Royal Touch ceremony. Wiseman tried the French liquor on a wounded dog and on two women, one suffering from breast cancer, the other from a scrofulous swelling on the neck. Like most trials, these proved precarious, the undisciplined experiment giving widely varying results. Though it took half an hour to staunch the blood of the dog, the first woman received instant relief. The second woman's bleeding returned after initial success, forcing Wiseman to apply a cautery to the wound.[72] Nevertheless, the experimenter's conclusion, addressed to the Royal Society via Sir Robert Moray, was that the liquor worked: "It proved successful, though ... not in so short a time as the Parisians said they had found it."[73] Needham was now requested to show his experiments in public, at the Society's meeting rooms in Arundel House. On 11 June, assisted by Robert Hooke and John Wallis, Needham applied the liquor to the opened crural artery of a dog. After half an hour the wound failed to heal, though a second application succeeded after another half hour. The *Philosophical transactions* reported the liquor a success, as "the Dog ... walked away without any ligature, and is still found alive and well".[74]

The King was soon informed of the trials, and on 18 June, Charles had Jean Denis appear in London to perform further public shows at the Royal Society and Whitehall. Denis reduced Needham's application time to twenty-three minutes before the Society. At court, Denis employed the liquor on his brother, Charles Colbert de Croissy, who was additionally the French Ambassador sent to England by Louis XIV to arrange the Treaty of Dover in 1670. Experiments on the architect of the King's French-Catholic intrigues evidently put Denis in "high consideration" at court.[75] Charles clearly attached great significance to Denis's shows, paying him a thousand guineas for his trouble.[76] Then, two days later, Charles performed his own trials with the liquor. They took place in the traditional location for the King's healing ceremonies, the Banqueting House at Whitehall, and were transformed from humble trials on dogs into spectacular experimental shows. Charles's royal butchers and surgeons used calves instead of dogs, their limbs being severed before the liquor was applied. Despite struggles, as the day progressed the speed of the liquor's action was reduced from two hours to fifteen minutes, until eventually, "his Majesty declared himself publickly to be well satisfied with it".[77]

Keen to try the liquor on human subjects, Charles ordered further experiments at St Thomas's Hospital in Southwark. On 3 and 4 July, trials took place on a woman suffering from the King's Evil, and on a sailor whose leg had been fractured by cannon fire during the latest battle with the Dutch. Amputating each patient's leg, the liquor was applied with impressive results. For the woman, "the blood was staunch without any other dressing". The sailor's "blood was stopp'd in less than half a quarter of an hour". These were "wonderful Effects" which the *Philosophical transactions* heralded as a great success, "instead of complaining,

as those who are wont to do who have a limb cut off, and the mouths of whose arteries are burnt with a hot iron ... to stop the blood, this Patient [the woman] look'd very cheerful, and was free from pain, and slept two hours after". Following the trials, the patients had "found themselves very well ... they have served to convince the most incredulous of the goodness of this remedy".[78] These idealized results suggest the liquor was being used as propaganda within the context of the Anglo-Dutch war. But the liquor was tried not only on ailing sailors but on patients suffering from scrofula, the King's Evil. If the liquor could serve as a means of demonstrating royal support for the navy at a time when public opinion was shifting against the war, it might also have been used here in reaction to the Test Act.

Certainly the chief concern throughout these experiments was the speed of the liquor's action, reduced to four minutes by 3 July. The liquor worked fast, but not *instantly*, as Denis had claimed in the letter to Oldenburg. Yet instantaneous healing was the hallmark of the Royal Touch, of the Catholic miracle of transubstantiation. In an atmosphere of suspicion against Stuart popery, the Royal Society's liquor provided Charles with a means of demonstrating royal healing, performed on sufferers of the King's Evil, but devoid of miraculous properties. Correspondences in the organization of experimental procedure and royal ritual made it easy for the King to transfer shows from the Royal Society's meeting rooms at Arundel House to Whitehall. Like the miracle of the King's Touch, Charles could present the liquor experiments as a spectacle of healing in public inside the Banqueting Hall, only now that form of healing was secular and civil. Although there is no direct evidence to prove it, the styptic liquor likely provided another aspect of Charles's efforts to fashion the appearance of allegiance to Parliament and the established church.

Charles was already making efforts to demonstrate such allegiances at court. Throughout June and July, as holders of official office swore their adherence to the Church of England, news circulated in London of Shaftesbury's efforts to dissuade James, Duke of York from his intentions to marry the Catholic Mary of Modena.[79] Charles was careful to make evident his opposition to James. On 10 June, he told de Croissy, the French benefactor of Denis's liquor, that bills might be introduced to the next Parliament to exclude Catholic princes, meaning James, from the throne, so that "the first known mention of exclusion came from the lips of the King himself".[80] Two days later, Charles was conducting new experiments on calves in the Banqueting House. "The blood of them [was] stopp'd with this new liquor to the admiration of all the spectators." Since it had "been prepar'd with more exactness than ever ... the effect of it was so quick and effectual, that the blood was stopp'd in four minutes of time".[81] As a form of 'Protestant miracle', the liquor presented a further means of showing exclusion of Catholicism from Whitehall. Meanwhile, the Royal Society received valuable royal patronage, Charles's experiments providing a clear demonstration to the Royal College of Physicians and detractors like Stubbe that chemical medicine was not subversive

but ultimately approved by the King.

Significantly, Louis XIV, the other *Roi Thaumaturge* of seventeenth-century Europe, paid far less attention to Denis's extraordinary invention than Charles.[82] In Catholic France, where the miraculous touch remained uncontroversial, no alternative was necessary. Describing experiments made with the liquor at the Académie Royale des Sciences, Denis could proclaim "mon Essence arresta le Sang de ces ... Animaux *aussi-tost* qu'elle y fut appliquée"[83] — exactly what could not be said about the liquor in England. As Peter Dear has shown, the assumption of English natural philosophers that the age of miracles had passed sanctioned their use of experiment to capture singular instances of nature acting outside its ordinary course. Consequently, in England, experiment and royal ritual could be interchanged since both dealt in singular instances outside nature's ordinary course. Sprat's assertion that the miracles of Christ were "*Divine Experiments* of his Godhead" could apply just as easily to his earthly apostle, the King.[84] In contrast, French savants seeking a standard against which to judge miracles attempted to establish, not interrupt, the ordinary course of nature. This made experiment an inappropriate strategy for producing reliable knowledge and distanced natural philosophy from the practices of royal ritual. Consequently, Denis could make claims for the liquor's immediate effect because they were divorced from any context where such claims might be politically controversial.[85] To put it another way, whilst miracles were uncontroversial in France, as part of an opaque, unquestionable Reason of State, experiments were not. As Biagioli argues, Louis maintained a distance from his academy because experimental controversy was potentially detrimental to his honour and status.[86] It was therefore proper for Louis not to involve himself with the liquor experiments. By contrast, English Reason of State was contested *because* it was miraculous, whilst experiment was not. Consequently, Charles's involvement with the liquor experiments could help to grant him credibility amongst those who would see Catholicism excluded from the court.

In fact, Charles went out of his way to publicize his connection with the liquor. The King was presented as a named author of the liquor experiments in the *Philosophical transactions*, something inconceivable for Louis in France. Following the experiments of 12 June, details of the liquor's ingredients were sent to Whitehall by Denis on Charles's order, and the royal apothecaries, Christian Harrell, John Chase and John Jones, set to work in the King's laboratory producing an English styptic liquor.[87] Interest in the liquor was now dying away in France. Justel wrote to Oldenburg in September that "Not such a good opinion is held here of the styptic liquid as in England, and no one uses it in Paris".[88] Meanwhile, Charles not only had the liquor dispatched to the fleet for use in the Dutch war, but also ordered it manufactured and sold in various London coffeehouses. Advertisements appeared in the *London gazette*, owned by the Royal Society Fellow and strong Anglican Sir Joseph Williamson, for "An extraordinary Remedy to stay Bleeding.... Lately discovered, and by his Majesties Command fully tryed,

and approved by his Majesties Chirurgeons". Denis's essence was now being sold as "the Royal Styptique Liquor" and was to be "dispersed into all parts of his Majesties Dominions, for [the] good of his Majesties Subjects" sealed in bottles "with his Majesties Royal Character".[89] Not just an aid to the fleet, Charles's Protestant miracle, like the Royal Touch, was now available to all.

CONCLUSION

The "Royal Styptique" by no means heralded the end of the Royal Touch. Charles continued to perform the ceremony until the end of his reign, as did his successors, until Queen Anne undertook the last healing on 14 April 1714. Although the liturgy for the ceremony remained in the *Book of Common Prayer* into the reign of George II, by 1752 Bishop of Salisbury John Douglas could dismiss supernatural explanations of royal healing, "this solution might, perhaps, pass current in the age of ... Mr. Wiseman, but one who would account for [it] so, at this Time of Day, would be exposed, and deservedly so, to universal Ridicule".[90] With the ascendancy of Anglican public science and the marketplace of the military-fiscal state, natural philosophers were no longer "fools" but they did jest.

In the time of Mr. Wiseman, however, the supernatural status of Kingship was less easily dismissed. Throughout the Restoration, both the Royal Society and the King were faced with the task of self-legitimation, and the rituals surrounding both provided resources for legitimation. But changing circumstances transformed relations between the prince and natural philosophers, and links between Whitehall, Gresham College and Arundel House changed accordingly. In 1660, ritual demonstrations of the King's miraculous powers had consolidated his Restoration with an enthusiastic public. These rituals offered potent models for natural philosophers to construct experimental procedures founded on the theatricality of the show. But by 1673, a conjunction of fears of popery and French absolutism contested the power of the King's Catholic rituals. In light of the Test Act, experiment provided a new form of theatre, specifically devoid of miraculous content, which served to propagate a royal cure. Evidently Charles's efforts did not go unappreciated. After the King's death in 1685, Dryden at least was grateful,

> For all those joys thy Restauration brought,
> For all those miracles it wrought,
> For all the healing Balm thy mercy pour'd,
> Into the Nation's bleeding Wound,
> And care that after kept it sound.[91]

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65. For attacks on the Royal Society, see Hunter, *Science and society* (ref. 2), 136–61; R. H. Syfret, "Some early critics of the Royal Society", *Notes and records of the Royal Society*, viii (1950), 20–64; James R. Jacob, *Henry Stubbe, radical Protestantism and the early Enlightenment* (Cambridge, 1983), 80–108.
66. Quoted in Harold J. Cook, "The Society of Chemical Physicians, the new philosophy, and the Restoration court", *Bulletin of the history of medicine*, lxi (1987), 61–77, p. 75. See also Cook, *Decline of the old medical regime* (ref. 51), 133–59; Sir Henry Thomas "The Society of Chemical Physicians: An echo of the Great Plague of London, 1665", in E. Ashworth Underwood (ed.), *Science, medicine and history* (2 vols, London, 1953), ii, 56–71.
67. My italics. Johnson quoted in Thomas, "Society of Chemical Physicians" (ref. 66), 67–68.
68. Johnson quoted in Cook, "Society of Chemical Physicians" (ref. 66), 75.
69. Quoted in Hunter, *Science and society* (ref. 2), 45. On Stubbe and physick, see Cook, *Decline of the old medical regime* (ref. 51), 172–6; Jacob, *Henry Stubbe* (ref. 65), 107.
70. Joseph Glanvill, *Plus ultra; or the progress and advancement of knowledge since the days of Aristotle* (London, 1668), 7–8. On Stubbe at court, see Jacob, *Henry Stubbe* (ref. 65), 109–28.
71. The letter was printed in English translation in the *Philosophical transactions*, no. 94 (1673), 6039. The complete letter and an account of experiments with the styptic liquor in France are given in Jean-Baptiste Denis, *Recueil des mémoires et conferences de l'Académie des Sciences* (Paris, 1672–74), 277–316. See also A. Rupert Hall and M. B. Hall (eds), *The correspondence of Henry Oldenburg* (Madison, Wisc., 1965–), ix, 612–14, 642, and x, 21–25. On Denis's transfusion experiments, see Harcourt Brown, "Jean Denis and the transfusion of blood", *Isis*, xxxix, 15–29.
72. The trials are described in a report, written by Needham, and read to the Society on 4 June by Sir Robert Moray. See *Philosophical transactions*, no. 95 (1673), 6052–3, and Thomas Birch, *History of the Royal Society of London* (London, 1756–57), iii, 91–92. For Wiseman's account of the trials, see his *Severall chirurgical treatises* (ref. 51), 272–3.
73. Birch, *History of the Royal Society* (ref. 72), iii, 91.
74. *Philosophical transactions*, no. 95 (1673), 6053.
75. Jean P. Niceron, *Mémoires pour servir à l'histoire des hommes illustrés* (Paris, 1737), 77–78.
76. See W. D. Christie (ed.), *Letters addressed from London to Sir Joseph Williamson while Plenipotentiary at the Congress of Cologne* (London, 1874), 67.
77. *Philosophical transactions*, no. 95 (1673), 6053–4.
78. *Ibid.*, 6078–9.
79. Christie (ed.), *Letters ... to Sir Joseph Williamson* (ref. 76), 67.
80. K. H. D. Haley, *The first Earl of Shaftesbury* (Oxford, 1968), 331.
84. *Philosophical transactions*, no. 95 (1673), 6079.
82. Denis, assisted by the royal surgeon Elian, did perform experiments with the liquor before the Dauphin and his court at Chateau St Germain in June 1673, but the King was not present. See Denis, *Recueil des mémoirs* (ref. 71), 294.
83. *Ibid.*, 294.

84. Sprat, *History of the Royal Society* (ref. 39), 352.
85. Peter Dear, "Miracles, experiments and the ordinary course of nature", *Isis*, lxxxi (1990), 663–83.
86. Biagioli, "Etiquette, interdependence and sociability" (ref. 4), 216–25. On Reason of State, see *ibid*., 204.
87. On the laboratory, see Gunther, *Early science in Oxford* (ref. 49), i, 41–42; Arthur Bryant, *King Charles II* (London, 1964), 82. On the apothecaries, see Leslie G. Matthews, *The royal apothecaries* (London, 1967), 113–14.
88. Hall and Hall (eds), *Correspondence of Henry Oldenburg* (ref. 71), x, 210–12.
89. *London gazette*, no. 804, 31 July 1673. See also Hall and Hall (eds), *Correspondence of Henry Oldenburg* (ref. 71), x, 136–7.
90. John Douglas, *The criterion or miracles examined with a view to expose the pretentions of pagans and papists* (London, 1752), 200. David Hume likewise suggested the touch "was attended with ridicule by all men of understanding", *History of England* (London, 1792), iii, 179. See also Roger French, "Surgery and scrofula", in Christopher Lawrence (ed.), *Medical theory, surgical practice: Studies in the history of surgery* (London, 1992), 85–100. On the end of the English healing rite, see Bloch, *Royal touch* (ref. 12), 219–23.
91. John Dryden, "Threnodia Augustalis", in *The poetical works of John Dryden ... with notes by the Rev. Joseph Warton* (London, 1862), 97.