

The Hunterian oration : delivered at the Royal College of Surgeons of England on Saturday, February 14th, 1925 / by Sir d'Arcy Power.

Contributors

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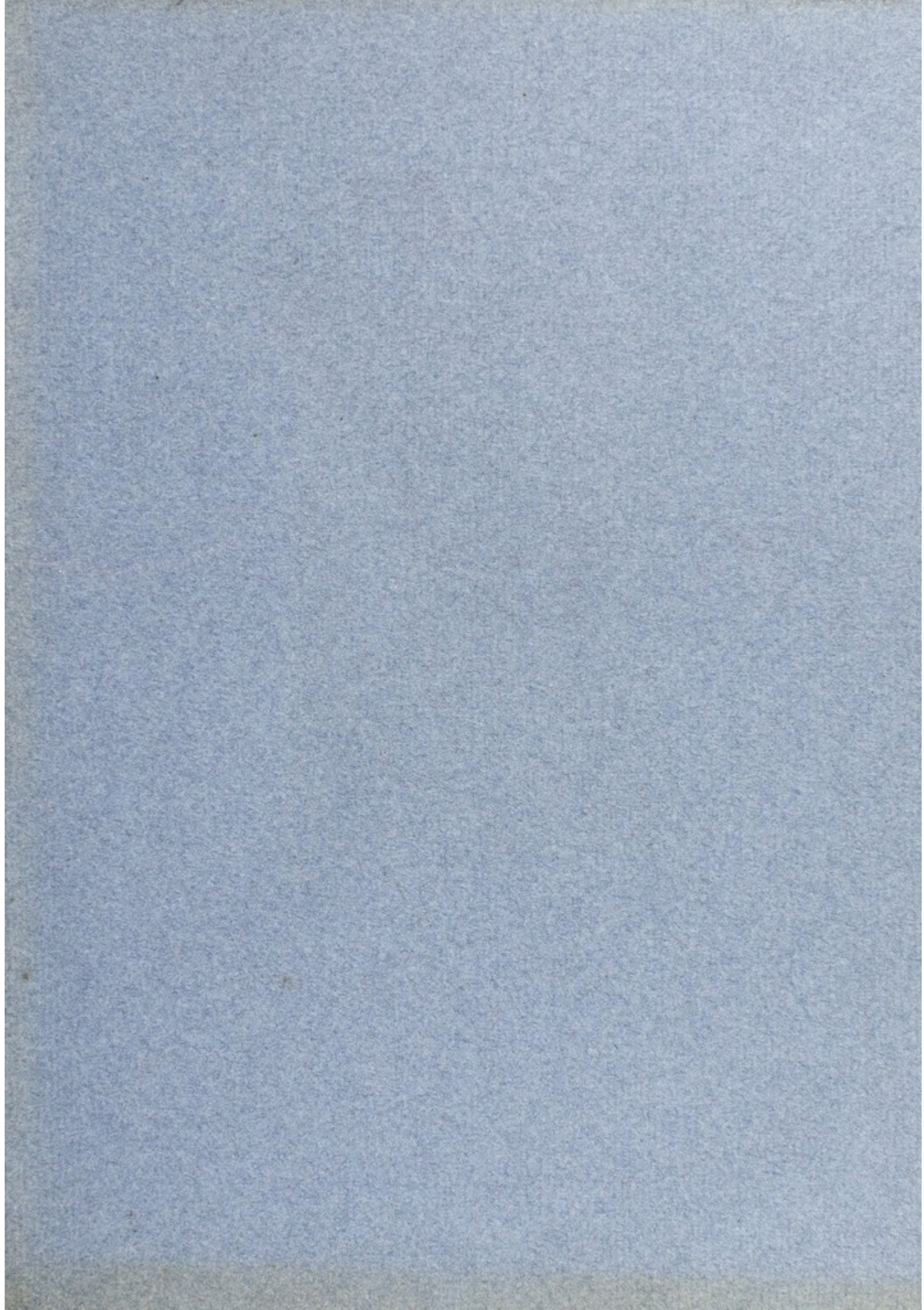


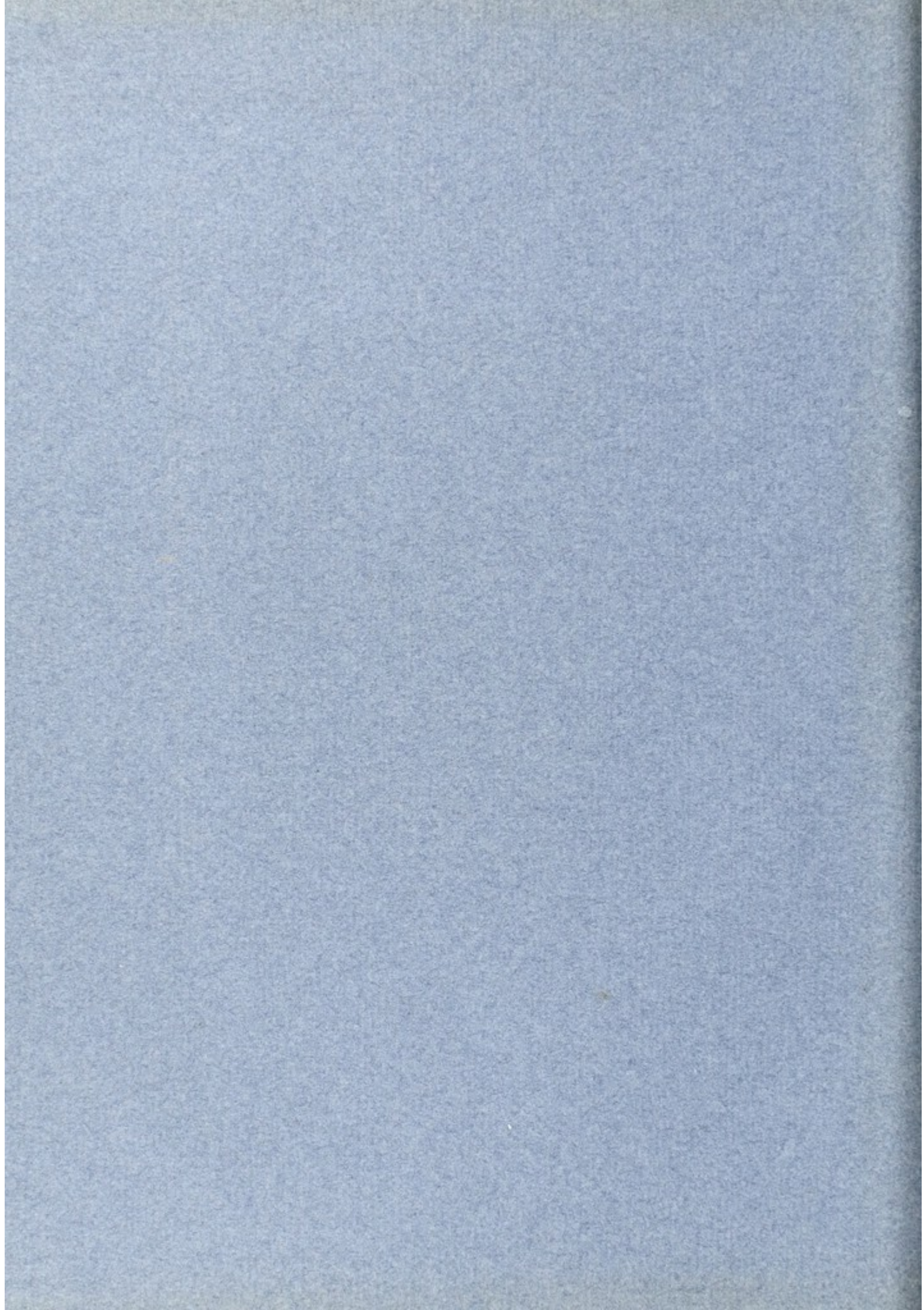
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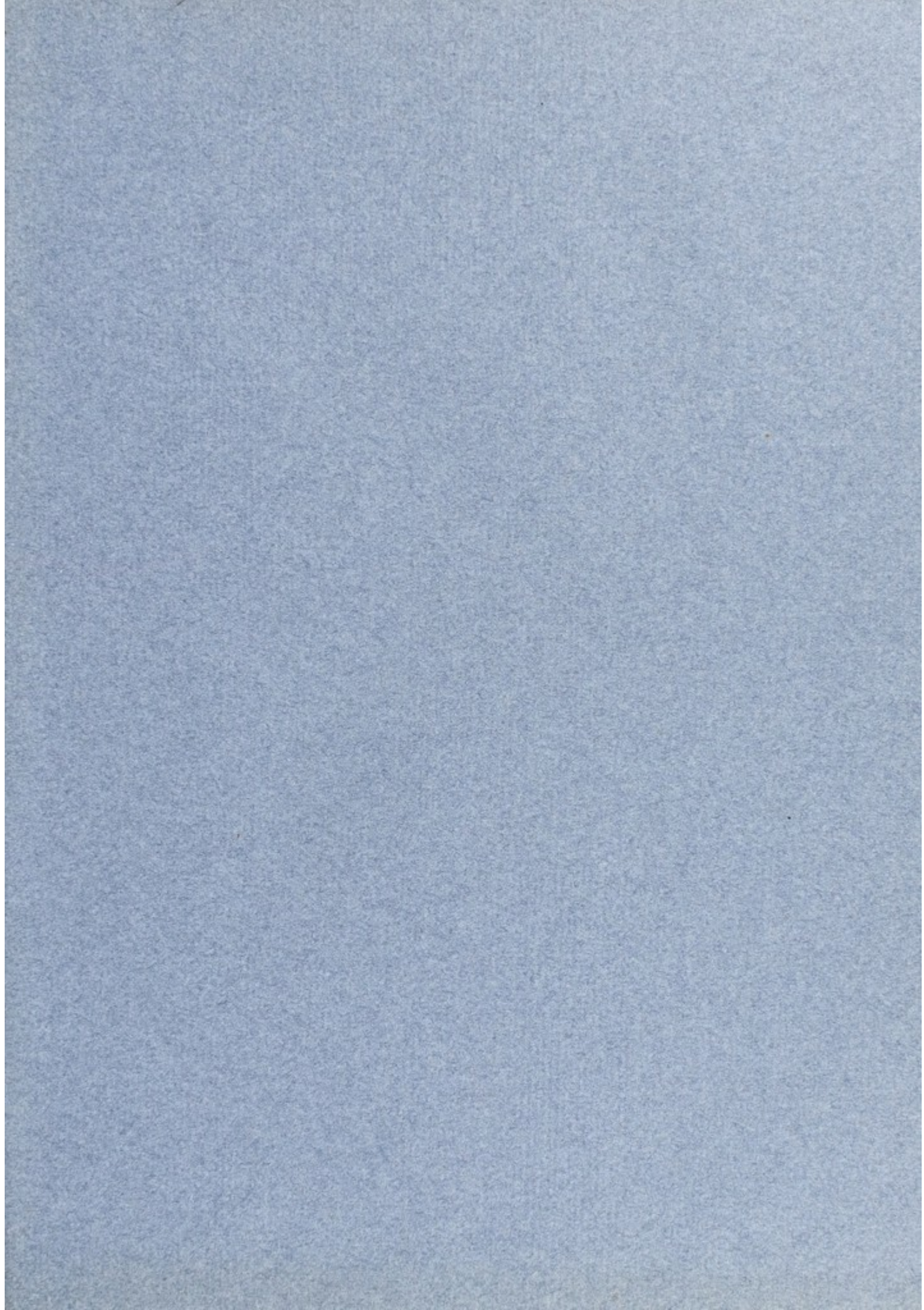
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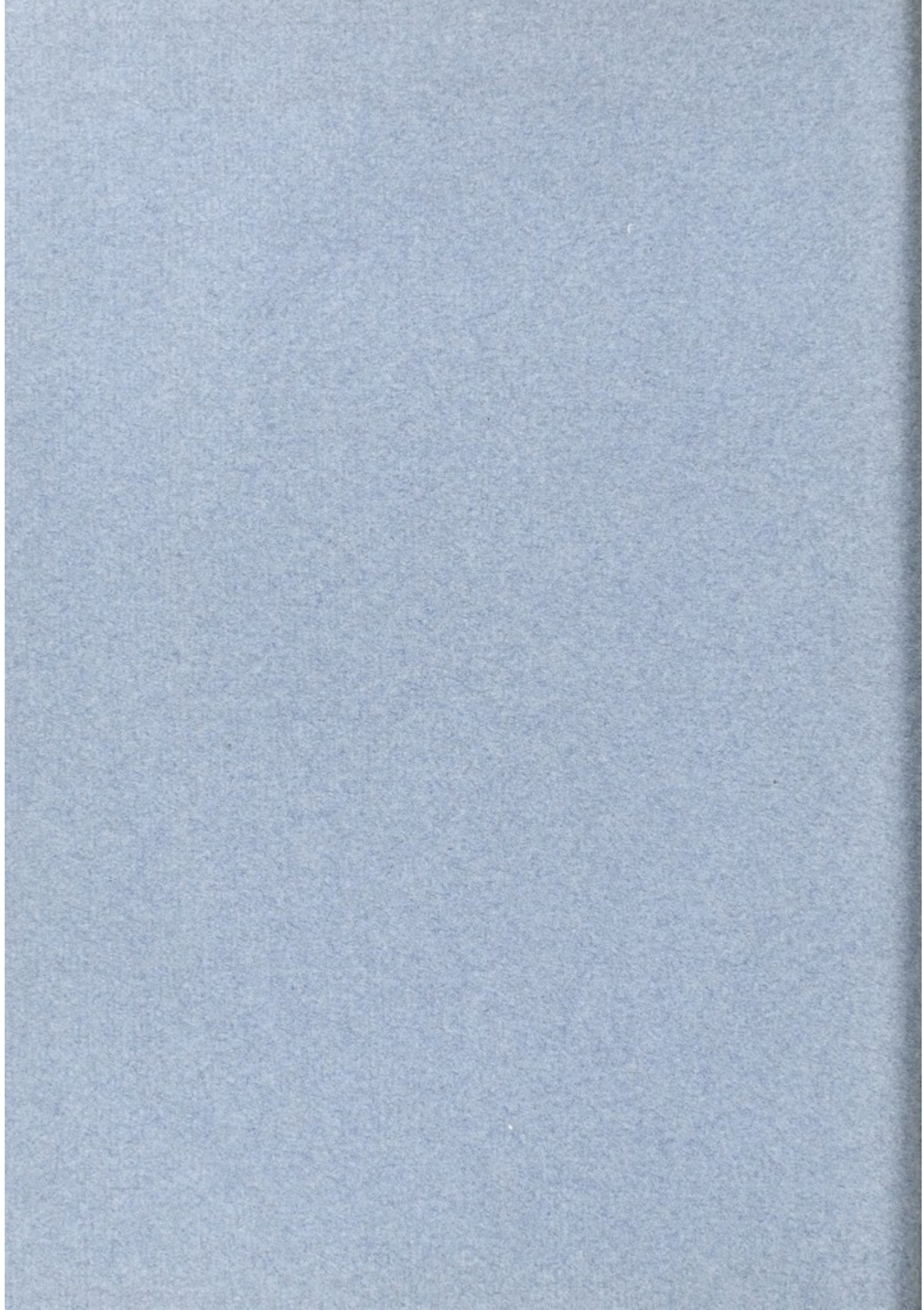


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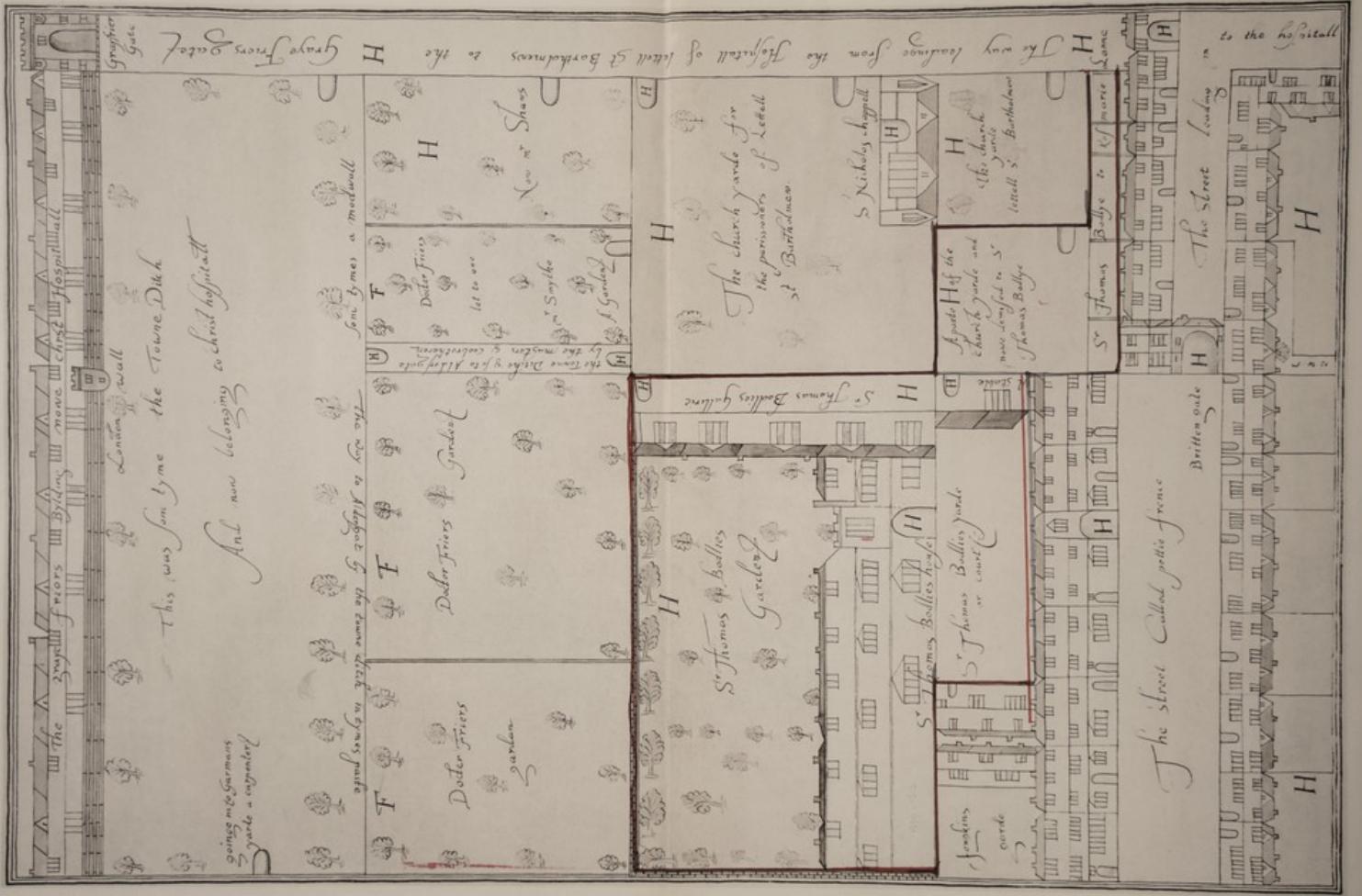






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Grayfriars Gate

The way leading from the Hospital of Little St. Bartholomew to the Grayfriars Gate

This was some time the Towne Ditch

And now belonging to christ hospital

Some times a moat wall

the same Ditch is to be taken by the masons & carpenters

let to one

New in Shaws

St. Nicholas Chappell

The church yard for the parish of Little St. Bartholomew

St. Thomas Bullies yard

St. Thomas Bullies yard

St. Thomas Bullies yard

St. Thomas Bullies yard

St. Thomas Bullies yard

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SIR THOMAS BODLEY'S LONDON HOUSE

It has long been known that Sir Thomas and Lady Bodley lived in 'The Great House' within the precincts of St. Bartholomew's Hospital from 1599 to 1612, paying an annual rent to the Hospital of £5 6s. 8d. Lady Bodley died in the house early in 1611 and was buried 'in the upper chancel without knells, 18s. 4d.' says the register, in the church of St. Bartholomew-the-Less where her memorial tablet on the north-east wall of the nave can still be read. It is of the ordinary Jacobean type and is inscribed

Thomas Bodleius
Eqves Avratus fecit
Annae conivgi Piissimae
Atqve omnibvs Exem
plis Bene de se
Meritae cvm qva
Dvlciter vixit
Annos XXIV.

Sir Thomas died in the same house on 28 January 1612-13 and was buried in Merton College Chapel.

Very little was known about his house in the hospital and it was generally thought to have been opposite the Church of St. Bartholomew-the-Less, just within the Smithfield entrance. A recent examination by Miss Gweneth Hutchings and myself of some plans of the hospital property made not later than 1613 has shown both the exact position of the house and its character. The plan was drawn whilst Sir Thomas Bodley was in possession. It can be dated between 18 April 1604 when he was knighted 'at Whitehall with seventeen others' and 1613 when he died, for he is called *Sir* Thomas Bodlie. The site of the house is now occupied by the newer portion of the Queen Mary's Institute for Nurses on the ground which lies between the Little Britain Gate, demolished in 1924, and the side entrance to the General Post Office. It was exactly opposite 'Montagu Court' and the main, but disused, entrance to the Nurses' Institute would have opened straight into the north end of Bodley's house.

The house, as will be seen from the plan which my friend Dr. Arnold C. Klebs of Nyon, Switzerland, has kindly had redrawn, stood at right angles to Little Britain. It was a three-story building facing west with a courtyard in front and a

small garden divided into two parts on the east side. The courtyard had a stable and offices. The entrance to the house and garden was through an archway, marked *H* in the plan, to show that it was hospital property and perhaps to maintain the right of way. The house has a high-pitched roof and seven chimneys; the top story is lighted by six windows, the second story has five windows, of which the southernmost is larger than the rest, the ground floor has only two windows, the one larger than the other. Some additions appear to have been made to the southern end of the house. A single-storied building with a battlement has been built over the entrance and to this has been added a three-storied building which looks as if it might have contained a porter's lodge on the ground floor and a passage way on the first floor with a living or sleeping room above it. The passage led to a long gallery built at right angles to the southern end of the house. The gallery is lighted by five large windows and there are four chimneys in the roof. It looks out upon the burial-ground for the parishioners of St. Bartholomew-the-Less, a part of which Sir Thomas Bodley had been allowed to buy. In this burial-ground is the mortuary chapel of St. Nicholas. It is the confusion of this chapel with the church of St. Bartholomew-the-Less, then known familiarly as 'the spital chapel', more than one hundred and fifty yards away, which has led to the site of the house being wrongly placed.

The subsequent history of the house and its inhabitants is interesting. Bodley, himself of Devonian extraction, married in 1587 Anna, daughter of Mr. Carew, a wealthy Bristol merchant and the widow of Nicholas Ball of Totnes, Devon. Elizabeth Ball her daughter, and therefore Bodley's stepdaughter, married in July 1603 Ralph Winwood, who was Secretary of State to King James the First. Winwood was knighted on 28 June 1607, and he with his wife continued to live with Sir Thomas and Lady Bodley in 'the Great House'. He died in the house on 27 October 1617, survived by his wife, three sons, and two daughters. Lady Winwood retained the lease until 1655, and another plan shows that in or before 1613 various alterations had been made in the house although the gallery remained unchanged. Anne Winwood, one of the daughters, married Edward Montagu, the second Baron Montagu, who had lived just opposite Bodley's house on the other side of Little Britain. Lord and Lady Montagu went to Ditton Park, Buckinghamshire, and had a family of two sons and a daughter. The daughter Elizabeth married Sir Daniel Harvey, ambassador to the Sublime Port. He was the fourth son of Daniel Harvey and consequently nephew to Dr. William Harvey, physician to St. Bartholomew's Hospital, the discoverer of the circulation of the blood and sometime Warden of

Merton. It makes a pleasant story and shows that the relation of the Bodleys, the Montagus, and the Harveys centred round this little bit of ground in the heart of London for two or three generations. Sir Thomas Bodley lived in later life for some time at Fulham, squeezed out, perhaps, by the Winwoods and their increasing family, but sick and sorry he returned to his old house where he could be well nursed by the hospital sisters and be well treated by 'little Doctor Harvey' the physician. Mr. G. W. Wheeler points out that Bodley in his letters to James, the Librarian, refers several times to his gallery, as, for instance, on 14 November 1604 when he writes that he has 'about 2,000 already [books] gathered in my Gallerie'. These books, too, were numbered and kept in order, for he complains that James had not put them back in their proper places. Dr. Freier, Bodley's and Winwood's next-door neighbour, was Thomas Fryer, incorporated Doctor of Physic at Oxford in 1623. He was a consistent member of the Church of Rome and 'compounded with his Majesty for a certain yearly sum not to come to church'. His two sons are said to have lived in the house. They were John, who died at the age of 96 in 1672, and Thomas, who died in 1623. Both were Doctors of Medicine and Fellows of the College of Physicians.

D'ARCY POWER.

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FRIENDS OF THE BODLEIAN

Visit to Merton College

23 JUNE 1931

SIR THOMAS BODLEY

AND MERTON

COLLEGE

2

Sir Thomas Bodley and Merton College

*

SIR THOMAS BODLEY, Founder of the Bodleian, was elected to a fellowship at Merton in 1563. His father had been educated at Merton, but had resided there only a short time. Bodley remained a fellow of the College for twenty-three years, vacating his fellowship by marriage—the fact of his marriage is duly recorded in the College Register (Aug. 5, 1586). When he resigned his fellowship, he had been for five years senior fellow, and had held, at various times, most of the College offices. He was bursar in at least three different years, in one of which he involved the College in a heavy law-suit. In 1575, when Oxford was devastated by the Plague and many of the fellows were absent, Bodley continued in residence and performed the office of bursar for one of his colleagues. One of his account-rolls as bursar is still extant, written in his own hand, and is interesting as recording the performance in the College of the English comedy *Damon and Pythias*—it is not certain that the play had been acted before. Bodley served as Dean in 1567 and in three subsequent years, one of them, 1571, another Plague Year—the College Register records that during the year no fewer than 600 persons died in Oxford of the Plague. As Dean he had a very stormy time, being little liked by the Romanist faction in College. In 1570 and 1572 he was Principal of the Postmasters—an office carrying with it the supervision of the undergraduate members of the College. In 1572 he was appointed 'Gardener' of the College Gardens. There is a tradition that he was fined for cutting trees down; and it is certain that on his appointment the College passed a rule by which the Gardener should pay 6s. 8d. for every tree which he cut down without leave. The Register in fact mentions twelve

plum-trees as having been cut down by Bodley, but for all these executions he had authority.

While he was still a junior fellow, it was Bodley's duty to read periodical essays in college. The titles of six of his essays survive in the Register.

In 1576 the College gave him four years' leave of absence for the purpose of studying abroad, allowing him, out of his fellowship, £6 13s. 4d. per annum. In the Merton Library is a copy of a Hebrew book given to Savile, with an autograph inscription, by Bodley, 'Oxonia ad exteras nationes proficiscens.' In the autumn of 1585 the Register records that he was appointed esquire of the body to Queen Elizabeth and sent upon a diplomatic mission to the Danish Court. But he retained his fellowship for another year. Diplomacy engaged the next twelve years of his life, until in 1598 he 'concluded at the last to set up his staff at the Library Door in Oxon'. The restored Library of the University was opened in 1602—for the building of the later portions of it Bodley employed the builders and masons who, a few years before, had been engaged by his friend Savile to build the Great Quadrangle of Merton. The first Catalogue of the Library—one of the earliest catalogues of any great European library—was issued in 1605. Merton preserves stray leaves of what are believed to be the proofs of this Catalogue sent to Bodley.

In January 1599 Merton had made Bodley a present of books to the value of £50 to be chained in the University Library—the names of the books are entered in the College Register.

Bodley was buried in the Chapel of Merton, and has his monument in the north transept of the Chapel. The Register contains a minute account of his obsequies—among the mourners was a postmaster of the College, his nephew Laurence Bodley. From moneys which he bequeathed to the College was instituted 'Bodley's Chest', from which over a long period loans were made to the fellows of the College. What is believed to be the actual chest, or loan box, is still kept in the College.

H. W. G.

Please turn over

UNACCOMPANIED SINGING BY THE
ST. MARY WINTON QUARTET

The Agincourt Song (1415).	Arr. <i>A. S. Warrell</i>
As matchless beauty (1609).	<i>John Wilbye</i>
The ape, the monkey and baboon (1608).	<i>Thomas Weelkes</i>
Come, let us join the roundelay.	<i>William Beale</i>

Awake, sweet love (1579).	<i>John Dowland</i>
Now, O now, I needs must part (1593).	<i>John Dowland</i>
Come, Sirrah Jack ho (1608).	<i>Thomas Weelkes</i>
While that the sun (1611).	<i>William Byrd</i>
Down in a flow'ry vale (1541).	<i>Costanzo Festa</i>

THE HUNTERIAN ORATION

DELIVERED AT
THE ROYAL COLLEGE OF SURGEONS OF ENGLAND,
ON
SATURDAY, FEBRUARY 14th, 1925,

BY
SIR D'ARCY POWER,
K.B.E., M.A., M.B. Oxon., F.R.C.S. Eng.

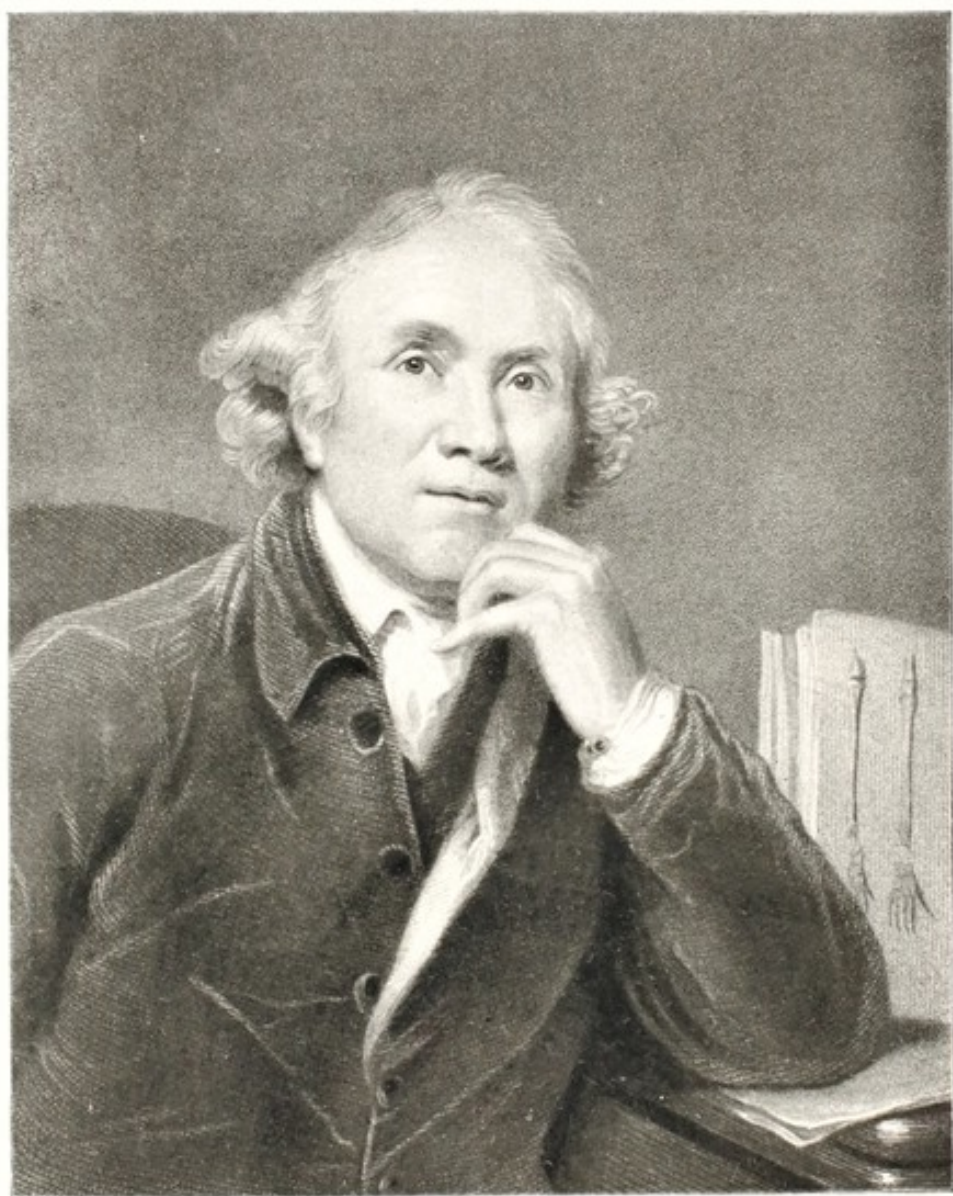
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LONDON: SIMPKIN, MARSHALL, HAMILTON, KENT & CO. LTD.



IN PIAM MEMORIAM
PATRIS CARISSIMI
ORATORIS HUNTERIANI

MDCCCLXXXIX.

^{et}
conjugis amantissimi
MDCCCLXXXII - MCMXXIII



JOHN HUNTER

From a painting by Sir Joshua Reynolds in the Royal College of Surgeons, London

JOHN HUNTER: A MARTYR TO SCIENCE

Mihi quidem miserandi magis quam beati videntur ut qui sese perpetuo torqueant. Addunt, mutant, adimunt, reponunt, repetunt, recidunt, ostendunt, nonum in annum premunt, nec unquam sibi satisfaciunt: ac futile premium, nempe laudem, eamque perpaucorum, tanti emunt, tot vigiliis, somnique rerum omnium dulcissimi tanta jactura, tot sudoribus, tot crucibus. Adde nunc valetudinis dispendium, formae perniciem, lippitudinem, aut etiam caecitatem, pauper-tatem, invidiam, voluptatum abstinentiam, senectutem præproperam, mortem præmaturam, et si qua sunt alia ejusmodi. Tantis malis sapiens ille redimendum existimat, ut ab uno aut altero lippo probetur.

Erasmus: *Eucomium Moriae*, cap. I.

MR. PRESIDENT AND GENTLEMEN,

Brought up, as I have been, at St. Bartholomew's Hospital, in the straitest sect of the Hunterian School, I might fairly claim some knowledge of the pioneer in surgery, the anniversary of whose birthday we are assembled to celebrate to-day.

Sir William Savory, my revered master, learnt from Sir William Lawrence, and he from John Abernethy, who himself sat at the feet of John Hunter and was ever afterwards his eulogist. But much as I had heard of John Hunter, a reperusal of his works has shown me how little I really knew about the originality of the man, of his limitations, or of the handicaps under which he laboured. It is on these subjects that I shall speak to you to-day, and my wish to do so is the greater because the principles of surgery which he laid down have fallen somewhat into the background, being overshadowed by advances in chemistry, physics, and physiology, by the advent of bacteriology, and by the work of Lister.

HUNTER AS A PIONEER.

I want you to think first of John Hunter as a pioneer in the philosophy of surgery, not as a skilled operator. Like all pioneers he lived and worked alone, for none of his contemporaries could think as he thought or see what he saw. Like Vesalius and Harvey he had to educate a new generation to foster his ideas and expound his thoughts.

Limitations.—The limitations of John Hunter are obvious. He was hampered by a defective education. He had an almost mediæval respect for words as words. He could not express himself clearly either in writing or by word of mouth when he dealt with the more difficult problems of surgery which he knew existed but was unable to solve for want of the ancillary

sciences. He was a gross teleologist. His metaphors were often strained and sometimes wholly false. He was confessedly ignorant of the work of his surgical colleagues and foreign contemporaries, and—as I shall show presently—he suffered from frequent and severe attacks of illness which would have incapacitated anyone possessed of a less dauntless spirit. But when we have said this we have said all there is to say against him as a man.

Handicaps.—Now consider his handicaps. In his day there was no chemistry; no physics; no acquaintance with minute anatomy, for the microscope was not yet in common use; no knowledge of animal cells; hardly even a theory of fermentation to account for disease, because humoral pathology and the doctrine of climatic conditions still held sway. Joseph Black discovered ‘fixed air’ or carbon dioxide in 1754; Priestley prepared ‘dephlogisticated air’ in 1774. Three years later Lavoisier called it ‘respirable air or oxygene’, and taught the true nature of the interchange of gases in the lungs. Hunter by this time had done much of his work on respiration. The want of a well-calibrated thermometer vitiated many of his experiments on animal heat. He was obliged, therefore, to stumble along and explore the fields of surgical knowledge as best he could, for he was half a century before his time. He would have gotten the true explanation of many of his facts had he been born in 1778 instead of in 1728. With all these limitations and handicaps he often arrived very nearly at the truth, and his writings are full of the most astounding presages of knowledge to come, presages which have been fulfilled for the most part by the advance of science, although some still await their accomplishment.

Animal Heat.—Hunter’s methods and the advances he made are nowhere seen to better advantage than in his experiments and observations on animals in regard to their production of heat. Just a century earlier his great predecessor, William Harvey, who equalled him in originality of thought and excelled him in logical exposition, had dealt with the subject of animal heat in the seventy-first essay of his treatise *De Generatione Animalium*. John Mayow had solved the problem at Oxford in 1674, but he died young, and the *Tractatus Quinque* fell stillborn from the press. He left no successor; his discoveries had to be made afresh and applied by others more than a hundred years later. Albert Haller, who did so much to advance physiology in general, was not particularly interested in the subject of animal heat, so there had been no material change of thought about it in the century which separated Harvey from Hunter. It is fair, therefore, to compare the two monographs bearing in mind that Harvey was already well stricken in years when he wrote on ‘calidum innatum’, whilst Hunter—aged 38—was in the prime of life when he performed his experiments, although they were not elaborated and published until twenty years afterwards.

Harvey is trammelled throughout by his knowledge of history, and his treatise is filled with quotations from Aristotle, although he arrives at the very practical conclusion that the heat of the blood in animals during life is neither fire nor derived from fire as the ancients thought. It is a principle inherent in the blood; but he then loses himself in speculating whether or not the blood is the Soul or Life itself.

Hunter starts in a very different manner. The lapse of a hundred years

had given him an instrument of precision—the mercury thermometer—invented by Fahrenheit in 1720*—whilst the work of Black had afforded some insight into the composition of the atmosphere and the interchange of gases. But the science of physics had not advanced sufficiently to enable Hunter to appreciate the relationship of heat to cold. He speaks of animals which “seem to possess a power of generating cold”, whilst heat, as in the time of Harvey, was still a principle. How new an instrument the thermometer was is shown by a letter to Jenner on July 6, 1777, in which Hunter says: “The thermometer is very useful when understood. You will observe the scratch upon the glass stalk, perhaps about two inches from the globe, which is the freezing point. Put 0 or nought which is upon the ivory scale (*Fig. 1*) two degrees below the scratch, then 0 becomes the thirtieth degree, and the scratch, being two degrees above it, stands at the freezing point; then from that count upwards; or, if the cold is below 30, then put 1 or 2 at the scratch and count down; every No. is ten degrees. What the devil becomes of your eels in the winter? But try them in the summer and see what you can make of them”.† Jenner does not seem to have been very fortunate in his management of the thermometer, for a few years later Hunter writes chaffingly: “You are very sly, although you think I cannot see it. You very modestly ask for a thermometer. I will send you one, but take care that those damned clumsy fingers do not break it also”.‡ Nevertheless, even with such inadequate instruments Hunter set out to determine experimentally the cause of animal heat not only in different vertebrata and invertebrata, but also in the vegetable kingdom. He came to the conclusion that “animal heat is owing to some decomposition going on in the body in pretty regular progression, though it is not the process of fermentation”.|| He thus, for the first time, gave the correct answer to a problem which had baffled philosophers from the earliest days. He then adds the very important statement: “I expect the blood has an ultimate standard heat in itself when in health, and that nothing can increase that heat but some universal constitutional affection”.§ Ignorance of the functions of the nervous system prevented him from studying the mechanism of heat regulation in animals, though he distinguished clearly between the homoiothermic and the poikilothermic—the warm- and the cold-blooded—for he

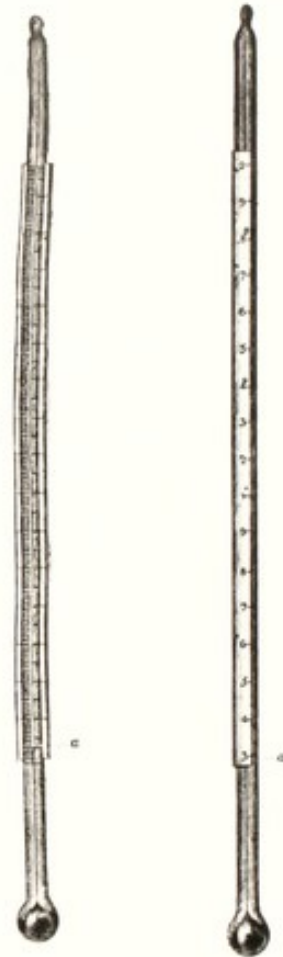


FIG. 1.

Thermometer with a movable scale invented by John Hunter. The freezing point is at *a*, marked by a scratch on the glass.

* “*Barometri Novi Descriptio*”, *Phil. Trans.*, xxxiii, 1724–25, 179.

† Otley’s Life in *The Works of John Hunter, F.R.S.*, ed. J. F. Palmer, i, p. 63.

‡ *Baron’s Life of Jenner*, i, 69.

|| *The Works of John Hunter, F.R.S.*, in 4 vols, ed. J. F. Palmer, i, 284.

§ *Op. cit.*, i, 385.

says, "the expression should rather be animals of a permanent heat in all atmospheres and animals of a heat variable with every atmosphere".* A strange perversity led him to spoil his result, for he limits the place of heat production to "some part of the body, perhaps the stomach",† and by ill fortune it did not occur to him to measure the fever in disease.

The Causes of Disease.—The shifts to which John Hunter was put to explain the general principles of disease in his ignorance of micro-organisms are both interesting and ingenious. He was in the position which we occupied until lately in regard to tubercle and syphilis, and where we still stand about cancer. He knew the clinical facts, but could not interpret them, for he had no knowledge of the part played by micro-organisms.

How near he got to the truth is shown by his definition of disease when he says: "The most simple idea I can form of an animal being capable of disease is that every animal is endued with a *power of action* and a *susceptibility of impression*, which *impression* forms a *disposition*, which disposition may produce *action*, which action becomes the immediate *sign* of the disease; all of which will be according to the nature of the impression and of the part impressed".‡ This seems at first sight to be a mere cloud of words hiding nothing, but interpret it by latter-day knowledge, and it shows how far Hunter had advanced in surgical pathology. What he calls the *power of action* we now speak of as the *predisposition* to disease or the *diathesis*; the *susceptibility of impression* is the *infective organism*; the *disposition* is the *exciting cause*, and the *action* is the *manifestation of the disease by signs and symptoms*. Take tuberculous arthritis as an example; the tuberculous diathesis (*power of action*) allowed the tubercle bacillus (*the susceptibility of impression*) to settle in the joint in consequence of a sprain (*the disposition*), and the joint then became hot and swollen (*the action*).

He says, indeed: "A true specific disease is one that probably cannot arise but from one cause and which probably belongs only to morbid poisons".|| He gives as an example: "Scrofula, which is one of those diseases which is supposed to be hereditary, but it is only the readiness to fall into this peculiar action, when properly irritated that is hereditary; and when such a cause does not exist we find no scrofula".§ Surely, "nil nisi clavis deest", the key alone is wanting, and the key was not forged until Pasteur and Lister, the master locksmiths, came to maturity more than seventy years after the death of John Hunter. He was even a little in advance of the earliest Listerian teaching, for he showed by experiment that "air, simply, has no power to excite inflammation".¶

He returns over and over again to the problem of the cause of disease when he is considering the causes of inflammation. Thus he says: "It is the cause producing inflammation which is the disease and not the inflammation itself, for all inflammations that can be called diseases have specific causes".** And he is driven at last to confess that "inflammation may arise from a vast variety of causes with which we are at present totally unacquainted; nay, which we do not perhaps even suspect: and this last opinion

* *Op. cit.*, iii, 16. note. † *Op. cit.*, i, 384. ‡ *Op. cit.*, i, 301.
 || *Op. cit.*, i, 342. § *Op. cit.*, i, 358. ¶ *Op. cit.*, iii, 352-3. ** *Op. cit.*, i, 371-2.

would seem to be the most probable because we can frequently put back these spontaneous inflammations, which would not be the case if they came from the destruction of a part, or anything else, whose stimulus was similar to it, for no such thing can be done with wounds, if they are not soon united by the first intention they must suppurate".* He has to confess his ignorance at last, for he says: "I cannot perceive why bleeding should have such an effect on inflammation as it often has. We cannot account for it simply on the mechanical principle of lessening the quantity of blood, because this can never remove the *cause* of the inflammation".†

He is in similar difficulties when he tries to explain the action of mercury in the treatment of syphilis, and again he gets very near the truth. "Mercury by its irritation", he says, "will produce diseased action in a healthy part; the venereal poison, by its irritation, will also produce diseased action in a healthy part; but from the application of mercury to a part already affected with diseased action from venereal irritation, an action results different from that which would be produced by the application of it to a healthy part; for, from the conjoined action of the two, results the action of health; but, if carried beyond that it may do harm, producing its own specific action".‡ This is a striking example of the Master's clarity of thought and poverty of language. What he wanted to say was that when mercury had done its remedial work in the body it again became a poison if its use was continued.

THE HUNTERIAN SCHOOL.

If Hunter was born half a century too soon to allow of his genius giving the best results, the span of his life coincided with the time needed to establish a school of scientific surgery in this country. No great surgeons existed in England from the death of Richard Wiseman in 1676 until William Cheselden began to make his reputation by teaching anatomy privately in 1711. The industry of Mr. G. C. Peachey|| has shown that Hunter was not the first to hold private classes, as a demand had already grown up for more advanced teaching than was provided by the formal lectures at the United Company of Barbers and Surgeons—lectures which had once been of the greatest service to surgery, but which in process of time had become obsolete. Cheselden, Nourse, Chovet, Sharp, and Pott (*Fig. 2*) had lectured to large classes before Hunter, but they dealt only with their own experience and with surgery in its clinical aspects. It was left to John Hunter to invent surgical pathology. His teaching only appealed to a few, and his lectures were sometimes attended so scantily as to give point to the story of his ordering the skeleton to be brought into his lecture theatre that he might address the audience with the usual prelude, 'Gentlemen'.

How, then, did the school spread from such small beginnings? His few pupils became the leaders of the next generation of surgeons. Sir William Blizard of the London Hospital, Henry Cline of St. Thomas's, Astley Cooper at Guy's, John Abernethy at St. Bartholomew's, Anthony Carlisle at the

* *Op. cit.*, iii, 407. † *Op. cit.*, i, 405. ‡ *Op. cit.*, i, 478.
 || *A Memoir of William and John Hunter*, Plymouth, 1924, p. 8.

Westminster, Philip Syngé Physick and his nephew John Syngé Dorsey in Pennsylvania, received the Hunterian teaching with enthusiasm. (*Fig. 3.*) These great surgeons transmitted their knowledge to Sir Benjamin Brodie, Sir William Lawrence, Joseph Henry Green, John Collins Warren, and Valentine Mott, who in their generation became teachers at great schools of medicine in England and in America. The teaching of John Hunter was thus disseminated amongst the rank and file of the profession, whilst the doctrines he enunciated were so novel, so ingenious, and seemingly so heterodox as to become the subject of acrimonious discussion. (*Fig. 4.*) Attention was thus drawn to them, and they quickly found their way into

a text-book so widely read as Benjamin Bell's *System of Surgery*. They thus became public knowledge both at home and abroad even during the lifetime of their author.

But something more is needed to account for the rapid diffusion of Hunter's teaching. It is to be found in the spirit of devoted affection (*Fig. 5*) which he inspired in his pupils and in all with whom he was brought into personal contact. Those who, like myself, have been pupils of Huxley, of Rolleston, and of Ray Lankester, can easily enter into their feelings of hero-worship. Adams says of him, "He was almost adored by the rising generation of medical men, who seemed to quote him as the Schools, at one time, did Aristotle."*

Rough, coarse, and prone to anger as he was in later life, he

had the personal magnetism inherent in every great teacher, whether of religion, philosophy, science, or even quackery—a magnetism which attracts kindred spirits, rarely amongst contemporaries, generally in a younger generation. Thus it was with John Hunter. To his pupils he was "The Dear Man" with whom they were in constant communication either by letter or by word of mouth, and to whom they looked for guidance and instruction in the experimental methods he had taught them to use in scientific surgery.

The Hunterian Tradition.—The Hunterian tradition passed down the next century in two great streams, theory and practice, uniting sometimes,

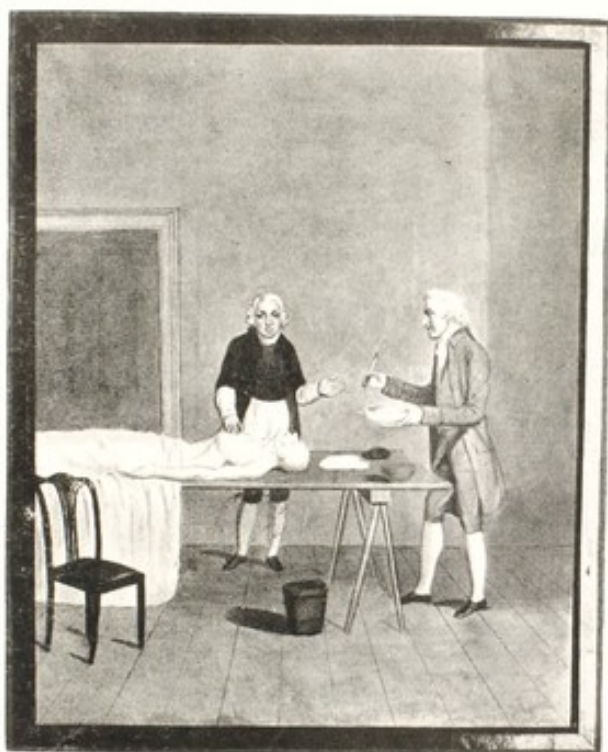


FIG. 2.—Percivall Pott demonstrating
John Hunter in the year 1756.

* *Memoirs of the Life and Doctrines of the late John Hunter, Esq.*, by Joseph Adams, M.D. London, 1817, p. 172.

but for the most part flowing separately, because it was only occasionally that a single mind could embrace the whole. Both streams took their source from a sound knowledge of human anatomy gained by daily dissection. The streams parted early. Blizard, Astley Cooper, Hey, Physick, Gibson, and Dorsey became great operating surgeons and advanced the teaching of Hunter along the lines of arterial surgery, the anatomy, and treatment of hernia, the pathology of fractures and dislocations. John Abernethy, on the other hand, developed the physiological side of surgery and investigated the causes of disease and its non-operative treatment, for he took but little pleasure in the manipulative part of his profession.

Sir Benjamin Brodie was great enough in the second generation to combine the science with the art of surgery—the theory with the practice. He was equally good as a morbid anatomist and as a clinical surgeon, whilst his general knowledge of science enabled him to fill with distinction the important position of President of the Royal Society. Joseph Henry Green, the Hunterian Orator in 1840, alone followed Hunter on the metaphysical side, and delved so deeply into philosophy that he soon lost himself in speculation and did but little to advance the practice of surgery.

Sir James Paget in the third generation developed surgical pathology on truly Hunterian lines; whilst Sir William Savory was more interested in the teaching and dissemination of the surgical principles laid down by John Hunter, though he was a skilful surgeon and dearly loved to tie an artery or extirpate a tumour so placed as to demand all his knowledge of anatomy.

You, Sir, like myself and many others in the fourth generation, hold firmly to the teaching of John Hunter. We recognize with thankfulness the great work which he accomplished; but we realize that it was the work of a pioneer, and that the fields he pointed to are being explored by methods and by instruments of which he had no conception. The Museum, Sir, has always been your especial care, but you have not neglected the equally important subject of

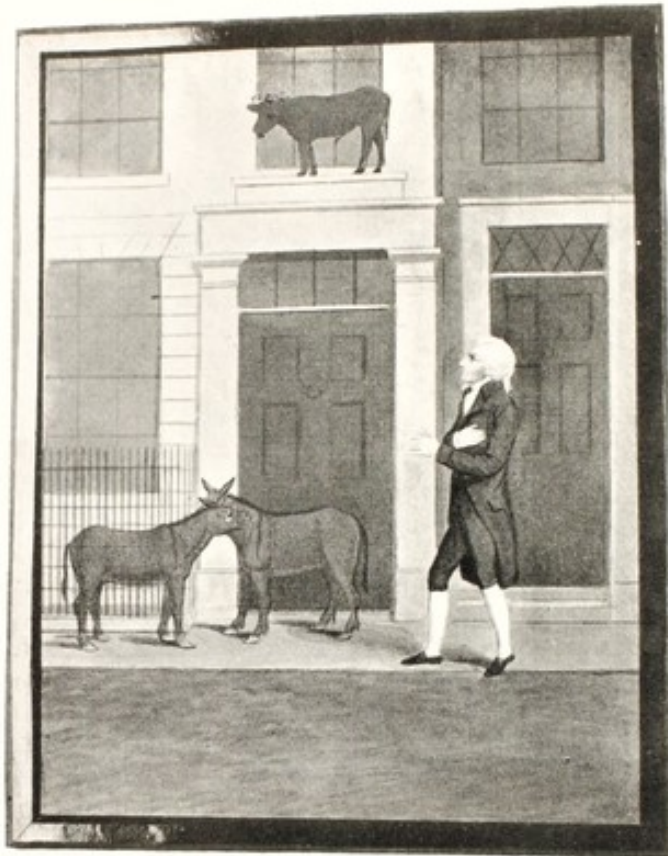


FIG. 3.—John Hunter at the door of his house in Golden Square in 1763.

teaching both by example and precept. You have shown, too, so enlightened an interest in the habits and the customs of the beasts of the field and the fowls of the air as would have drawn you very near to the heart of John Hunter had you been privileged to sit at his feet. To you also he would most certainly have been "The Dear Man."

THE MENTALITY OF HUNTER.

The attitude of Hunter to Nature and the human body always had something of the poetic in it, and was akin to the feeling expressed by Longfellow when he wrote of Agassiz :—

" And Nature the dear old Nurse *look*
~~look~~ the child upon her knee,
 Saying, ' Here is a story book
 Thy Father has written for thee.' "

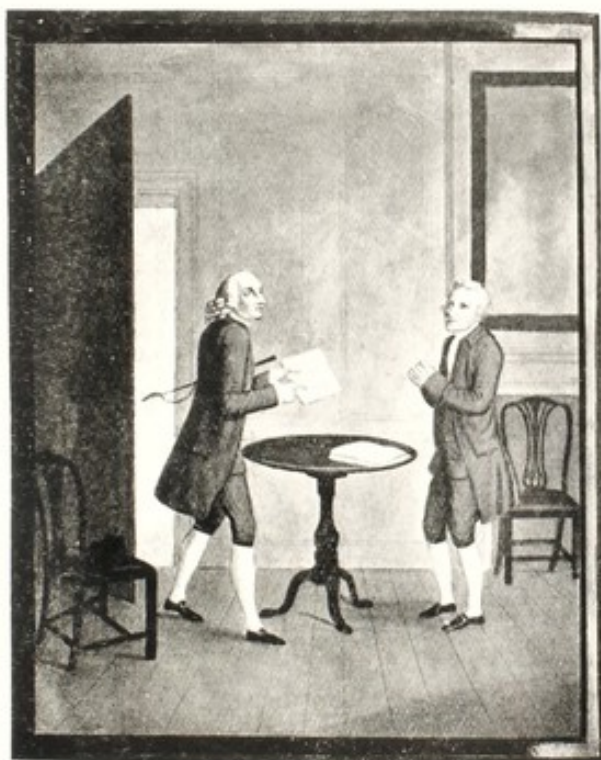


FIG. 4.—Peter Camper and John Hunter
 disputing in 1775.

Hunter looked upon Nature as a conscious personality. He says : " Everything in Nature involves two consequences, the one beneficial, the other hurtful. But if we understood thoroughly all the remote causes we should probably see its utility in every case ".* He speaks of muscles as " being conscious of their actions and almost endowed with reason ".† " Nature ", he says, " acts purposefully in the repair of dead bone ",‡ and the " clot adheres to the side of an aneurysm from a consciousness on the part of the artery of the weakness of its wall ".§ In like manner he states that " Nature lays claim to and removes what she pleases ".§ and he speaks of two surfaces lying in contact with each other and " agreeing mutually not to inflame ; or, perhaps more properly expressed, by being in contact

there is a mutual harmony which prevents their being excited to inflammation ".¶ He also maintains that the first and immediate cause of the absorption of tissues is " a consciousness in the parts to be absorbed of the

* *Op. Cit.*, iii, 481.
 † *Op. cit.*, i, 546.

‡ *Op. cit.*, i, 524.
 § *Op. cit.*, i, 576.

¶ *Op. cit.*, i, 526.
 • *Op. cit.*, iii, 293.

unfitness or impossibility of remaining under such circumstances, the action excited by the irritation being incompatible with the natural actions and existence of the parts, whatever these are; wherefore they become ready for removal or accept of it with ease".

The blood, too, is for him so living a tissue that the clot "has the power of becoming vascularized in itself",* and when blisters and setons have been used as derivatives to draw off the humours he "is unable to ascertain fully how they act, that is, how far the real disease is invited and accepts the invitation".†

A Martyr to Science.—

I wish now to draw your attention to a new aspect of John Hunter's life. It has always been assumed that the statement was the truth, the whole truth, and nothing but the truth, which was made by Sir Everard Home in 1794, the year after his brother-in-law's death, that "the symptoms of Mr. Hunter's complaint for the last twenty years of his life may be considered as those of angina pectoris and form one of the most complete histories of that disease upon record".‡

Reading the account of his illness in the light of modern knowledge it seems to me that John Hunter died of syphilitic disease of his arterial system, and that, in addition to the angina pectoris due to this cause, he suffered for many years from cerebral syphilis. Both conditions were due to the action of the spirochaetes with which he deliberately inoculated himself in May, 1767. He may be looked upon, therefore, as one of the great martyrs to Science. Personally I do not think that he was justified in this martyrdom, for the consequences of his action were visited upon his children as well as upon himself, whilst the whole of surgery suffered by a shortening of the life which was advancing its bounds in every direction.

On a Friday in May, 1767,|| Hunter inoculated himself with pus from a



FIG. 5.—John Hunter inviting a friend to see his new house in Leicester Fields in 1783.

* *Op. cit.*, iii, 351. † *Op. cit.*, iii, 395.

‡ Life of the Author prefixed to the quarto edition of Hunter's *Treatise on the Blood, Inflammation and Gunshot Wounds*, p. xlv.

|| *A Treatise on Venereal Disease*, 4to, London, 1786, 324.

patient with gonorrhœa to determine whether the poison of gonorrhœa was identical with that producing syphilis. Surely that Friday must have been May 22, a well-recognized 'Egyptian Day' or Dies Maledicti,* when it was most unfortunate to embark upon any new undertaking. The prepuce and glans were scarified, and it was noticed that the incisions itched on the second day, May 24. The prepuce was inflamed on May 26, and on June 2 a small ulcer appeared and was cauterized. A slough separated on June 6, and the sore was cauterized a second time. The glans itched on June 7, and on the following day a second slough detached itself from the prepuce whilst the sore on the glans ulcerated and was cauterized. Sloughs separated from the glans and prepuce on June 12, and the ulcers healed, leaving a scar. The lymphatic glands in the right groin enlarged during the week ending June 13, but they did not suppurate.

The rapidity with which the two sites of inoculation ulcerated, and the appearance of a bubo, suggest that the pus may have contained Ducrey's bacillus, causing two soft sores. Spirochetes were also present, because the gland in the groin began to enlarge again after a time, and in July the right tonsil ulcerated. Copper-coloured spots appeared upon the skin in September, and the tonsil ulcerated a second time. The administration of mercury soon healed the ulcer, but it returned a third and fourth time. The rash on the skin appeared on three separate occasions, and mercury was then "taken in a sufficient quantity and for a proper time", Hunter says, "to complete the cure. The time the experiments took up, from the first insertion to the complete cure, was about three years". How complete the cure was will be shown! It is certain, therefore, that Hunter also inoculated himself with the *Spirochata pallida* and that his mercurial course was insufficient. The gonococcus, having been inoculated on a skin surface, did not multiply.

He married Miss Anne Home on July 22, 1771. There is nothing to show that she became infected as it was then understood; but John Banks Hunter was born in June, 1772, and lived until 1838; Mary Anne, born in December, 1773, lived only two months; James, born in November, 1774, died in February, 1775; Agnes, the youngest child, born in 1776, lived until 1838. It may be remarked that neither of the two surviving children left offspring, and neither was above the average in mental attainments.

Except for an attack of pneumonia in 1759, and occasional poisoned wounds from which every anatomist suffers from time to time, Hunter was a healthy man until he inoculated himself in 1767. In the spring of 1769 he had some toxic disturbance which, in accordance with the fashion of the time, was diagnosed as "a fit of the gout". It returned in the three following springs, but not the fourth. Its place was taken in the spring of this year (1773) by his first attack of serious illness. The account reads:—

In the spring of 1773, having met with something which very forcibly affected his mind, he was attacked at ten o'clock in the forenoon with a pain in the stomach

* The Fridays in May, 1767, as my friend Mr. R. T. Gunther tells me, fell on the 1st, 8th, 15th, 22nd, and 29th of the month. Hunter states that he made the experiment on a Friday in May, 1767, but does not specify the exact date. I have assumed for the sake of convenience that it was the only Egyptian day in a notoriously ill-starred month.

about the pylorus. It was the sensation peculiar to those parts and became so violent that he tried change of position to procure ease. He sat down, then walked, laid himself down on the carpet, then upon chairs, but could find no relief. He took a spoonful of tincture of rhubarb with thirty drops of laudanum without the smallest benefit. While he was walking about the room he cast his eyes on the looking-glass and observed his countenance to be pale, his lips white, giving the appearance of a dead man. This alarmed him and led him to feel for his pulse, but he found none in either arm. The pain still continued and he found himself at times not breathing. Being afraid of death soon taking place if he did not breathe, he produced the voluntary act of breathing by working his lungs by the power of the will; the sensitive principle, with all its effects on the machine not being in the least affected by the complaint. In this state he continued for three-quarters of an hour, in which time frequent attempts were made to feel the pulse, but in vain; however, at last the pain lessened and the pulse returned, although at first but faintly, and involuntary breathing began to take place. In two hours he was perfectly recovered. In this attack there was a suspension of the most material involuntary actions, even involuntary breathing was stopped, while sensation with its consequences, as thinking and acting with the will, were perfect and all voluntary actions were as strong as before.*

This attack of epigastric angina occurred six years after the inoculation with syphilis. It may have been caused by toxic changes in the smaller blood-vessels supplying the vagal nuclei, or it may have been the first indication of syphilitic inflammation at the root of the aorta. I am inclined to think that it was due to cerebral changes rather than to inflammation in the large arteries, for it would hardly have passed off so rapidly without leaving any marked ill-effects. It is noteworthy, too, that from this time until his death twenty years later he drank little if any wine, not, we may be sure, because he liked abstinence, but because, as he says, it went to his head.

Four years later—in 1777—and again in the spring, he was seized with a very severe and dangerous illness in consequence of anxiety of mind from being obliged to pay a large sum of money for a friend for whom he had gone security and which circumstances made extremely inconvenient.

At two o'clock in the forenoon he ate some cold chicken and ham and drank a little weak punch; immediately after this he went eight miles in a post-chaise. While he was on the journey he had the feeling of having drunk too much, but passed the remainder of the day tolerably well; at twelve o'clock at night his stomach was a little disordered, for which he took some caraways and went to bed. He had no sooner lain down than he felt as if suspended in the air, and soon after the room appeared to go round; the quickness of this motion seemed to increase and at last was very rapid. It continued for some time, then became slower and slower till the whole was at rest. This was succeeded by vomiting, which was encouraged, and gave him a good night's rest. Next day he was tolerably well but fatigued. The morning after, thinking himself quite recovered, he went out before breakfast, drank some tea and ate some bread and butter which he was not accustomed to do. At eleven o'clock he felt his stomach in much the same state as before; in about half an hour the sensation of the room appearing to turn recommenced and continued for some time, but not with such violence as in the last attack. He became sick and vomited. The sensation of himself and everything else going round went off, but that of being suspended in the air continued with a giddiness. He could now hardly move his head from the horizontal position, and about two o'clock was brought home in his carriage, the motion of which was very disagreeable, giving the sensation of going down or sinking.

* *Treatise on the Blood, Inflammation and Gunshot Wounds*, 1794, pp. xlv-xlvii.

After he went to bed the giddiness and the idea of being suspended in the air increased, and the least motion of the head upon the pillow appeared to be so great that he hardly durst attempt it ; if he but moved his head half round, it appeared to be moving to some distance with great velocity ; the idea he had of his own size was that of being only two feet long, and when he drew up his foot or pushed it down it appeared to him to be moving a vast way. His sensations became extremely acute or heightened ; he could not bear the least light, so that although the window-blinds were shut, a curtain and a blanket were obliged to be hung up against it, the fire to have a screen before it and the bed curtains to be drawn. He kept his eyelids closed ; yet if a lighted candle came across the room he could not bear it. His hearing was also painfully acute, but not so much increased as his sight. The smell and taste were also acute, everything he put into his mouth being much higher flavoured than common, by which means he relished what he ate. His appetite, at first, was very indifferent, but soon became good. His pulse was generally about sixty and weak, and a small degree of heat on the skin, especially on the hands and feet.

He remained in this state for about ten days and was obliged to be fed as he lay. By this time he was rather better, that is, he could move his head more freely. At the end of ten days all his ideas of his present state became natural, the strange deception concerning his own size was in part corrected, and the idea of suspension in the air became less. But for some time after the fire appeared of a deep purple red. When he got so well as to be able to stand without being giddy, he was unable to walk without support, for his own feelings did not give him information respecting his centre of gravity, so that he was unable to balance his body and prevent himself from falling. He gradually recovered from this state, and as soon as he was able went to Bath at the end of August, stayed there until the middle of November and drank the waters, which were thought to be of service to him, but did not stay long enough to give them a fair trial. He returned to Town much better and in a few weeks got quite well.*

Soon after his arrival at Bath he received a visit from Jenner, who was so much shocked at the alteration which he noticed in him that he wrote to Heberden in 1778 saying, "When I had the pleasure of seeing him at Bath last autumn I thought he was affected with many symptoms of angina pectoris. . . . As I have frequently to write to Mr. H., I have been some time in hesitation respecting the propriety of communicating the matter to him (i.e., changes in the coronary arteries). . . . Should it be admitted that this is the cause of the disease I fear the medical world may seek in vain for a remedy and I am fearful (if Mr. H. should admit this to be the cause of the disease) that it may deprive him of the hopes of a recovery".†

Here again the symptoms point rather to cerebral than cardiac disturbance, to syphilitic inflammation of the smaller cerebral arteries, perhaps in the nature of a syphilitic peri-arteritis. There was vertigo, but neither tinnitus nor deafness, so that the auditory symptoms were due to inflammation of the vestibular nerve rather than to changes in the labyrinth. The photophobia was of retinal origin, and was due to hyperæsthesia such as led to exaltation of the senses of smell and taste. The lesions were multiple, and although their results lasted for some time, as in the case of the purple-red fire, yet they became compensated in the end. The unsteadiness of his gait does not appear from the description to have been of an ataxic character.

Hunter's brain adapted itself fairly well to the altered conditions for the next eight years, although his arterial system was undergoing progressive degeneration. His friends noticed with concern that he was ageing rapidly.

* *A Treatise on the Blood, etc.*, pp. xlvii-1. † *Baron's Life of Jenner*, i, 39 and 40.

At the beginning of April, 1785, he was attacked with a spasmodic complaint which, at first slight, became afterwards very violent and terminated in a fit of the gout in the ball of the great toe. Like the previous attack it was brought on by anxiety of mind. The first symptom was a sensation of the muscles of the nose being in action, but whether they really were or not he was never able to determine. This sensation returned at intervals for about a fortnight, attended with an unpleasant sensation in the left side of the face, lower jaw, and throat which seemed to extend into the head on that side and down the left arm, as low as the ball of the thumb, where it terminated all at once. These sensations were not constant, but returned at irregular times. They soon became more violent, attacking the head, face, and both sides of the lower jaw, giving the idea that the face was swelled, particularly the cheeks, and sometimes they slightly affected the right arm. After they had continued for a fortnight they extended to the sternum, producing the same disagreeable sensations there and giving the feel of the sternum being drawn backwards towards the spine, as well as that of oppression of breathing, although the action of breathing was attended with no real difficulty. At these times the heart seemed to miss a stroke, and upon feeling the pulse the artery was very much contracted, often hardly to be felt, and every now and then the pulse was entirely stopped. He was afterwards attacked with pain in the back about that part where the œsophagus passes through the diaphragm, the sensation being that of something scalding hot passing down the œsophagus. He was next seized with a pain in the region of the heart itself, and last of all with a sensation in the left side, nearly in the seat of the great end of the stomach, attended with considerable eructations of wind from that viscus. These seemed to be rather spasmodic than a simple discharge of wind—a kind of mixture of hiccough and eructation, which last symptoms did not accompany the former, but came on by themselves. In every attack there was a raw sore feeling as if the fauces were excoriated. All these symptoms (those in the stomach and nose only excepted) were in addition to the first, for every attack began with the first symptoms. The complaint appeared to be in the vascular system, for the larger arteries were sensibly contracted and sore to the touch, as far as they could be touched, principally in the left arm. The urine at these times was in general very pale.

These symptoms increased in violence at every return, and the attack which was most violent came on one morning about the end of April and lasted above two hours. It began as the others had done, but having continued about an hour the pain became excruciating at the apex of the heart. The throat was so sore as not to allow the attempt to swallow anything, and the left arm could not bear to be



FIG. 6.—John Hunter in a trance in 1776.
Mrs. Hunter is holding back her brother, Everard Home.

touched, the least pressure upon it giving pain. The sensation at the apex of the heart was that of burning or scorching, which by its violence quite exhausted him, and he sunk into a swoon or doze (*Fig. 6*) which lasted about ten minutes, after which he started up without the least recollection of what had passed or of his preceding illness. He then fell asleep for half an hour and awoke with a confusion in his head and a faint recollection of something like a delirium. This went off in a few days."*

These attacks appear to have been of a more complicated nature than the previous ones. They were due in the main to syphilitic changes taking place in the aorta and heart, and were thus anginal, but in part to alterations in the cerebral circulation.



FIG. 7.—John Hunter in the Buffalo Cart which he used to drive down Piccadilly from his house at Earl's Court in 1792.

He went to Tunbridge in the August of this year, 1785, but finding no improvement there he travelled to Bath in September, and in December he was back in London, where he performed his first operation for the cure of aneurysm by ligaturing the artery in its continuity. The attacks of angina continued, though they did not increase in severity throughout the year 1786, until he became so accustomed to them that they formed a part of his life. He was unable, in consequence, to take much exercise (*Fig. 7*), and passed his time in superintending the printing and publication of the *Observations on Certain Parts of the Animal Economy* and the *Treatise on Venereal Disease*, which were issued from his own press in Castle Street, Leicester Square, and in the following year Sir Joshua Reynolds

* *A Treatise on the Blood, etc.*, pp. 1-11.

painted the striking portrait which has made his appearance so familiar to all of us (*see Frontispiece*).

He wrote to Jenner in May, 1788,* saying that a severe indisposition for three weeks had prevented him from writing, although "when two guineas rouse me I cannot resist". (*Fig. 8.*)

It is noteworthy that the first appearance of these symptoms was produced by an affection of the mind, and every subsequent attack of any consequence arose from the same cause. Although bodily exercise or distention of the stomach brought on slighter attacks, it still required the mind to be affected to render them severe, and as his mind was irritated by trifles these produced the most violent effects on the disease. His coachman being late, or a servant not attending to his directions, brought on the spasms, while a real misfortune produced no effect.†

About the beginning of December, 1789, he was attacked with a total loss of memory when he was spending the evening with a friend. He did not know in what part of the town he was, nor even the name of the street when told it, nor where his own house was. He had not a conception of any place existing beyond the room he was in, and yet was perfectly conscious of the loss of memory. He was sensible of impressions of all kinds from the senses, and therefore looked out of the window, although rather dark, to see if he could be made sensible of the situation of the house.

This loss of memory gradually went off, and in less than half an hour he was perfectly recovered. About a fortnight afterwards as he was visiting his patients in the forenoon, he observed occasionally a little giddiness in his head, and by three o'clock it was attended with an inclination to vomit. He came home and drank some warm water, which made him vomit severely, but nothing came off his stomach except the water. The giddiness became severe, but went off again about seven or eight o'clock. About nine or ten it returned with more severity, and when going to bed about eleven o'clock he had entirely lost the centre of gravity, although he could move his limbs as the will directed. Light became offensive and everything had a kind of yellow cast; sounds were more acute than natural; objects had lost their true direction. A perpendicular, for instance seemed to him to lean to the left, making, as nearly as he could conjecture, an angle with the horizon of fifty or sixty

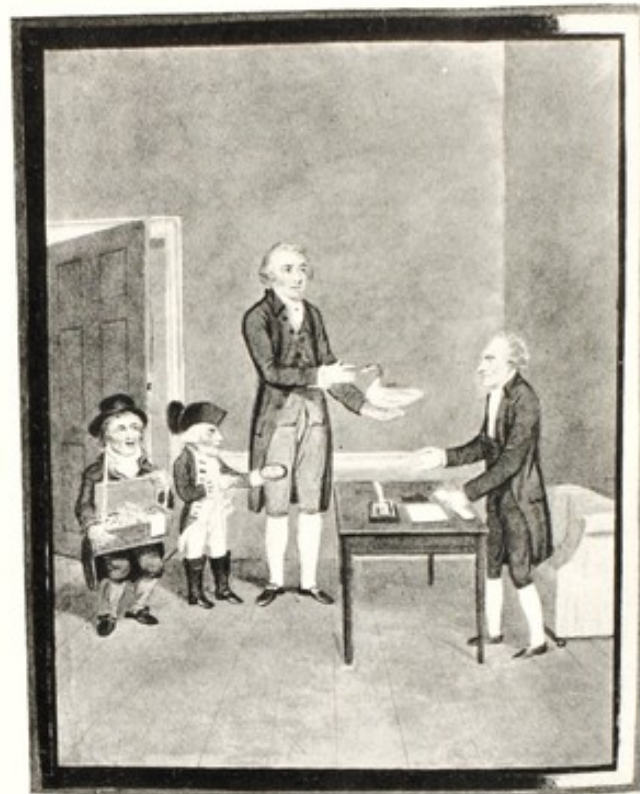


FIG. 8.—1783. John Hunter with three of his freaks.

* *Ottley's Life*, i, 110.

† *Ibid.*, p. lviii-lxi.

degrees. Objects were also smaller than the natural recollection of them; his idea of his own size was that of being only four feet high; objects also appeared to be at an unusual distance as if seen through a concave glass. He had a slight sound in the right ear at every stroke of the pulse. Motion of his head was extremely disagreeable. He therefore moved it with great caution, although coughing and sneezing did not affect it. It is difficult to describe sensations, especially when they are not common. The sensation which he had in his head was not pain, but was rather so unnatural as to give him the idea of having no head; but with all this neither the mind nor the reasoning faculty were affected, which is not the case when such effects are produced from liquor. Objects in the mind were very lively and often disagreeably so. Dreams had the strength of reality so much so, as to awaken him—and the remembrance of them was very perfect. The disposition to sleep was a good deal gone, an hour or two in the twenty-four being as much as could be obtained. These symptoms were much the same for about a week and began gradually to diminish, so that in a fortnight he was able to sit up, and in three weeks went for an airing in his carriage. He felt a pain in the joint of his great toe, which inflamed gently, but soon left it. During the attack he was unable to make water from ten o'clock in the evening till the same time next evening, the quantity being very considerable, although not so much as would have been made in the same time had he been in health.*

His recovery from this indisposition was less perfect than from any of the others. He never lost entirely the oblique vision. His memory was in some respects evidently impaired, and the spasms became more constant.

These attacks were probably due to cerebral changes similar to those which caused the first symptoms in 1777, more than twelve years before, and perhaps not far from the areas originally involved, although there is no doubt that the disease in the large arteries had made considerable progress. I am not a neurologist, but, so far as a surgeon can guess, the lesions may have been situated in the immediate neighbourhood of the basal ganglia or even still nearer the cerebral cortex. They were certainly not in the cortex itself, nor in the spinal cord, nor in the peripheral nerves. The subjective sensation in the nose, and the pain in the great toe, might help to localize them more accurately. Sir William Macewen, in his address on Brain Surgery, delivered as President of the British Medical Association in 1922,† quoted some cases which bear upon this point. He says that in a "girl under his care a protospasm of the hallux was preceded by sensory impressions and pain in the great toe. The lesion was found mainly in the upper portion of the ascending parietal convolution. In another case a sensory impression in the right foot heralded the invasion of the upper parietal convolution of the opposite side. The pain and discomfort in the foot entirely disappeared after the removal of a wedge-shaped portion of the brain tissue, and was replaced by numbness."

The illusions as to size and shape may perhaps be accounted for by changes occurring in those 'silent areas' of the brain which it is so difficult to explore experimentally. It is certain that a generation which knew nothing of the individual functions of the brain and which attributed every form of toxic absorption to 'gout' explained the pain in John Hunter's toe by that disease, just as in later years we have been contented to say that he suffered from angina pectoris, without looking farther for a cause. The permanency

* *A Treatise on the Blood, etc.*, p. lxi.

† *Brit. Med. Jour.*, 1922, ii, 158.

of the defect in vision, and the impairment of memory, also point to widely-spread changes in the brain which were almost certainly vascular, for no gross lesion was found after death. The sleeplessness and the increasing irritability must be attributed rather to changes taking place in his larger arteries than to alterations in the brain.

He never went to bed at this time without having an attack which was brought on by the act of undressing himself. They came on in the middle of the night, and the least exertion in conversation after dinner was attended by them. He felt, therefore, obliged to confine himself within a certain sphere of action and to avoid dining in large companies. Even operations in surgery, if attended with any nicety, now produced the same effects.

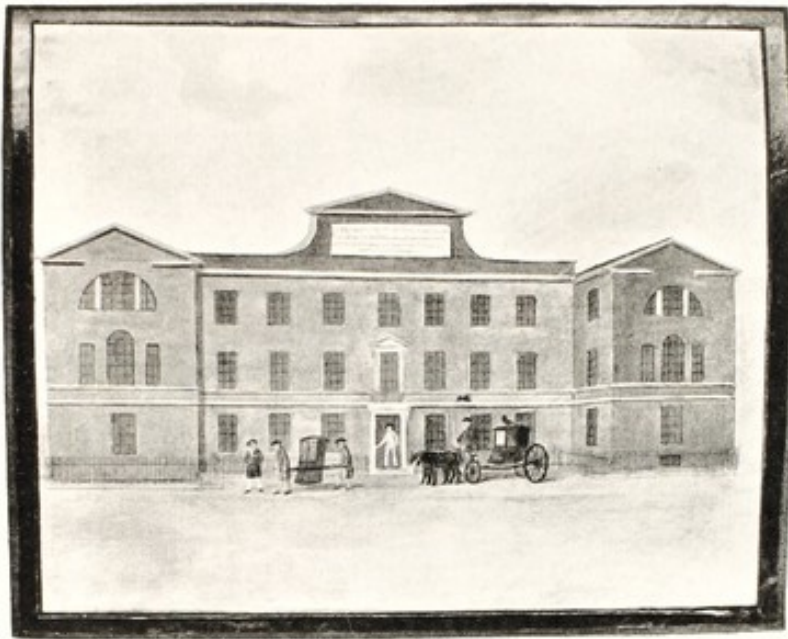


FIG. 9.—Lanesborough House, now St. George's Hospital, as it appeared on Oct. 16, 1793. The body of John Hunter is being conveyed home in Mrs. Hunter's sedan chair immediately after his sudden death. His carriage and pair follow behind, and Jesse Foot has malignantly represented his own feelings by introducing two magpies into the drawing.

In the autumn of 1790 and in the spring and autumn of 1791 he had more severe attacks than during the earlier periods of the year, but of not more than a few hours' duration. In the beginning of October, 1792, one was so violent that Everard Home who was present thought that he would have died.

On October 16th, 1793, when in his usual state of health, he went to St. George's Hospital (*Fig. 9*), and, meeting with some things which irritated his mind and not being perfectly master of the circumstances, he withheld his sentiments, in which state of restraint he went into the next room, and turning round to Dr. Robinson, one of the physicians of the hospital, he gave a deep groan and dropt down dead.*

The post-mortem examination showed that the pericardium was thickened, the heart very small, and there were two patches of a whitish colour and opaque appearance upon the under surface of the left auricle and ventricle. These two

* *A Treatise on the Blood, etc.*, lxi.

patches were covered by an exudation of coagulated lymph which at some former period had been the result of inflammation there. The muscular structure of the heart was paler and looser in its texture than the other muscles of the body. The coronary arteries had their branches in the state of bony tubes which were with difficulty divided by the knife, and their transverse sections did not collapse but remained open. The valvulae mitrales where they came off from the lower edge of the auricle were in many places ossified, forming an imperfectly bony margin of different thicknesses, and in one spot so thick as to form a knob, but these ossifications were not continued down upon the valves toward the chordae tendineae. The semilunar valves of the aorta had lost their natural pliancy, the previous stage to becoming bone, and in several spots there were evident ossifications.



FIG. 10.—William and John Hunter arguing before Sir Joseph Banks, President of the Royal Society in 1789. The portrait of Sir Isaac Newton still hangs behind the President's chair at the Royal Society.

of the ramifications which go off from them had become opaque and unhealthy in their appearance. The vertebral arteries lying upon the medulla oblongata had also become bony, and the basilar artery which is formed by them had opaque white spots very generally along its coats.*

A review of these facts about the illness and death of John Hunter shows, I think, that he died with widespread disease of his arterial system—the largest as well as the smallest arteries being involved. He may have inherited some family weakness of the vascular system, for his brother William (*Fig. 10*) had died ten years before of a cerebral hæmorrhage, after suffering the vague

The aorta, immediately beyond the semilunar valves, had its cavity larger than usual, putting on the appearance of an incipient aneurysm; this unusual dilatation extended for some way along the ascending aorta, but did not reach so far as the common trunk of the axillary and carotid artery. The increase of capacity of the artery might be about one-third of its natural area; and the internal membrane of this part had lost entirely the natural polish and was studded over with opaque white spots, raised higher than the general surface.

On inspecting the head, the cranium and dura mater were found in a natural state. The pia mater had the vessels upon the surface of the two hemispheres of the brain turgid with blood, which is commonly found to be the case after sudden death.

The internal structure of the brain was carefully examined, and the different parts both of the cerebrum and the cerebellum were found in the most natural and healthy state; but the internal carotid arteries, as they pass by the sides of the sella turcica, were ossified, and several

* *Ibid.*, lxii-lxiv.

symptoms associated with arterial degeneration, at exactly the same age of 65. The post-mortem examination of John Hunter's brain showed no gross lesions—such as a gumma—which were not likely to be overlooked by the trained anatomists who carried it out. The cerebral symptoms from which he began to suffer two years after he had inoculated himself with syphilis until the time of his death twenty-six years afterwards were, therefore, of a microscopic character. They were caused by cerebral syphilis of the interstitial variety, that is to say, they were due to the action of toxins produced by the *Spirochæta pallida* in the lymphatic sheaths of the smaller cerebral blood-vessels. These changes in the outer coat of the arterioles interfered with their vasa vasorum, and so with the nutrition of the middle coat, thus leading to thrombosis or even complete obliteration of the little vessels as a consequence of the "endarteritis." Such a sequence of events recurred several times, and became more frequent and severe as he grew older and the arteriosclerosis became more pronounced. We can only be thankful that the stress of the disease fell upon the deeper parts of the brain, and that his intellectual faculties were so little impaired that he could give sound judgement in consultation, invent new methods of operating, and retain those powers of collecting which enabled him to form his magnificent museum.

Many of the experiences which I have quoted are undoubtedly recorded in John Hunter's own words. Sir Everard Home says: "Each symptom was described at the time it occurred and was noted either by myself (himself?) or was dictated to me when Mr. Hunter was too ill to write. They will, therefore, be found more accurately detailed than in ordinary cases."

It never seems to have occurred to Hunter to associate any part of his ill health with the inoculation experiment of 1767; indeed, he says expressly: "It would appear that some parts of the body are much less susceptible of the lues venerea than others; and, not only so, but many parts, so far as we know, are not susceptible of it at all. For we have not yet had every part of the body affected; we have not seen the brain affected, the heart, stomach, liver, kidneys, nor other viscera, although some cases are described in authors".*

How great, therefore, would have been his joy if his cerebral cortex could have looked down upon the great basal ganglia of his brain and recognized that some parts of them were suffering from the effects of the venom which he had himself introduced into his system so many years before. We look upon him as a martyr to science; he would rather have considered that the fresh knowledge was worth the penalty he paid to gain it. To us it is marvellous that he could accomplish so much, crippled as he was mentally and physically.

HUNTER BEING DEAD YET SPEAKETH.

Whilst praising John Hunter and his pupils for what has been done in the past, it is the duty of the Orator to point to the influence of his teaching upon the present generation of surgeons and to call attention to any outstanding work which may have been done since the last Oration was delivered in

* *A Treatise on The Venereal Disease*, ed. 1786, 305.

his honour. His spirit still lives and exerts its influence upon those of the younger generation of surgeons who are endowed with a portion of his originality of thought and action, stimulating them to attack and make advances along old lines which many had long since abandoned as useless.

John Hunter, like his brother William (*Fig. 10*), was always interested in the surgery of the blood-vessels. To many surgeons of to-day the name of John Hunter as an operating surgeon is associated solely with ligation of the femoral artery by a method which is no longer in use for the cure of aneurysm. They look upon it as a mere stroke of genius, being ignorant of the time, thought, and experience which had been given by many surgeons in England, France, Germany, and Italy to the cure of aneurysm for more than twenty years before Hunter tied the femoral in its continuity. As early as 1750 Francis Thierry, of Toul, was inquiring in an inaugural thesis, "An tutior faciliorque vulgari detur aneurysmatis Chirurgica curatio?"*

Pupils in the Hunterian school naturally shared in the enthusiasm of their teachers, and the surgery of the blood-vessels became a favourite subject of research and of practice during the opening years of the last century. Abernethy, Astley Cooper, Blizard, Wardrop, and Anthony White in England; Liston and Syme in Scotland; Colles and Crampton in Ireland, tied many of the large arteries, although the opportunities for doing so were not very numerous. It was far otherwise in America, where wounds of arteries were not rare and the surgical practice was concentrated in a few hands. The teaching of John Hunter was carried across the Atlantic by Wright Post to New York, by Physick to Philadelphia, by Gibson to Baltimore, and by Warren to Boston. In the New World so many opportunities occurred, and they were seized upon with such avidity, that one surgeon alone—Valentine Mott—ligatured the common carotid no fewer than forty-three times, the external carotid once, the first part of the subclavian once, and the third part of the subclavian four times—operations carried out before the introduction of anæsthesia, and for the most part successfully.† It is no matter of surprise, therefore, that the tradition of the surgery of the blood-vessels is stronger in the United States than it is in this country, although the excellent work of Sir George Makins and Sir Charles Ballance has done much to keep it alive amongst ourselves. Professor Rudolph Matas has nobly maintained the tradition at New Orleans by his reparative treatment of aneurysm, which is based upon experimental surgery in the true Hunterian spirit.

The Heart subdued to the Hand of the Surgeon.—Sir Lauder Brunton in a short communication to the *Lancet* in 1902‡ suggested the possibility of treating mitral stenosis by surgical methods. He had already performed some preliminary experiments in the deadhouse and upon animals, but ill health and the generally expressed feeling which is always against any new operation involving great risk to life prevented him from carrying his design into execution on the human subject. Nothing further was

* Haller, *Disputationes Chirurgicæ Selectæ*, tom. v, cxxxix, 211.

† *Essays in Surgical Anatomy and Surgery*, by John A. Wyeth, M.D., New York, 1879.

‡ "Preliminary Note on the Possibility of treating Mitral Stenosis by Surgical Methods", *Lancet*, 1902, i, 352.

done in this country, although it had long been known to physiologists that the healthy heart, even of mammals, could be handled with impunity,* whilst surgeons have had many opportunities of suturing wounds of the heart. At any rate nothing more was done in this country, and it was left to Professor Elliott C. Cutler, of the Western Reserve University, Cleveland, Ohio, with the help of Dr. S. A. Levine and Dr. Claude S. Beck, to subdue the diseased human heart to the hand of the surgeon.†

Lately, whilst visiting the United States, I had the good fortune to make the acquaintance of Professor Cutler and to see him operate upon a dog. As the original idea was put forward by Sir Lauder Brunton (although it had already entered the minds of Dr. Lauriston Shaw and Sir Arbuthnot Lane), who held in linear succession the office occupied by William Harvey, we must regret that it did not bear fruit at St. Bartholomew's Hospital. But no one who knows Professor Cutler, young, generous, enthusiastic, painstaking, and scientific, will grudge him the laurels he has earned by his brilliant and successful operation, and all will wish him 'God-speed' in what we hope will be a long and prosperous career.

The terms of the Trust, Sir, demand of me a melancholy duty, that I should draw your attention for a few moments to the losses which British surgery has sustained since the last Oration was delivered. Death has been busy in our ranks during the last two years. Very noticeable is the gap left by the departure of Sir William Macewen whilst still in the full exercise of his mental and physical powers. A surgeon of such originality and power that he is worthy to be placed amongst the greatest of his own century; a pioneer in the surgery of the brain, in the surgery of the lung, and in the study of the infective inflammations of bone, his name seems likely to be handed down to future generations of surgeons by that operation for the cure of knock-knee which should become less and less frequent as rickets becomes more rare under the influence of a better hygiene during childhood.

Sir Frederick Treves will live in the history of England. To us he appeared as a good anatomist, a fine abdominal surgeon, a fluent writer of interesting books, and a travelled gentleman. By his prompt action in an unparalleled crisis he showed himself a master of the greatest attribute of a surgeon—the ability to take upon himself infinite responsibility, mindful of the maxim of Hippocrates, *ὁ ἐὶ καὶρός ὄζυς, ἡ ἐὶ πείρα σφαλέρη, ἡ ἐὶ κρίσις χαλεπή* (Time is urgent, experience deceitful, and judgement difficult).

Mr. W. H. A. Jacobson, 'the gentle cynic', and the author of the first satisfactory text-book on operative surgery in the English language, abandoned his profession at the height of his reputation, taking with him the sympathy of all his colleagues and friends.

* Robert Grove (1634–1696), afterwards Bishop of Chichester, in his *Carmen de Sanguinis Circuitu*, gives a detailed description of Harvey's demonstration of the action of the heart in a living dog. Grove is probably the only bishop of the English Church who actually took part in a vivisection to show the tolerance of the heart to mechanical stimulation.

† "Cardiotomy and Valvulotomy for Mitral Stenosis", *Boston Med. and Surg. Jour.*, 1923, clxxxviii, 1023–27, and "The Surgical Treatment of Mitral Stenosis", *Arch. of Surg.*, ix, 689–821.





Royal College of Surgeons of England Hunterian Festival.

14TH FEBRUARY, 1925.

President.

Sir JOHN BLAND-SUTTON, F.R.C.S.

Vice-Presidents.

Sir HOLBURT J. WARING, M.S., F.R.C.S.

WALTER G. SPENCER, M.S., F.R.C.S.

Hunterian Orator.

Sir D'ARCY POWER, K.B.E., M.A., F.R.C.S.

Secretary.

S. FORREST COWELL, M.A.

List of Toasts.

“THE KING.”

“The Queen, Queen Alexandra, the Prince of Wales,
and the other Members of the Royal Family.

“The Memory of John Hunter” (*in silence.*)

“The Royal College of Surgeons of England.”

Proposed by
The Right Hon. The Lord Chief Justice of England.

Responded to by the President.

“The Guests.”

Proposed by Sir Holburt J. Waring, Vice-President.

Responded to by
The Right Hon. The Speaker of the House of Commons.

“The Hunterian Orator.”

Proposed by
The Rev. Dr. Nairn.

Responded to by
Sir D'Arcy Power, K.B.E.

Mr. Alderman & Sheriff F. J. Barthorpe.
 Colonel T. Sinclair, C.B., M.P.
 Sir Anthony A. Bowlby, Bt., K.C.B.,
 K.C.M.G., K.C.V.O.
 The President of the Royal Society, Sir
 Charles S. Sherrington, G.B.E., M.D.
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 Mr. Rudyard Kipling.
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 The Rt. Hon. Lord Riddell.
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 K.C.B.,
 Treasurer of the Inner Temple.
 The Rt. Hon. The Speaker of the
 House of Commons.
The President:
 Sir John Bland-Sutton,
 The Rt. Hon. the Lord Chief
 Justice of England.
 The Rt. Hon. the Viscount Burnham.
 The Rt. Hon. Lord Stanmore, C.V.O.
 Sir Henry Morris, Bt.

Mr. V. Warren Low, C.B.

A (right).

Chair.

Lt.-Gen. Sir William
 Leishman, K.C.B.,
 K.C.M.G.

Mr. Evelyn Sprawson,
 M.C.

The Times.

The Morning Post.

Professor Arthur
 Thomson.

Sir George Newman,
 K.C.B., M.D.

Mr. H. S. Pendlebury.

Dr. Andrew Balfour,
 C.B., C.M.G.

Mr. L. Bathe Rawling.

The Daily Telegraph.

The Press Association.

Sir David Murray,
 R.A., P.R.I.

Sir Cuthbert S. Wallace,
 K.C.M.G., C.B.

Mr. S. G. Asher.

Mr. John Murray.

Mr. J. Herbert Fisher.

Mr. Victor G. Plarr, M.A.,
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Mr. R. H. Burne, M.A.,
Physiological Curator.

Professor William
 Wright.

Sir Richard H. Luce,
 K.C.M.G., C.B., M.P.

Mr. A. E. Webb-
 Johnson, C.B.E.

Mr. Frederic G. Hallett,
 O.B.E.

Mr. H. S. Clogg.

Sir Dawson Williams,
 M.D.

Major Stanley Flower,
 O.B.E.

The Master of the
 Salters' Company.

Mr. F. J. Steward.

Lt.-Gen. Sir John
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 C.M.G., D.S.O.

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Mr. J. Lewin Payne.

Mr. Alastair Cameron.

Sir Charles Gordon-
 Watson, K.B.E., C.M.G.

Col. H. Stuart-Sankey,
 C.V.O., J.P.

Sir Archibald E. Garrod,
 K.C.M.G., M.D.

Mr. G. E. Gask,
 C.M.G., D.S.O.

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Squadron-Leader
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Vice-President.

Sir Holburt J. Waring,
Vice-President.

Sir P...

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 Sir Berkeley Moynihan, Bt.,
 K.C.M.G., C.B.
 The President of the Royal Society
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 Mr. Sheriff H. G. Downer.

(left).

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C.B.E.
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 Sir Arthur Keith, LL.D., F.R.S.,
Conservator of Museum.

power, K.B.E.
 an Orator.

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Menu.

†

PUNCH.

—

MADEIRA.

—

SAUTERNE.

*Chateau
Roquetaillade.*

—

CHAMPAGNE.

*Bollinger, 1914.
Pommery & Greno,
1911.*

—

PORT.

Martinez, 1904.

—

CLARET.

*Chateau Latour,
1909.*

—

BRANDY.

Normandin, 1875.

—

BENEDICTINE.

—

COFFEE.

Caviare.

—

Clear Turtle.

—

Salmon, Tartare Sauce.

—

Saddle of Mutton.

—

Snipe.

—

Foie Gras à la française.

—

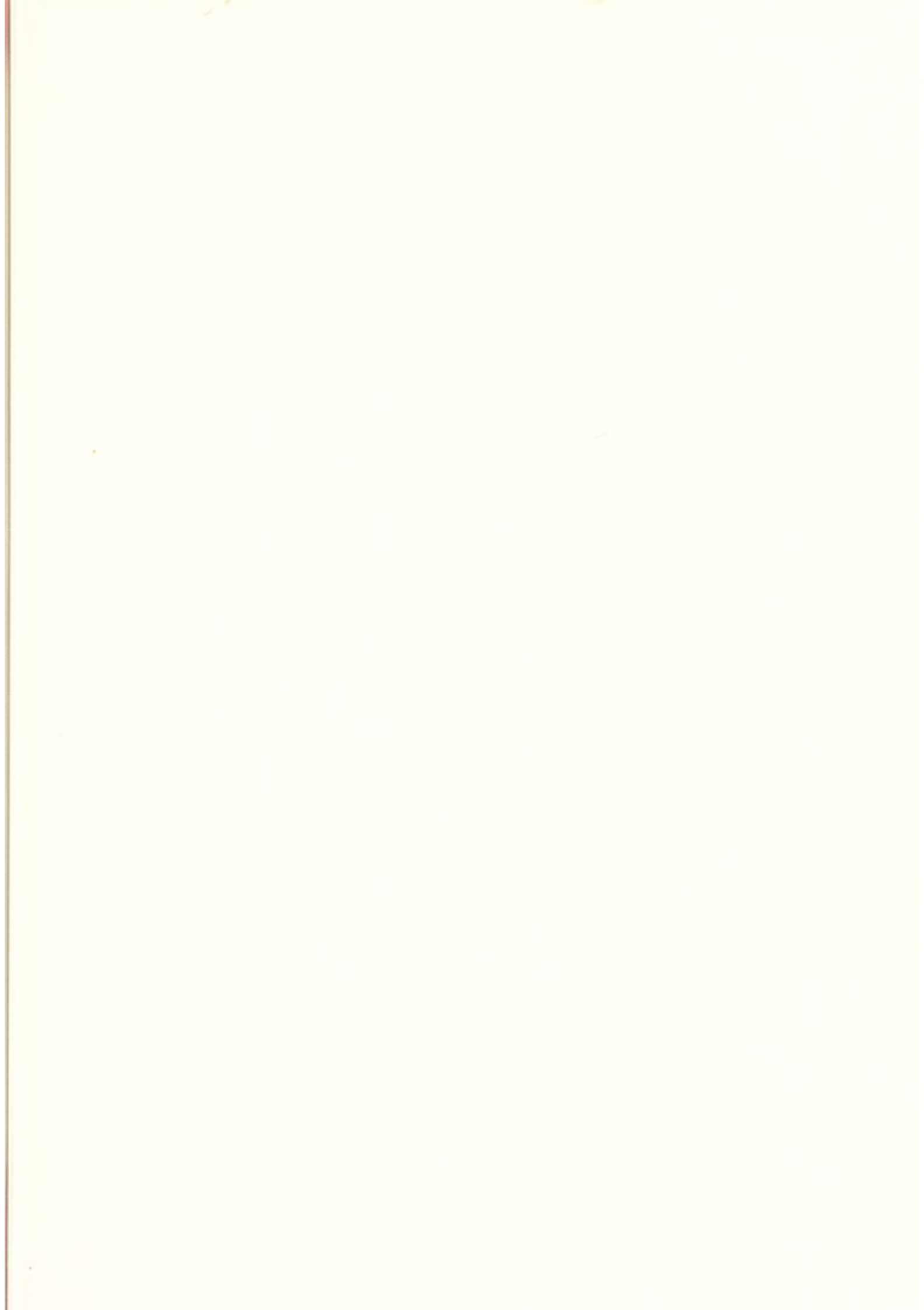
Asparagus.

—

Parfait au Café.
Friandises.

—

Dessert.





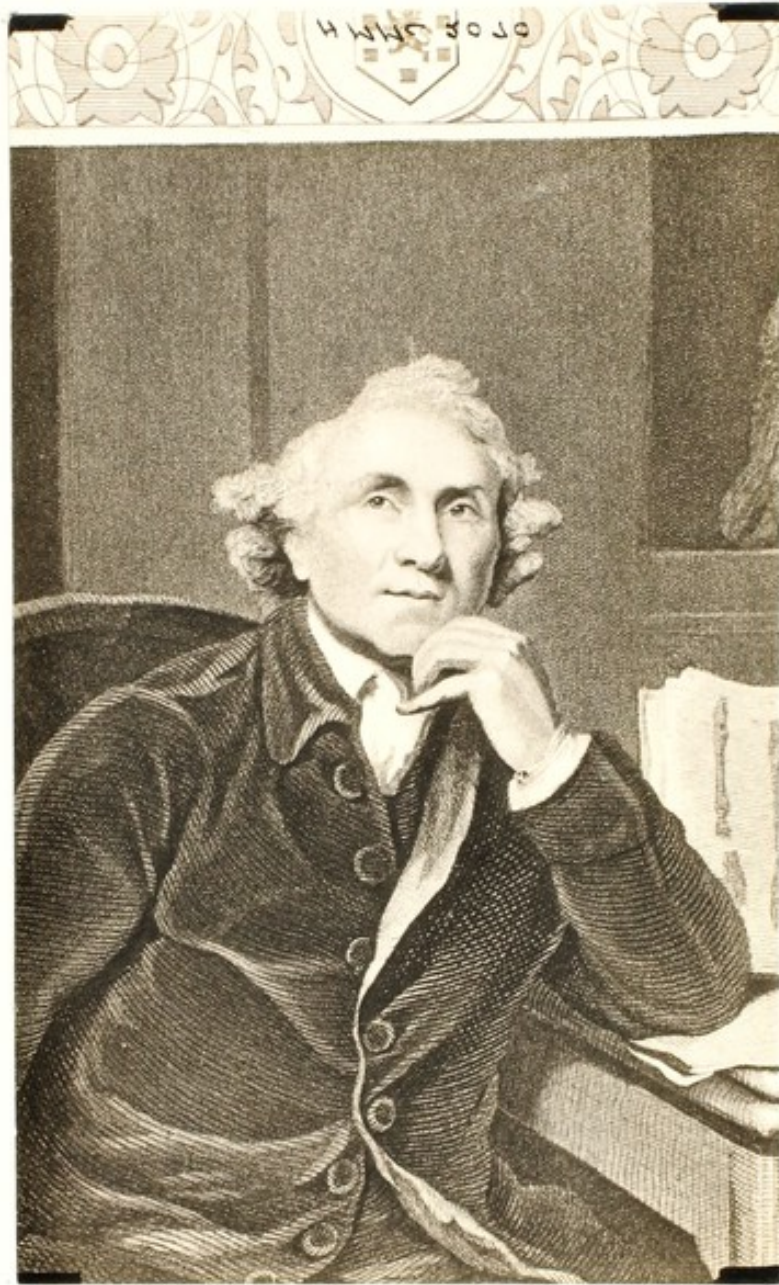


Fig 1

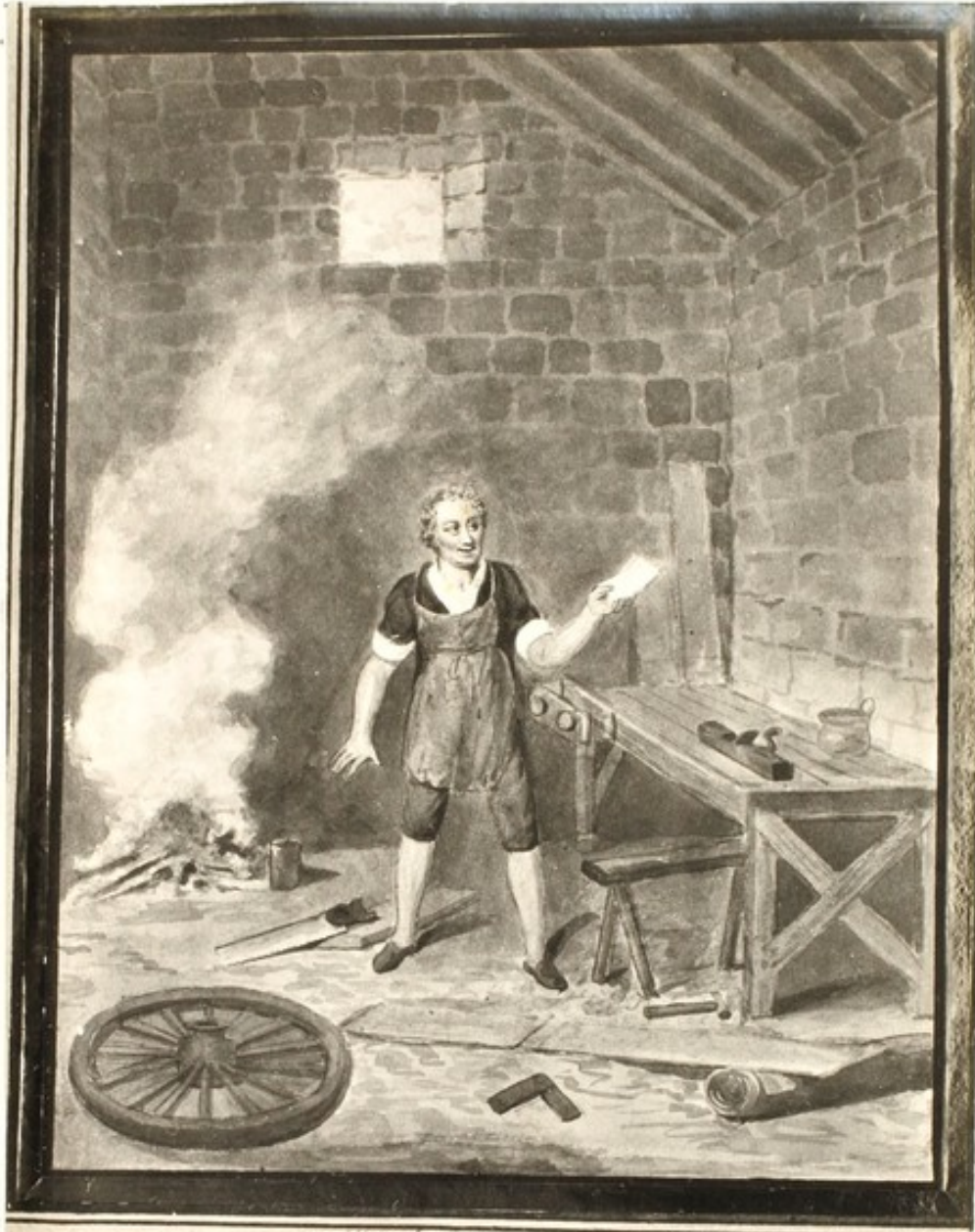
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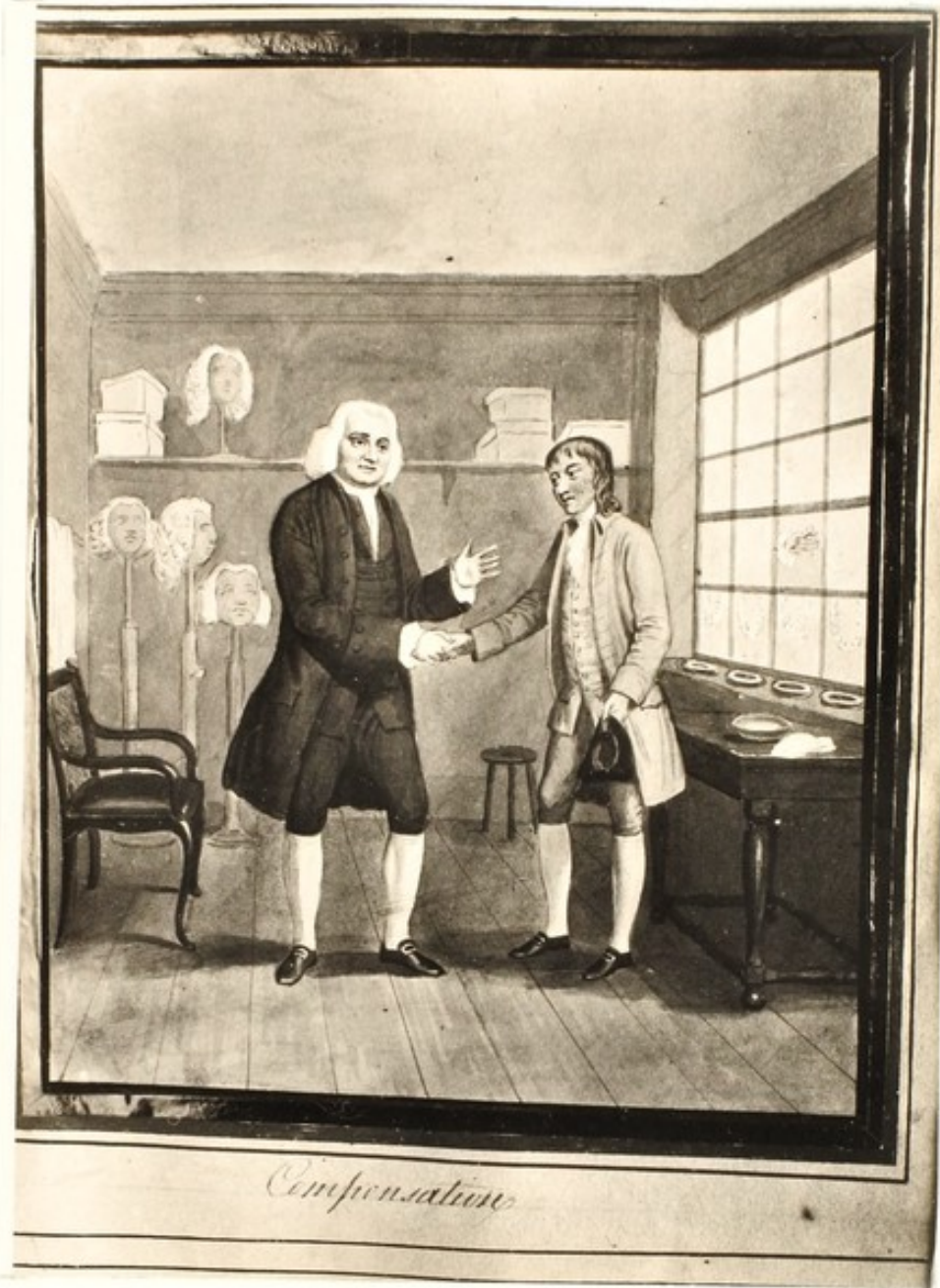
The Invitation

4



Metamorphosis

5



Compensation

6



Compensations

7



Partnership

8



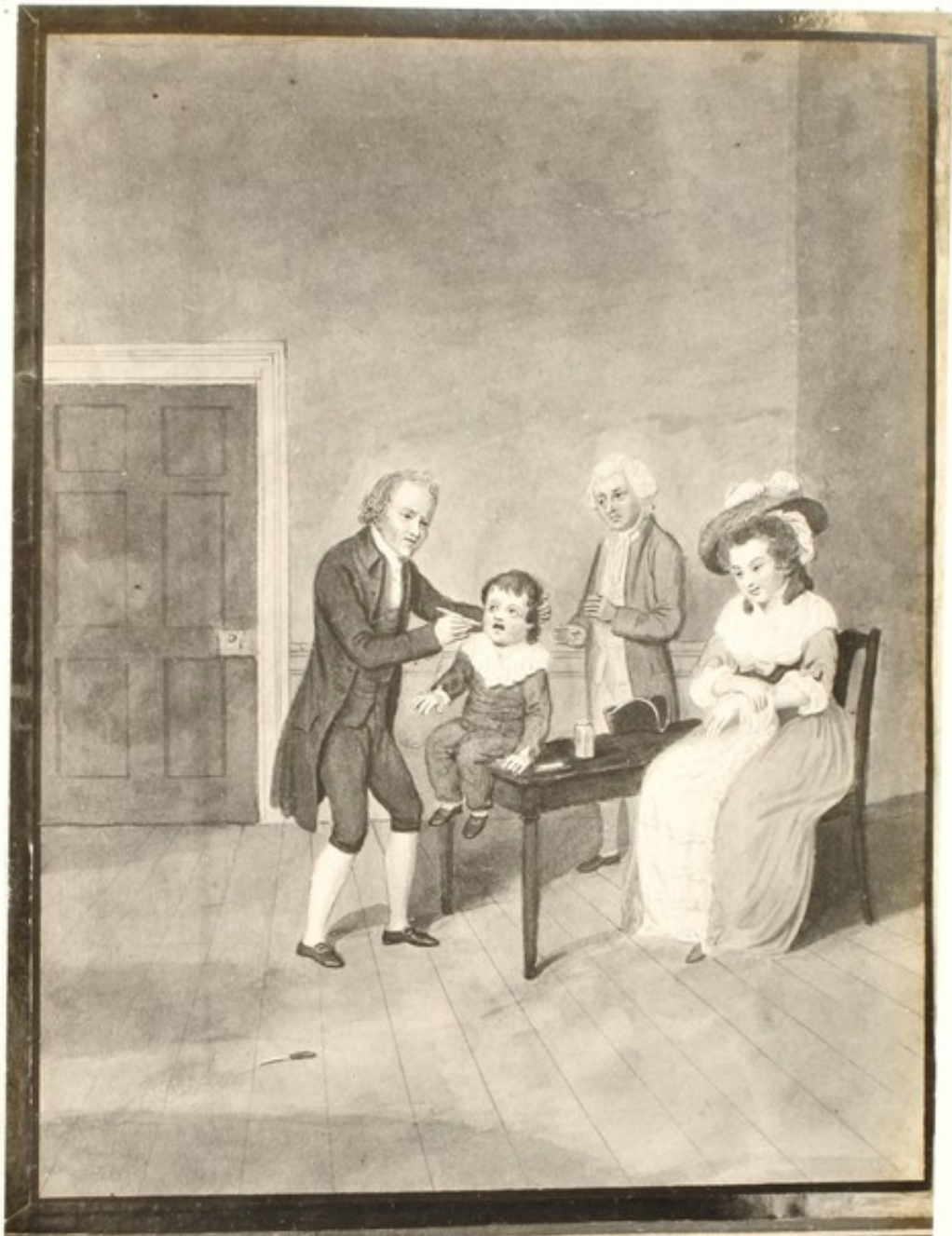
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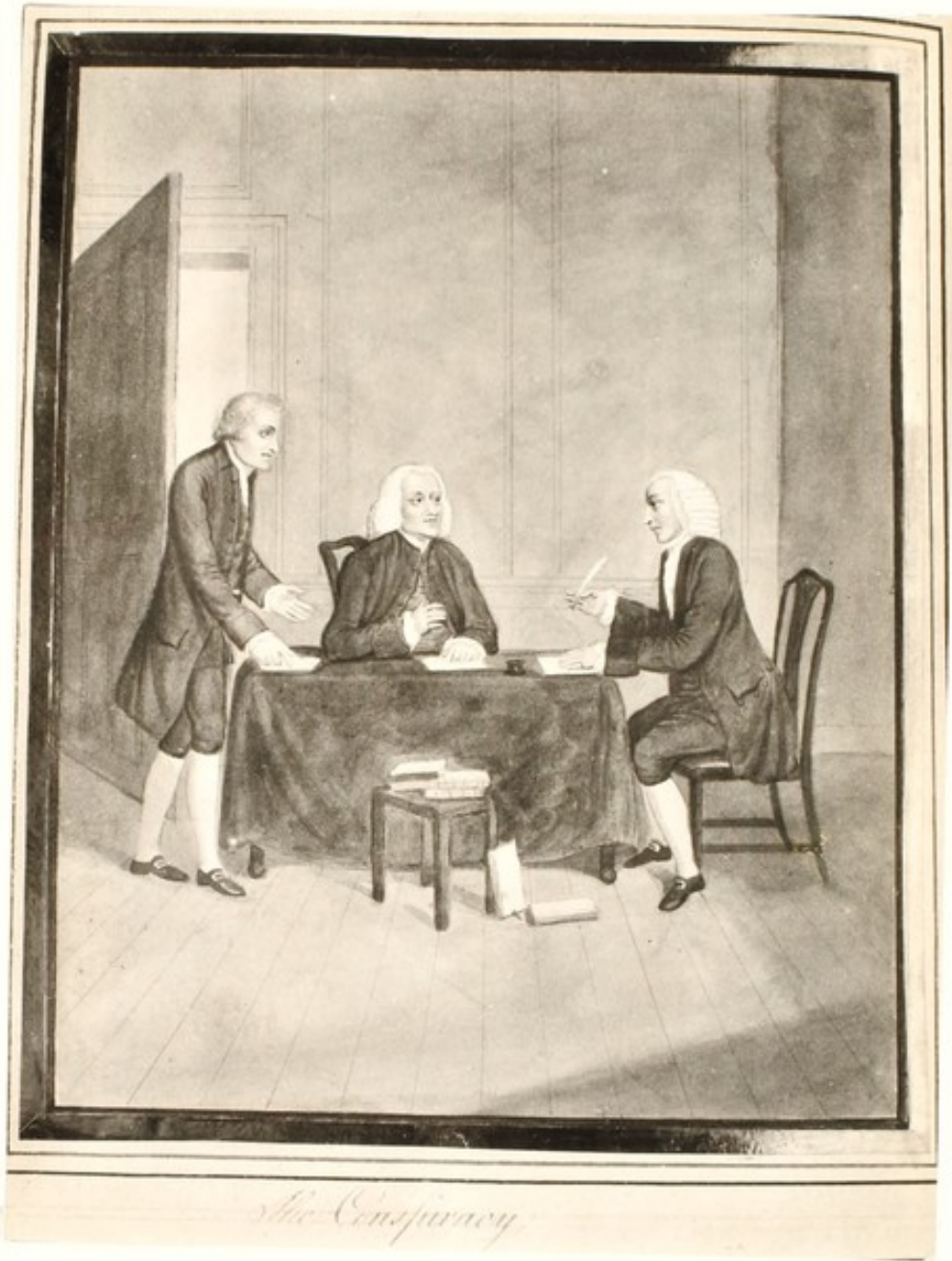


The New House shown to a Friend

10

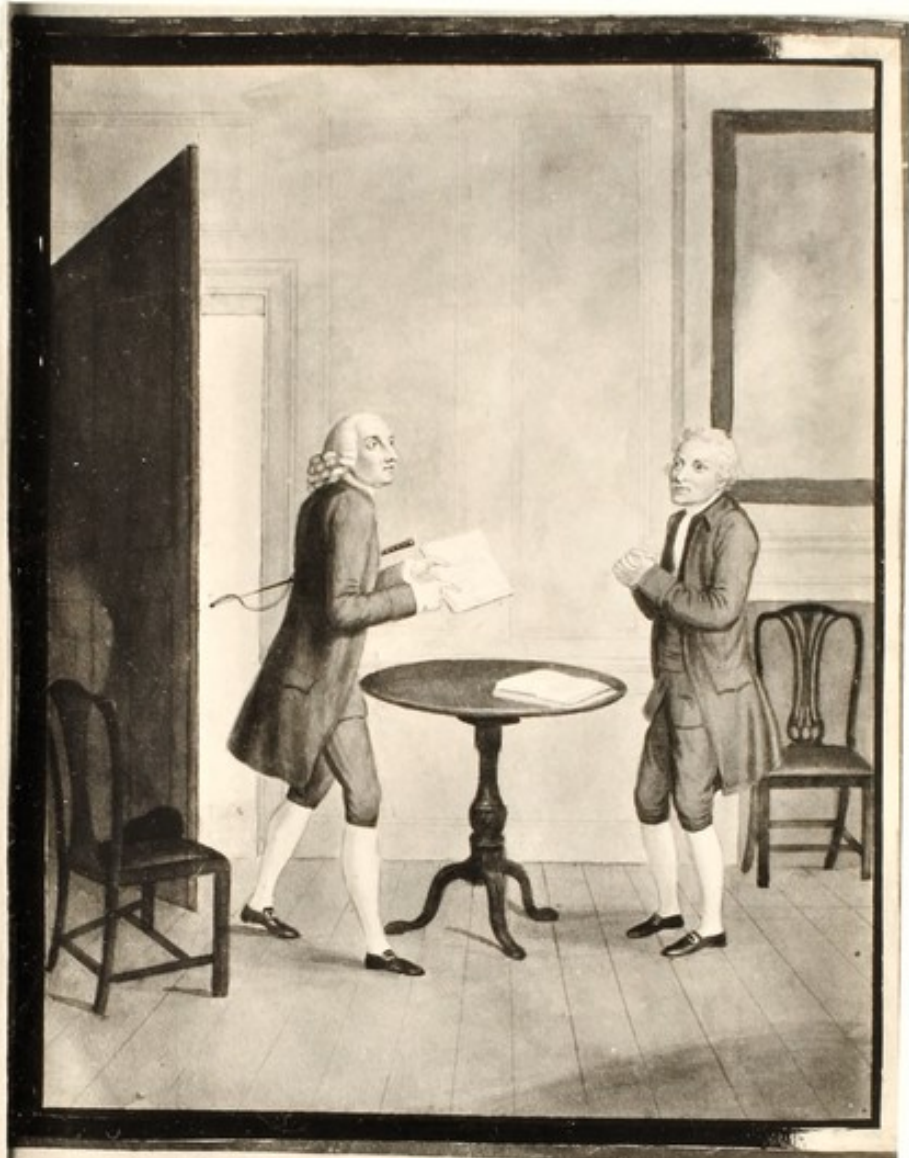


Anascality



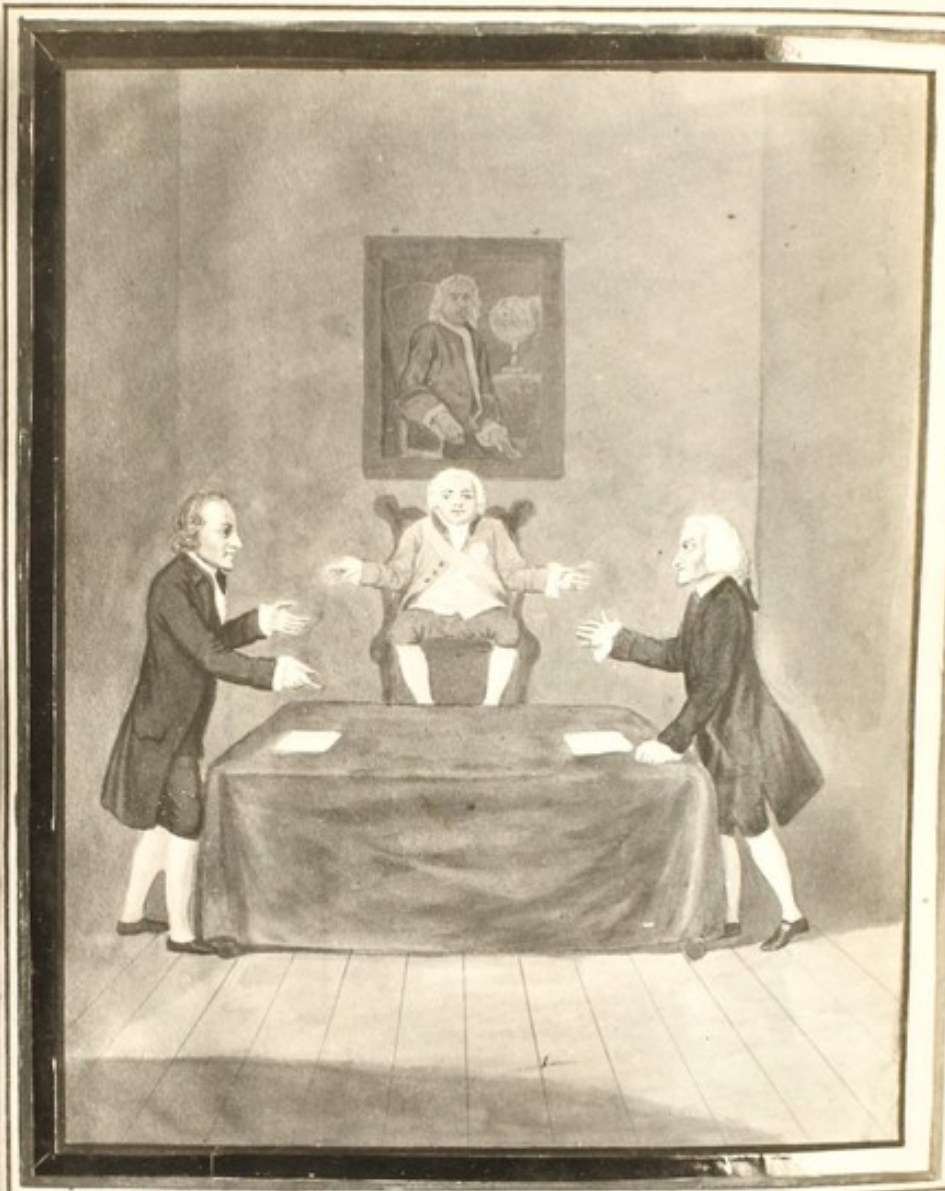
The Conspiracy

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Petrus Campus Hunterum corrigebat.

13

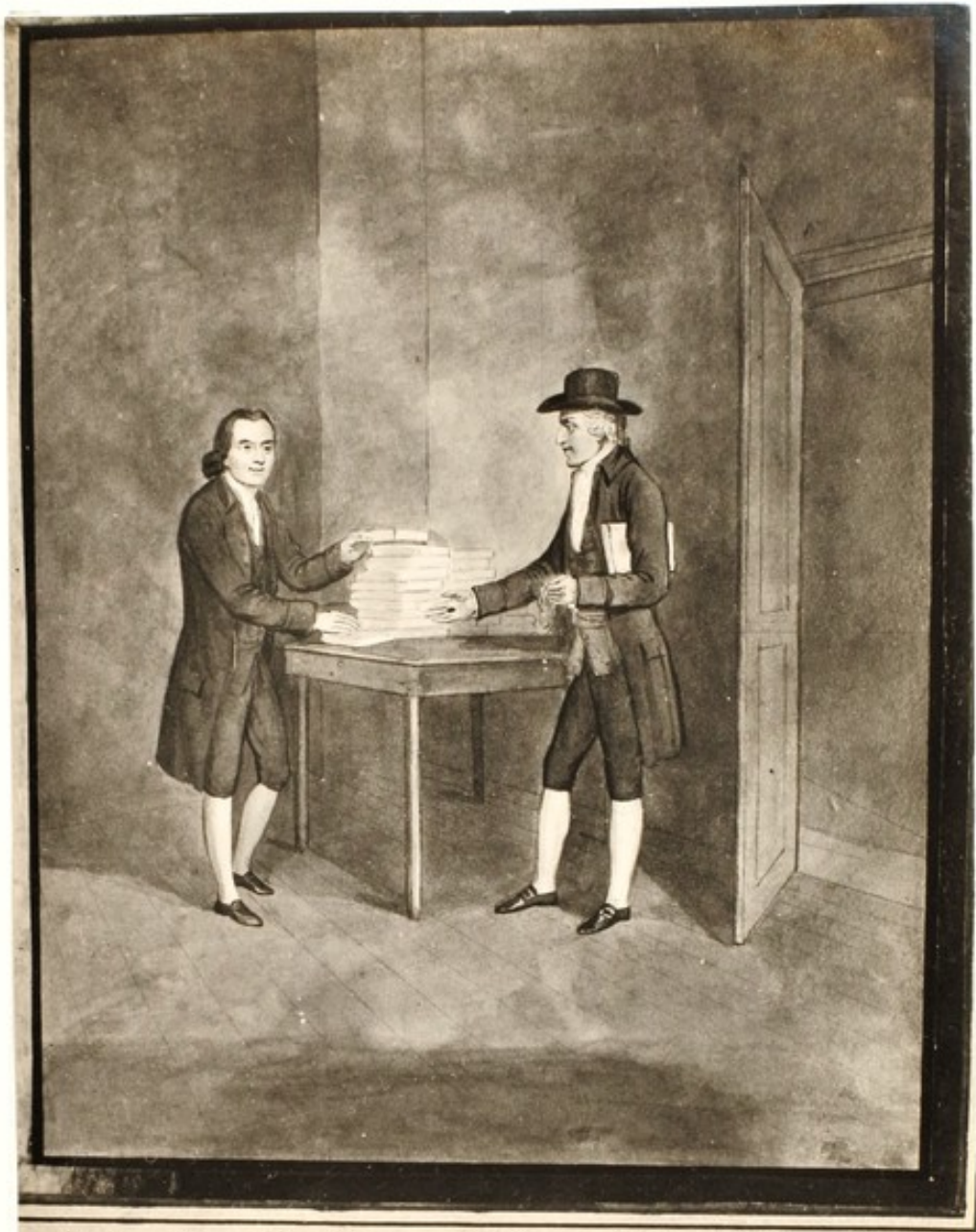


The grand Appeal

Vander Biele
Boards.

14

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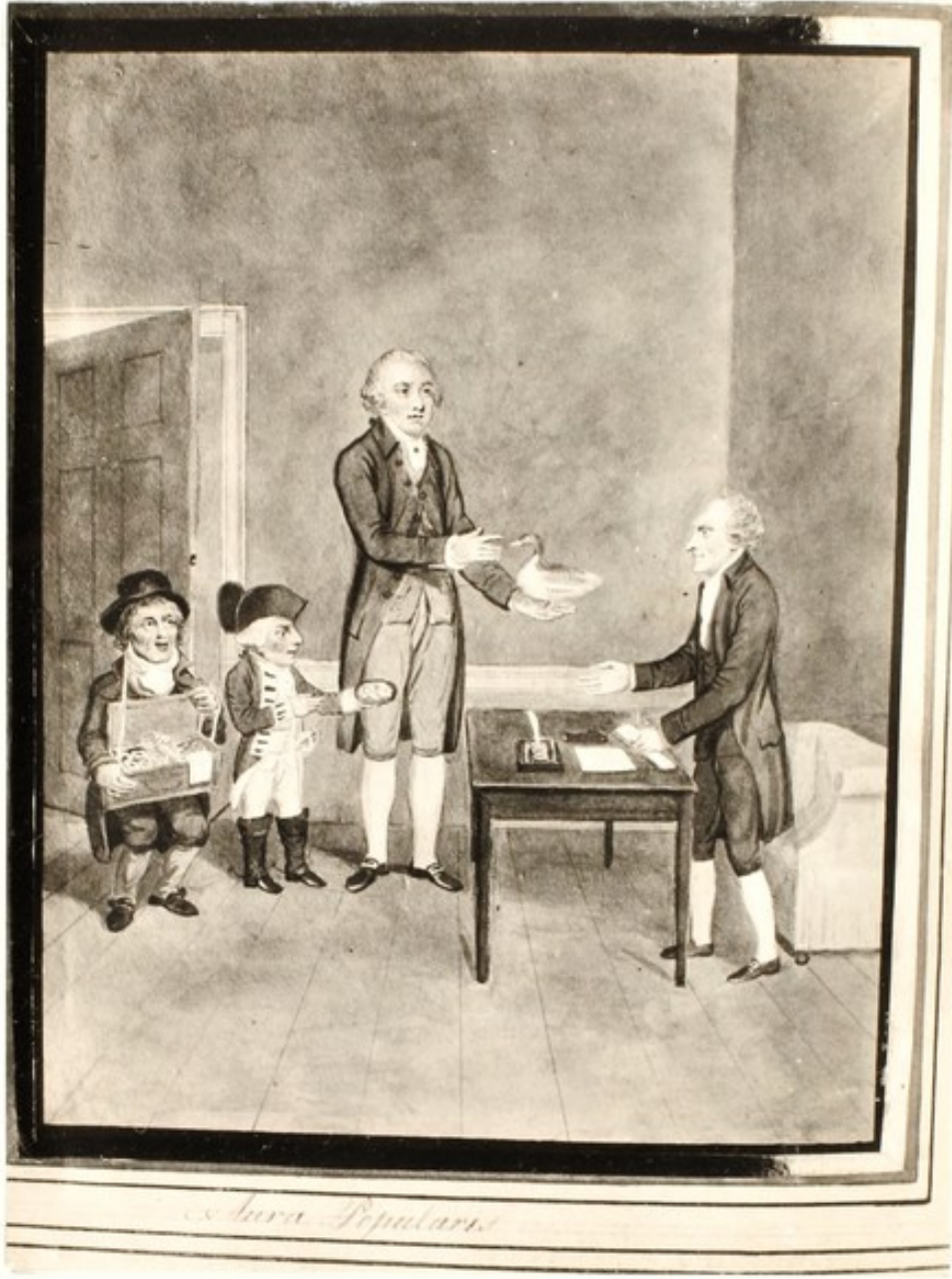


André selling John Hunter's Book on the Venereal Disease to W. Peck

15



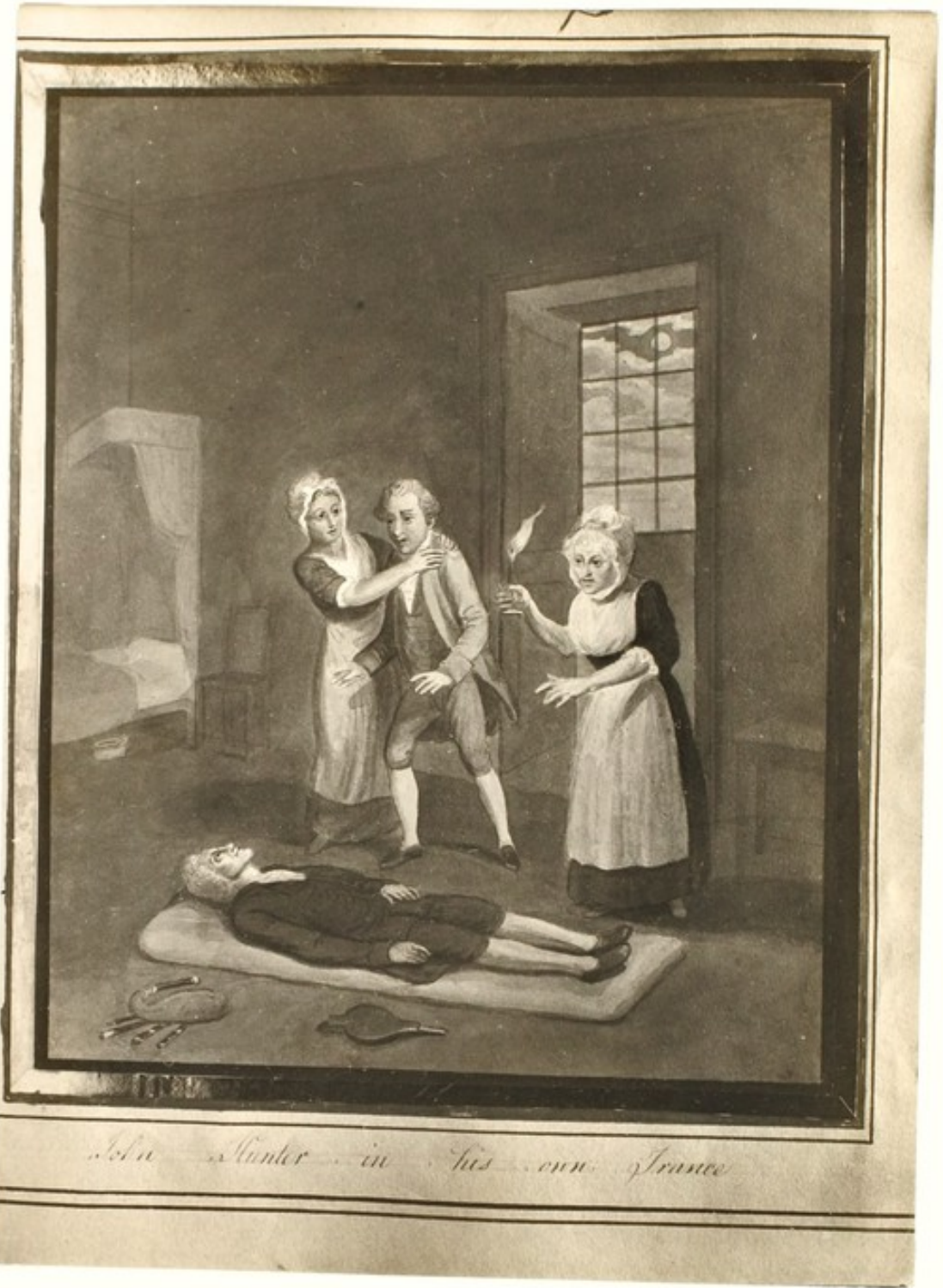
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Aura Popularis

17

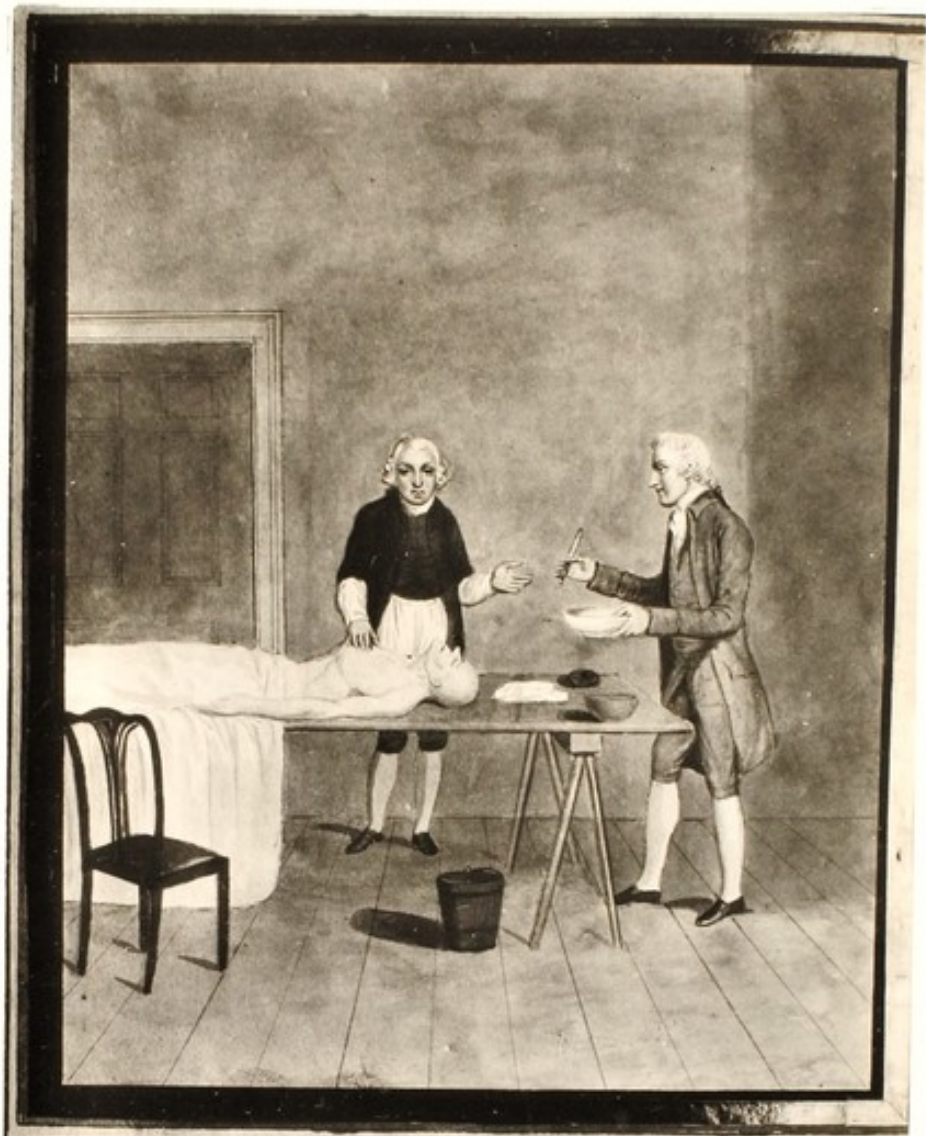




John Hunter in his own House

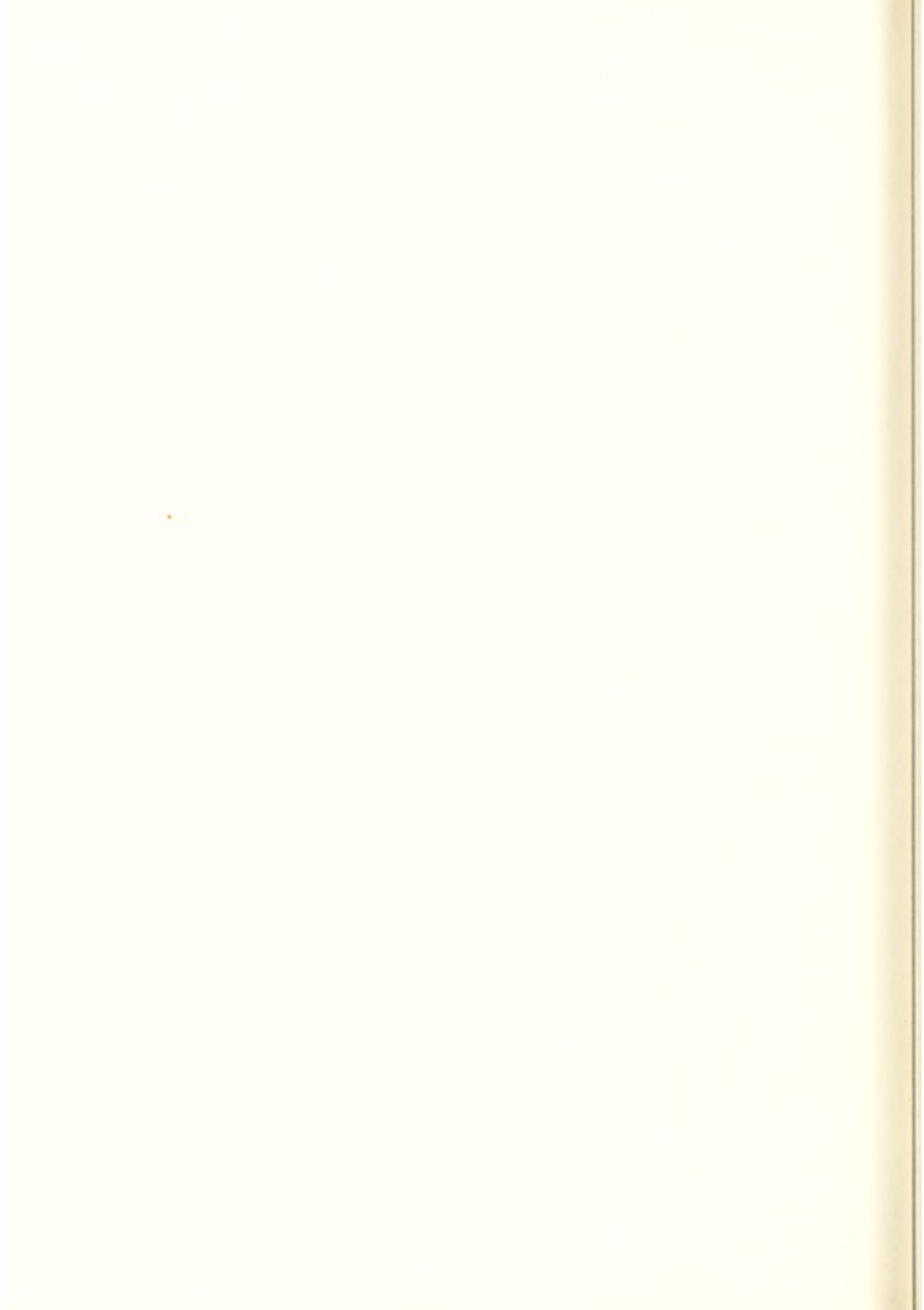
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Peer Hunter gone to Toll at last

170



SIR THOMAS BODLEY'S
LONDON HOUSE

By

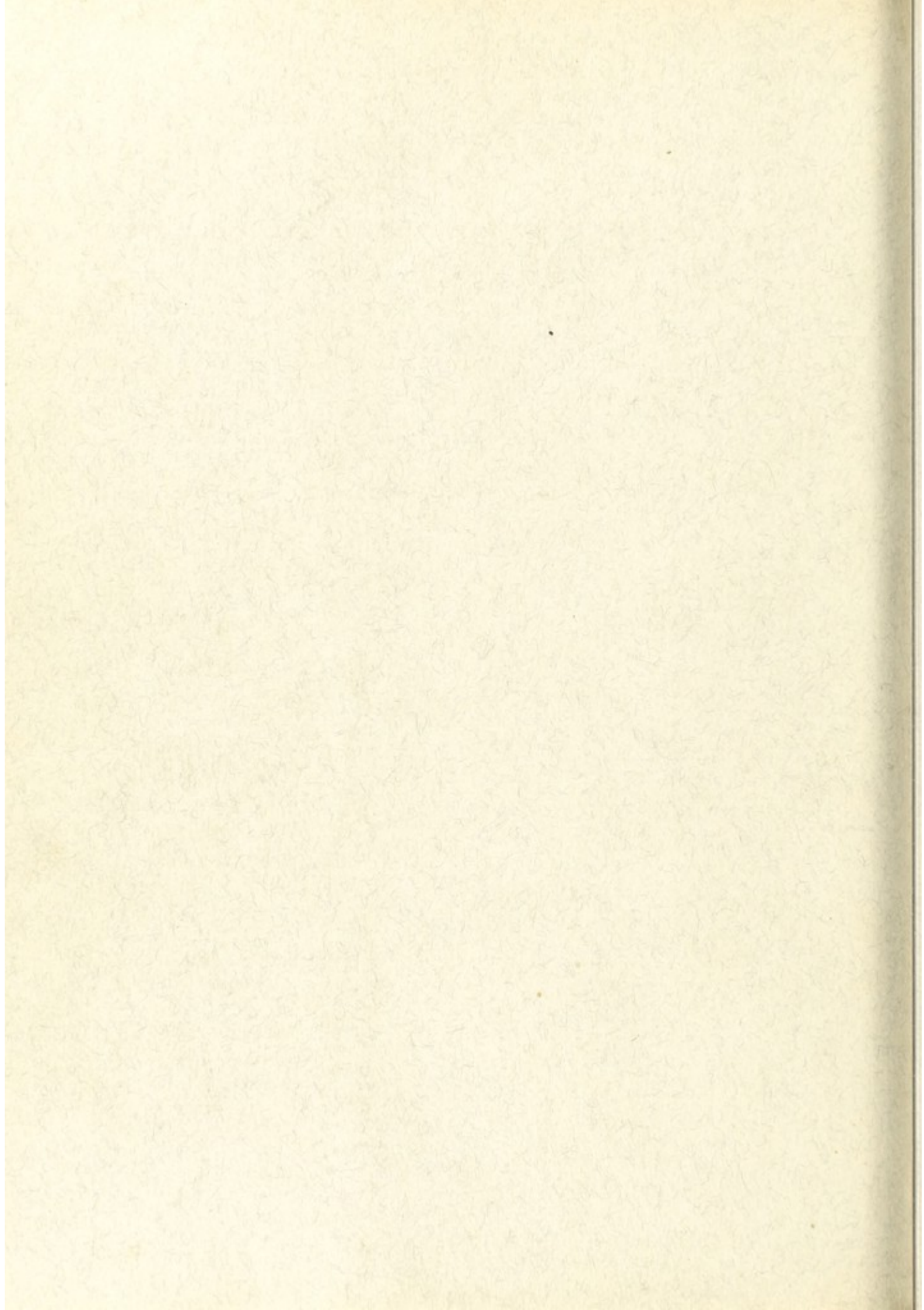
SIR D'ARCY POWER

K.B.E., B.M. OXON., F.R.C.S.

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THE
HUNTERIAN
ORATION

1925

D'Arcy Power
ad.
filiis suo
D'Arcy Power

SIR D'ARCY POWER, K.B.E.

