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Educating the senses: students, teachers and medical rhetoric in eighteenth-century London

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Teaching about sensations is fraught with ambiguities. Words serve uneasily to reify experience. Language pretends to define, structure and codify sensory data, but ever falls short of the Enlightenment philosophers' dreams to construct a perfectly transparent symbolic system in which words, things and ideas march in one-to-one correspondence. Medical instruction, like that in other subjects centred on objects and experiences, has always had to cope with the tensions between tacit and verbal knowledge. This chapter focuses on medical teaching at a time when many still hoped that a 'scientific' language could be unambiguous, yet lecturers struggled to convey what they could not, in fact, *say* about the body and disease.[1] Specifically, it examines how late eighteenth and early nineteenth-century London medical men instructed pupils who came from a broad range of backgrounds to use their senses to acquire knowledge from objects (such as the dead) and patients.

Based on a reading of advice manuals and over fifty sets of students' manuscript lecture notes dating from 1750 to 1820, this study concentrates on three of the common medical subjects taught in London: anatomy, surgery and physic.[2] Exploring both the explicit and implicit injunctions about the senses offered to young men entering the professions allows a closer look at two of the intertwined themes that run through eighteenth-century medicine and surgery. First, lecture notes carry a host of assumptions about the relationships between language, objects, knowledge and authority, in particular the role of formal medical systems and the place of the 'surgical point of view' in organizing medical perceptions.[3] Second, they reveal much about the encounters between practitioners and their patients, which in turn shaped the contours of appropriate clinical experience.[4]

Examining how, and what, medical men taught provides a limited, yet fruit-

ful, perspective on the intellectual and social relationships that structured late eighteenth-century English medicine. Whatever the epistemological orientation of the London teachers, which in itself is difficult to categorize,[5] lecturing demanded that knowledge be verbalized. The strategy of demonstrating objects, particularly anatomical preparations, partially bridged the gap between sensory experience and the inadequacies of language. In the clinical subjects, however, lecturers sometimes found themselves at a loss for words when they attempted to descend from the abstract to the particular, and could only urge their auditors to connect the terms that they defined or used with sensations acquired outside the lecture rooms. As argued below, London lecturers were in the business of educating – not training – the senses, and hence in structuring their pupils' experiences through the authoritative weight of their own scholarship and clinical acumen. The didactic, 'academic' lecture itself centred on offering pupils a formal, institutionalized vocabulary of theoretical terms with which to deal with patients. Yet, while students were told that there were two obvious sources of sensory knowledge, what was 'either felt by the patient [or] observed by the physician',[6] as actually taught these two realms were inseparable when identifying and treating illness in the late eighteenth century. The practitioner constantly translated the patient's account into symptoms with professional and lay meaning, at the same time that he transformed his own sensations into perceptions intelligible within commonly accepted medical and surgical categories.[7]

An analysis of London teaching about the use of the senses suggests that the simplistic contemporary and historical division of the medical domain into 'internal' illnesses that the physician prescribed for, such as fever, gout, rheumatism and diabetes, and 'external' conditions that the surgeon treated, such as wounds, hernias, fractures and visible tumours, obscures their shared assumptions about medical knowledge.[8] In broad terms, elite physicians are often portrayed as relying heavily on the patient's 'subjective' accounts, together with visual inspection of the clothed body, judicious observation of urine, faeces, blood and sputum and a delicate hand on the pulse.[9] As Nicholas Jewson has argued, the highly passive, scholarly physician provided an individualized explanation and treatment of disease, essentially in subservience to the patient's own assessment of his or her condition. Competing theoretical systems, attention to the patient's account and the lack of physical examination nicely follow from this patron-dominated view of the clinical encounter, for the practitioner – in theory – had little social or intellectual authority to violate the patient's physical privacy and much to gain by providing acceptable explanations of illness and therapeutic regimens.[10] The craft-oriented (and socially inferior) surgeons, in contrast, were much more closely tied to the 'objective' experience obviously offered by a deep knowledge of anatomy and the need to touch their patients to identify conditions and to operate. For

surgeons, what the patient said would supposedly be of less importance than what the practitioner saw or felt. A major 'problem' in the history of medicine has concerned how, when and why the boundaries between these realms of experience were constructed and changed. As some scholars have noted, only since the rise of modern medicine and the thorough disjunction between 'objective' and 'subjective' clinical knowledge, has the patient's account become of secondary, if not peripheral, importance in identifying and treating organic disease.[11]

Yet, at least in London teaching, the traditional 'internal' versus 'external' dichotomy transcended the usual professional and rhetorical distinction between the practice appropriate for the physician and that of the surgeon. (The man-midwife already violated this polarization.) Both physicians and surgeons taught that 'internal' disorders were identified primarily by visual inspection and the patient's report, while 'external' diseases could be further elucidated through the practitioner's and patient's touch. The overlapping realms of information garnered from sight, from touch and from the patient's reports were mediated by social, professional and intellectual criteria underlying what could be known in the clinical encounter. Which methods were used probably depended upon whether the patient and the practitioner initially categorized the disorder as 'internal' or 'external'.

The ideas and relationships that London medical lecturers presented were certainly neither unique to London nor, in some areas, to eighteenth-century knowledge. It is not yet possible to date specific changes in the perceptual orientation of London physicians and surgeons, however. Any attempt to locate trends reveals more hindsight than historical sensitivity, given the wide range of men who lectured and the multiplicity of their sources, goals and approaches. The following discussion, therefore, does not attempt to reveal a conception, gestation or birth of 'the clinic' in late eighteenth-century London. Despite what might appear to be very promising developments in clinical instruction, such precursor-searching obscures the nuances of eighteenth-century medical knowledge and experience.[12] Finally, as a last caveat, at this stage it is premature to make any overt claims about the impact that London teaching had on how medical men actually shaped their perceptions and used their senses in medical and surgical practice. The instruction offered to students, from prosaic directions about setting simple fractures or bleeding in inflammatory fevers, to complex anatomical demonstrations and detailed discussions of the stages of labour, probably had, nevertheless, a significant role in structuring the day-to-day encounters that practitioners had with their patients. While the chasms between what was said, what was learned, and what was done inevitably remain, we can carefully construct a few platforms to narrow these gaps.

Although impossible to document through the lecturers' self-conscious

admissions, what they said – and how they said it – was surely shaped in part by their need to attract a paying audience. London medical education emerged during the eighteenth century as a competitive and potentially lucrative private enterprise. Whether on hospital grounds or in extramural rooms, lecturers offered their knowledge on a fee-for-course basis, outside the umbrella of any university degree requirements or (before 1815) licensing regulations. From the early decades of the century, but especially from the 1770s, medical men advertised dozens of courses in nearly all the branches of medicine – anatomy, chemistry, botany, materia medica, midwifery, the theory and practice of medicine and the theory and practice of surgery. London also offered considerable opportunities for clinical experience in its large general and specialized hospitals. By the late eighteenth century literally hundreds of men signed up to walk the wards at these charitable institutions, primarily as surgeons' pupils, and so formed a potential audience for the courses offered either at the hospitals or in extramural rooms.[13] Advice books, student accounts and several manuscript compilations reveal that pupils routinely followed a broad curriculum, attending medical, surgical and midwifery courses, while following hospital men on their rounds.[14]

Neither courses nor hospital experience were explicitly required before the second decade of the nineteenth century for certification by the Royal College of Surgeons, the Society of Apothecaries or the Royal College of Physicians. The lecturers' audiences were, therefore, entirely voluntary ones in the sense that their efforts and payments were not imposed by official mandates. The pupils came to fulfil their own expectations about the education necessary for successful practice. Scattered supporting evidence from the hospitals' pupil registers and students' letters and diaries, suggests that a considerable majority intended to practise as surgeon-apothecary-man-midwives, rather than proceeding to earn the M.D. degree and establish physicians' rounds, or to limit themselves to surgical treatments. Many of the students, moreover, had already served an apprenticeship and were thus seeking the additional knowledge, experience and polish the metropolis offered.[15] The enterprising lecturer needed to attract and retain young men with some prior experience with patients and treatment, not just professional neophytes.

Quite a few hard-working students approached their London courses conscientiously, as the large number of surviving manuscript notes attest. Not only did taking notes and transcribing them into fair copies produce introductory texts, to which the new practitioner could later refer, but, as William Hunter emphasized, the process itself also gave the pupil 'a facility of writing upon subjects in his profession ... and of expressing them in the most clear and proper language'.[16] As a genre, lecture notes deserve a serious and extended study, particularly to analyse more deeply their social, professional and pedagogic functions in the eighteenth century.[17] Like so many historical

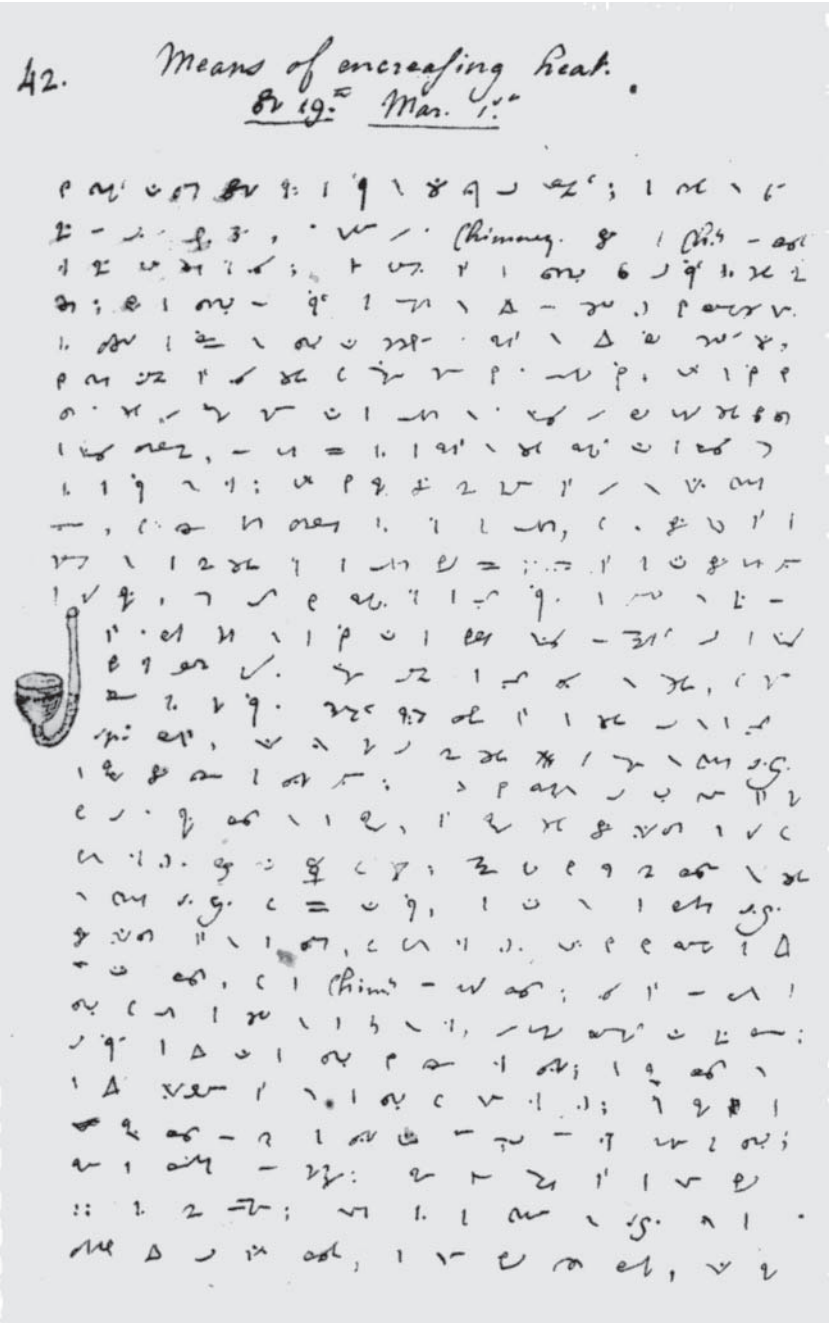


Fig. 47. 'Means of encreasing heat', in George Fordyce [1736–1802], Lectures on chemistry, in shorthand, p. 42.

records, they are not unproblematic sources. Neither reflections of what was said nor necessarily accounts of what the pupil learned, these texts only tentatively support broad generalizations about late eighteenth-century teaching. Hence a few cautions are in order.

First, the surviving notes unevenly reflect the diversity of lecturing that occurred.[18] In general, notes from anatomy and surgery courses outweigh those from chemistry, materia medica and the theory and practice of medicine, perhaps partially reflecting differing enrolments, but also corresponding to the later image of London as a centre for surgical instruction.[19] Notes from hospital lecturers also far outnumber those from extramural teachers, except for a few extremely influential or popular men such as William Hunter and Colin Mackenzie.[20] This uneven distribution unfortunately puts disproportionate weight on hospital men's instruction during a period equally rich in teaching by non-hospital entrepreneurs.

Second, as records of what was spoken in lecture theatres, manuscript notes lie open to all sorts of possible criticisms. Many are undated; a large number unsigned; some do not even record the name of the lecturer. These obviously must be used with caution. More important, however, is the fundamental relationship between what was said and what the student wrote. Very few of the men who made lecturing a business in eighteenth and early nineteenth-century London either published their complete lectures[21] or composed introductory texts. Even fewer left their own copies of lecture material.[22] Comparison, therefore, with what the lecturer thought he said and what the students wrote is, in most cases, impossible.[23] One striking early exception to this generalization is the posthumous publication of William Hunter's *Two Introductory Lectures, Delivered to his Last Course of Anatomical Lectures* (1784), which he left in manuscript apparently corrected for the press. This text, with 114 pages for two lectures, has a pale reflection in pupils' notes. At least one student recorded several of the basic points in 1779, but his thirteen pages omit most of the details and flourishes Hunter included in the published version.[24]

Students used shorthand (fig. 47), rough non-verbatim comments and hurriedly scribbled longhand to capture their lecturers' words. The unknown student who attended John Abernethy's lectures in 1813 (fig. 48) mentioned the key anatomical terms associated with Abernethy's demonstrations and several of his lecturer's remarks on their clinical significance. Yet he also clearly went back to his notes to emend and embellish some points, interjecting either his own observations or ideas that he later remembered. In contrast to such manuscripts, where the student conspicuously interacted with the subject, most surviving pupils' notes appear to be fair copies of condensed accounts of what they thought the lecturer said, ideally written out cleanly in complete sentences. The anonymous student who attended Percival Pott's

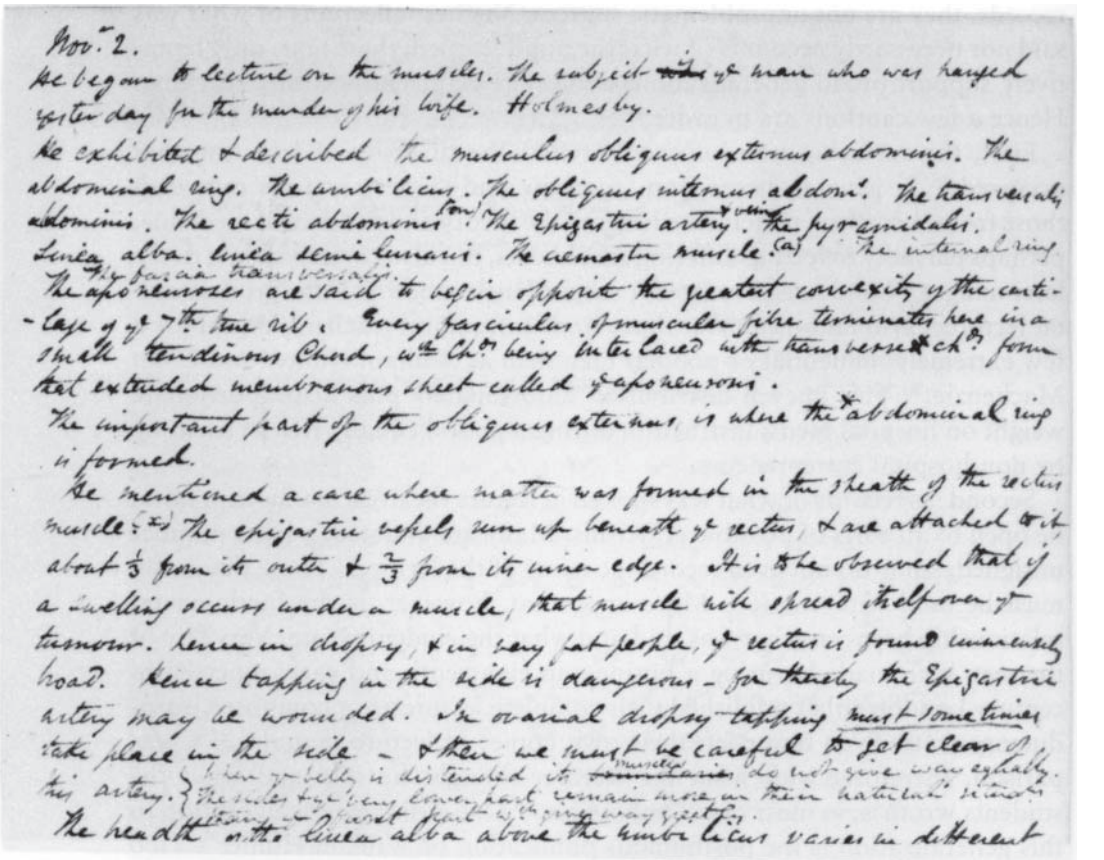
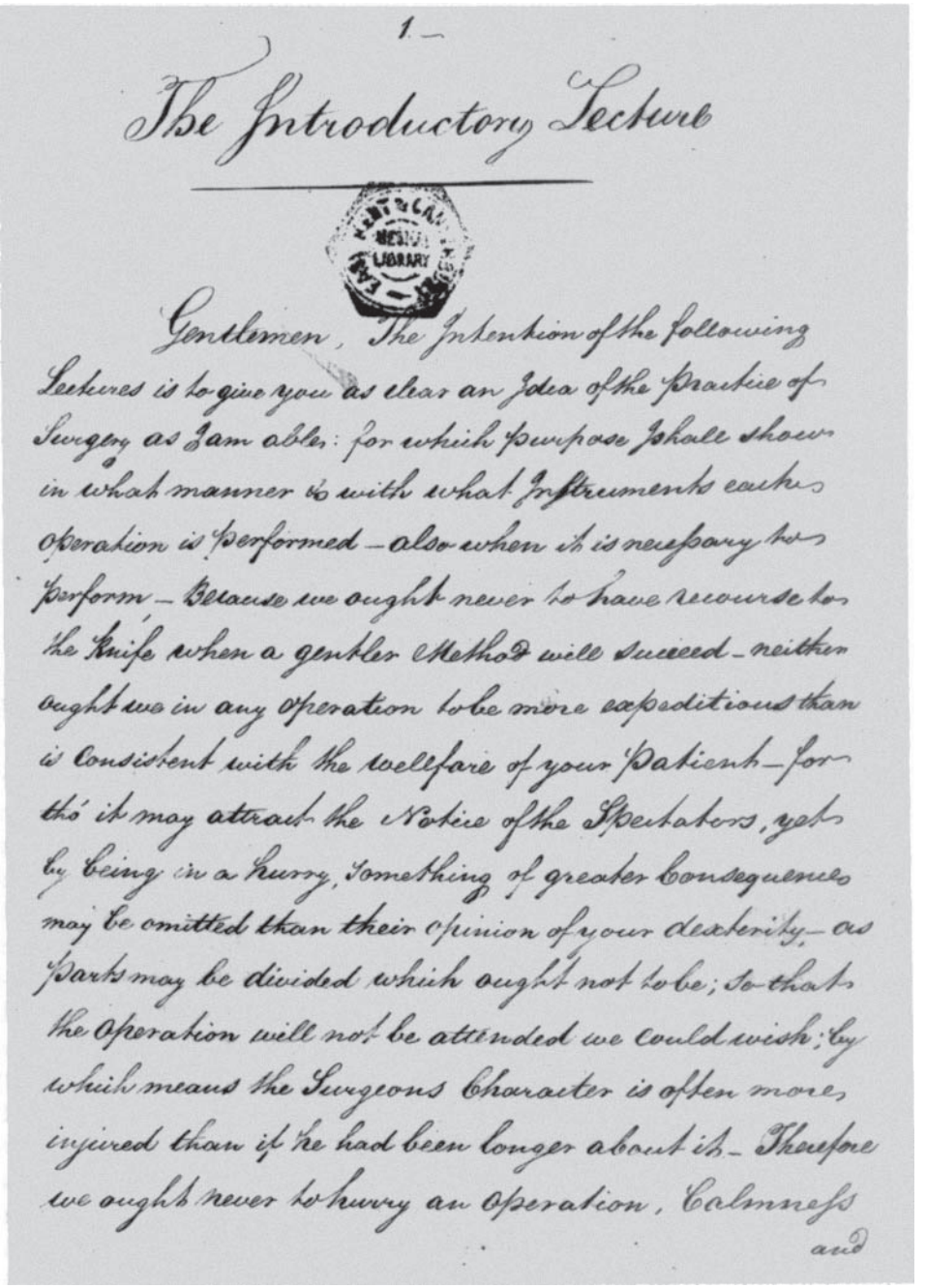


Fig. 48. Entry for 2 November, in John Abernethy, Notes of lectures on anatomy, *c.* 1813, unpaginated.

lectures around 1770 (fig. 49) typically polished his notes using Pott's voice, as though giving a verbatim report. (Note the use of the first person in the third line of fig. 49. This convention regularly lead to syntactical contortions when the pupil decided to interject his own 'I'.) Among the London manuscripts, moreover, even those with the closest similarities reveal enough variation to suggest that the students put the information they heard into their own words and were not simply copying others' notes.[25] Certainly the accuracy of the end result also depended heavily on the pupil's intelligence, skill and dedication.[26]

Lecture notes thus reflect an interaction between the instructor and the student. They are neither sources for what the lecturer necessarily said or did, nor accounts of what the pupil understood, but an amalgam of statements and interpretations. At a deeper level, too, the lecturers themselves constructed their courses as a synthesis of their own reading, education and experience. Some of the medical courses, in fact, were obvious derivatives of Boerhaave or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The Introductory Lecture

Gentlemen, The Intention of the following Lectures is to give you as clear an Idea of the Practice of Surgery as I am able: for which purpose I shall shew in what manner & with what Instruments each Operation is performed – also when it is necessary to perform – Because we ought never to have recourse to the Knife when a gentler Method will succeed – neither ought we in any Operation to be more expeditious than is consistent with the welfare of your Patient – for tho' it may attract the Notice of the Spectators, yet by being in a hurry, Something of greater Consequence may be omitted than their Opinion of your dexterity – as Parts may be divided which ought not to be; so that the Operation will not be attended we could wish; by which means the Surgeons Character is often more injured than if he had been longer about it – Therefore we ought never to hurry an Operation, Calmness

and

Fig. 49. Introductory lecture, in Percival Pott [1714–88], The surgical lectures, p. 1.

William Cullen; others, more complicated blends.[27] The lecturers' reliance on other scholars' work affects what they said about using the senses. On one hand, it can be argued that what they taught was merely a rhetorical repetition of familiar homilies, and can tell us nothing about what the lecturer might have done in his practice.[28] On the other hand, for students who transcribed points about, for example, physical examination, there was always the possibility that even classical instructions could have been taken literally, especially in conjunction with the skills and ideas learned from other courses.[29]

Whether they took it seriously or not, London pupils frequently heard how important 'observation' was to acquire and to advance medical knowledge. All of the authors who prepared or published texts about medical education in the eighteenth and early nineteenth centuries noted that students, no matter what their formal instruction, would ultimately need to learn how to identify and treat illnesses by observing the sick and practising themselves. From Sir John Floyer in about 1720, to James Lucas and James Parkinson in 1800, moreover, authors urged the young practitioner to acquire his initial experience at hospital patients' bedsides.[30] Yet their recommendations were simple programmatic statements, for they did not specifically discuss how the pupil should use his senses once he got there.

Similarly, in their general discussions, London lecturers upheld the significance of personal observation, but rarely explicitly addressed sensation as a distinct topic or problem. At an ideological level, they glorified the benefits of direct experience. They often devoted the first, introductory lecture in many subjects, for example, to presenting a brief history of anatomy, surgery or medicine. One purpose then, as now, was to promote professional bonding by linking the student to an intellectual tradition. But these historical sketches served other rhetorical functions, not the least of which was to portray the disciplines as both sciences and arts, as the fruits of judicious reason and careful observation. Hippocrates, Harvey, Bacon and Sydenham were the acknowledged heroes; those who merely speculated and spun fantastic theories, the villains, blinded by prejudice.[31] The lecturers, nevertheless, upheld the role of reason, of course, for that divided the man of science from the mere quack or unthinking empiric.[32]

The London teachers obviously adopted a didactic tradition that justified presenting knowledge in lectures rather than simply by direct experience. They were educating the senses, not training them. Although lacking a university's elitist prestige and social cliquishness, London's courses probably succeeded in part because they appealed to those seeking an 'academic' distancing from apprenticeship. To the surgeon or apothecary who hoped to present himself as a respectable, learned practitioner instead of an ignorant craftsman or shopkeeper, lecturers offered the language and theoretical frameworks that had previously been the grounds separating the elite physician from the lower

ranks.[33] One of the most overt testimonies to this professionalizing function of lectures came, not surprisingly, from a physician, William Graeme, who wrote in 1729 to justify his proposal to lecture on physic in London. To those who claimed that 'the only way to give Instructions in Physick, is to carry the Student to the Patient's Bed-side, and there shew him the Disease and the Practice', Graeme responded that the pupil 'cannot be the better for what he sees, but rather the worse', if he has not already learned the rationale of practice.[34] As Dr William Hamilton put it in 1787, in theoretical courses 'diseases are represented as they occur in general, divested of those peculiarities which we observe in every particular instance of them'. The abstract method, so familiar in eighteenth-century medical systems, gave physic 'all the graces of science'.[35]

The didactic formalization that structured medical lectures also characterized other subjects and probably influenced practitioners seeking to enhance the scholarly image of their disciplines. Some surgeons and anatomists, in particular, appear to have tried to make their courses, as William Cheselden put it in 1721, suitable for 'gentlemen'.[36] The emphasis on constructing a theory of surgical diseases, especially on creating new physiologies to account for morbid changes, such as inflammation, well known in John Hunter's work, made surgery respectable by giving it an abstract foundation. In the process, the senses could not be given the free rein associated with empiricism, but had to be disciplined and ordered by a rational system.[37] In 1790–1, for example, John Pearson dubbed his lectures 'Chirurgical Institutes'. After an extended theoretical introduction, Pearson discussed surgical diseases according to their genera and species, often latinizing their names. Although he ridiculed medical nosologies based on collections of symptoms, calling them 'nothing more than Medical Vocabularies', he revealingly claimed that his own lectures offered 'a sort of Grammar of the Art'. He ended up creating a surgical nosology as abstract and artificial as the physicians' medical ones.[38]

Yet even this formal level, centred on mastering a vocabulary for disease and treatment, implied the constant use of sensory data. The pupils needed to learn a wealth of definitions and distinctions which, ideally, they would ultimately observe in their patients. The 'putrid' breath, spongy gums, lassitude and shortness of breath indicating scurvy; the 'copper color'd ... dry, scurfy scab' of the venereal eruption; the 'sighing & sobbing inspiration ... unequal pulse', cough and fever of peripneumonia vera; the 'impeded and difficult respiration, attended with fear of suffocation' marking asthma; or the 'bloody, sanious mucous [stools] often in the state of putrid fermentation and mixed with fleshy, skinny fibrous matter' found in acute dysentery are only a few examples of the symptoms the practitioner would need to note on seeing his patients or having their conditions reported to him.[39] Students' lecture notes forcibly testify to the complex range of clinical detail that the eighteenth-

century practitioner had to master. Much of it is both visual and closely connected to what the patient reported, yet at the same time presented in such abstract terms that it is difficult to read from it any special or personal hints on how to use the senses in clinical encounters.

In several instances, however, lectures implicitly acknowledged that they could not convey the clinical sensations associated with the words they used. When some lecturers attempted to describe non-visual perceptions, often in the context of specific cases, their efforts frequently resulted in instructions to touch, smell, taste or listen rather than in coherent verbal accounts of distinguishing experiences. The occasional references to smell, as in the 'putrid' breath of scurvy already mentioned, or to taste, as in the sweetness of diabetic urine, presupposed either prior or future clinical contact with these sensations. Lectures on the pulse especially demonstrate the instructors' limitations with language. Dr George Fordyce, for example, like most physicians in the late eighteenth century, emphasized the importance of measuring the number of pulse beats per minute. Yet he also tried to characterize the qualitative variations for his students. He described a full pulse as 'whn ye Arteries act strongly the Pulse is hard feeling like a Cord high braced & having a Thrill under ye finger at ye beginning of ye Contract[ion]'. He went on to note 'whn ye Vessels are very full they have not room to play the Pulse is small & called oppressed'.[40] Clearly dissatisfied with his efforts to render such distinctions verbally, Fordyce declared (according to his auditor): 'These we cannot convey to you by Words, there are not Words expressive of their feels [sic] or sensations ... you are to learn them by actually feeling the Pulse of the Patient'.[41] Most lecturing physicians and surgeons simply used the common terms for clinical variations in the pulse, such as 'hard' or 'small and low', without attempting to describe how these felt to the observer. It was enough for them that the student simply learn that the 'small & frequent' pulse indicated a low fever, or that the 'strong hard pulse' was found in rheumatism.[42]

Faced with failure to describe the complex nuances of non-visual sensations, some London lecturers, notably George Fordyce, became increasingly frustrated with formal, abstract 'systems', and yet could not escape them when teaching courses on the theory of medicine. As already suggested, Fordyce urged his pupils in no uncertain terms to attend clinical lectures and walk the hospital wards.

> I have seen a young man perfectly instructed (& old men too sometimes) in all that knowledge [of genera and species] & brought them [sic] into St Thomas's Hospital & set them into a ward to give names to diseases & they did not know one single disease that affected the Patients, nor how to name it at all, because it was not exactly according to the Definitions laid Down in these books.[43]

Such comments only reiterated the fact that what the student learned on the wards, while shaped by the formal discourse given in lectures, was up to him

to acquire. The paucity of surviving notes known to have been taken by either physicians' or surgeons' pupils in the hospitals leave us in the dark about what they actually experienced at the bedside.

One of the major purposes of lectures was, thus, to provide a shared technical vocabulary which, as much as clinical acumen, both set the practitioner off from the layperson and allowed him to converse intelligently with educated patients.[44] This verbal instruction was to precede contact with patients, although in the case of students who had already spent time as apprentices, it also served to organize and codify previous experience. Yet, while a glance at almost any set of manuscript notes confirms this formal goal, lecturers also instructed their students in how to use their senses and to interpret their patients' accounts in several intertwined ways. Their advice and approaches appear in the methods they used to teach and the implicit models of clinical experience they presented.

Demonstrating objects was one of the most obvious techniques used to bridge the gap between words and things. Throughout the eighteenth century, lecturers in materia medica relied on collections of simples and compound medicines to aid instruction.[45] Midwifery teachers, such as Colin Mackenzie, used both anatomical preparations to show foetal development and a 'machine' representing the pregnant uterus to demonstrate difficult births.[46] Within medical teaching, anatomy has long been recognized as the paradigm for instruction through the use of an increasingly complex array of preparations, from freshly dissected parts to intricate specimens of injected arteries and veins. Accompanying the development of techniques for preserving anatomical material came the well-known emphasis on individual dissection by students. Hands-on experience, it was repeatedly argued, provided a knowledge of natural and morbid body structure far deeper than that acquired by merely seeing demonstrations and hearing the associated terms. William Hunter's role in proselytizing (if not introducing) the importance of dissection does not need to be repeated here; after mid-century nearly all London anatomy teachers had dissecting rooms distinct from their lecture theatres and students had numerous opportunities to attend a dissecting course, for which they paid separately.[47]

The emphasis on individual dissection, however, should not be seen as a glorification of simply learning by experience, with the young man tossed among the corpses to recapitulate centuries of investigation and discovery. William Hunter argued that the student who begins to dissect too early 'will be so much at a loss in his work, and recover so little instruction or satisfaction, that at least it will be so much time almost thrown away'.[48] Only after at least one, or preferably two, demonstration courses would the pupil be ready to take up the knife himself. During formal anatomy lectures, instructors, from William Hunter to Henry Cline, John Abernethy, Henry Watson and Joseph

Fig. 50. Man dissecting corpse, in John Abernethy, 'Lectures on anatomy, physiology, etc.', notes made by D. D. Dobree, *c.* 1814, last flyleaf and drawing.

Else, showed a wide range of preserved and fresh preparations.[49] (See fig. 50, a student's sketch of a be-wigged and frock-coated surgeon lecturing over a corpse.) 'What the student acquires this way, is solid knowledge, arising from information of his own senses: thence, his ideas are clear and make a lasting impression on his memory.'[50] When the student came to dissect on his own, he would thus have an entire system of anatomy 'deeply impressed' in his mind by a series of class sessions where the senses (particularly vision) had been rigorously disciplined.[51]

Most students who referred to preparations simply noted that they were 'exhibited' (as in fig. 48, line 3) and concentrated on mastering the technical anatomical vocabulary associated with the part. Only a rare few embellished

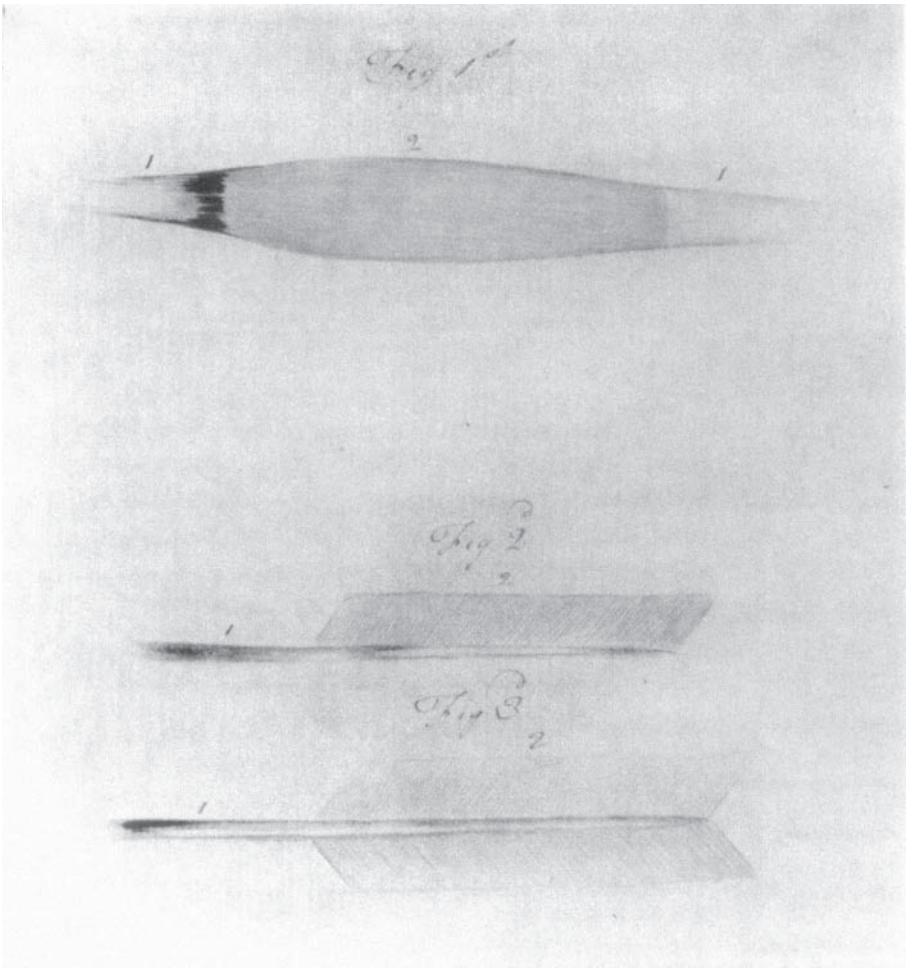
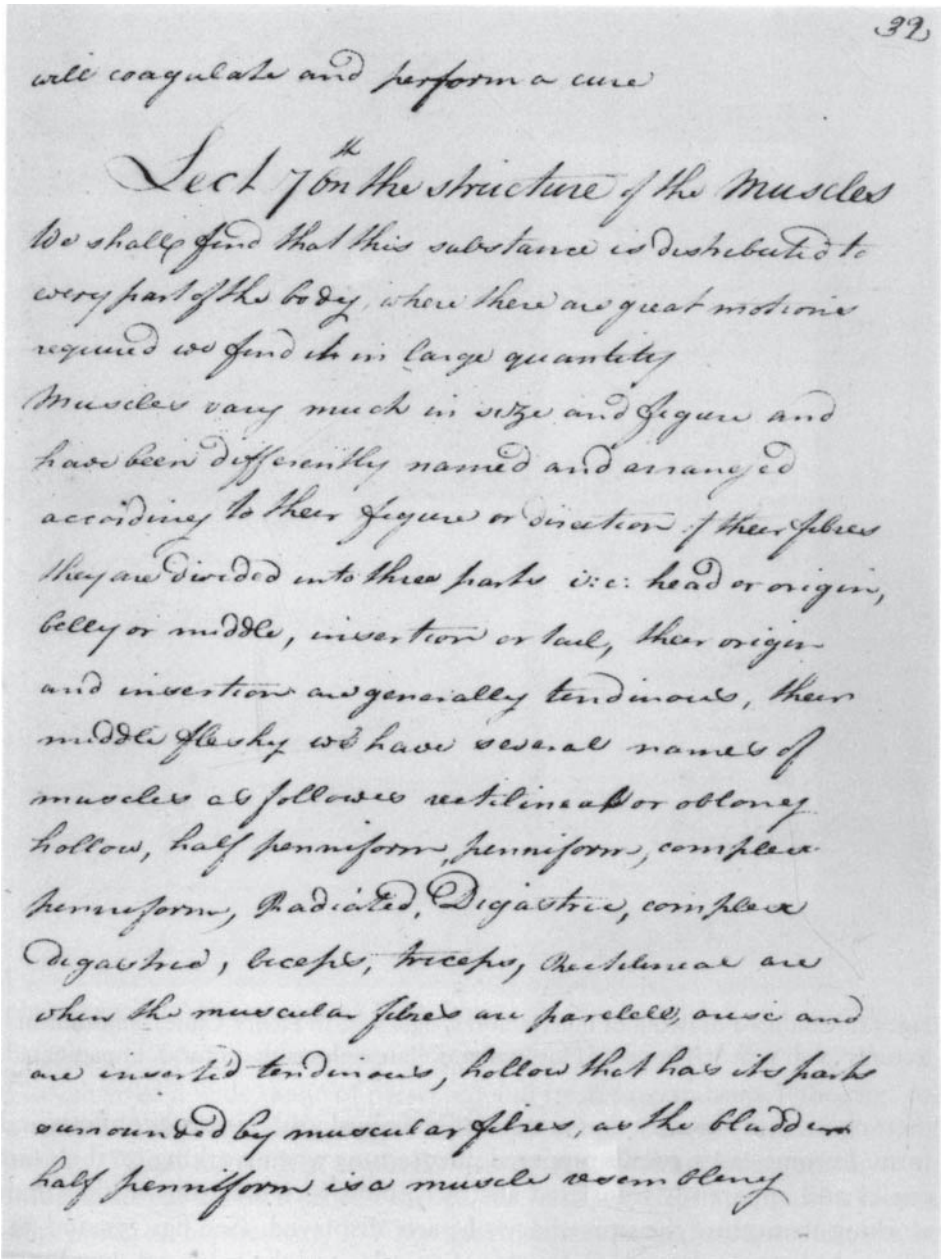


Fig. 51. Coloured drawing of muscle fibres, figs. 1–3, in Henry Cline, 'anatomical lectures', vol. 1, at St Thomas's Hospital, n.d. [late eighteenth century], unpaginated.

their notes with sketches that attempted to record visual instruction in visual form. In some cases, pupils prepared illustrations when working on their fair copies and apparently translated abstract points into diagrams, rather than working to capture the immediacy of parts displayed. (See figs. 51 and 52, where the manuscript describes types of muscles and the coloured sketches at the end of the volume support minor points in the text.) Daniel Dobree, in contrast to most of his peers, relatively lavishly illustrated his notes of John Abernethy's anatomy lectures and Astley Cooper's lectures on surgery. Tellingly, however, the drawings accompanying Abernethy's lectures were those that showed 'The exact representation of the sketches used by Mr A



32

will coagulate and perform a cure

Sect 7th On the structure of the Muscles

We shall find that this substance is distributed to every part of the body, where there are great motions required we find it in large quantity

Muscles vary much in size and figure and have been differently named and arranged according to their figure or direction of their fibres they are divided into three parts viz: head or origin, belly or middle, insertion or tail, their origin and insertion are generally tendinous, their middle fleshy we have several names of muscles as follows rectilineal or oblong, hollow, half pennisform, pennisform, complex pennisform, radiated, Digastric, complex Digastric, biceps, triceps, Rectilineal are when the muscular fibres are parelell, ovic and are inserted tendinous, hollow that has its parts surrounded by muscular fibres, as the bladder half pennisform is a muscle resembling

Fig. 52. On the structure of the muscles, in Henry Cline, 'Anatomical lectures', vol. 1, at St Thomas's Hospital, n.d. [late eighteenth century], p. 32, seventh lecture.

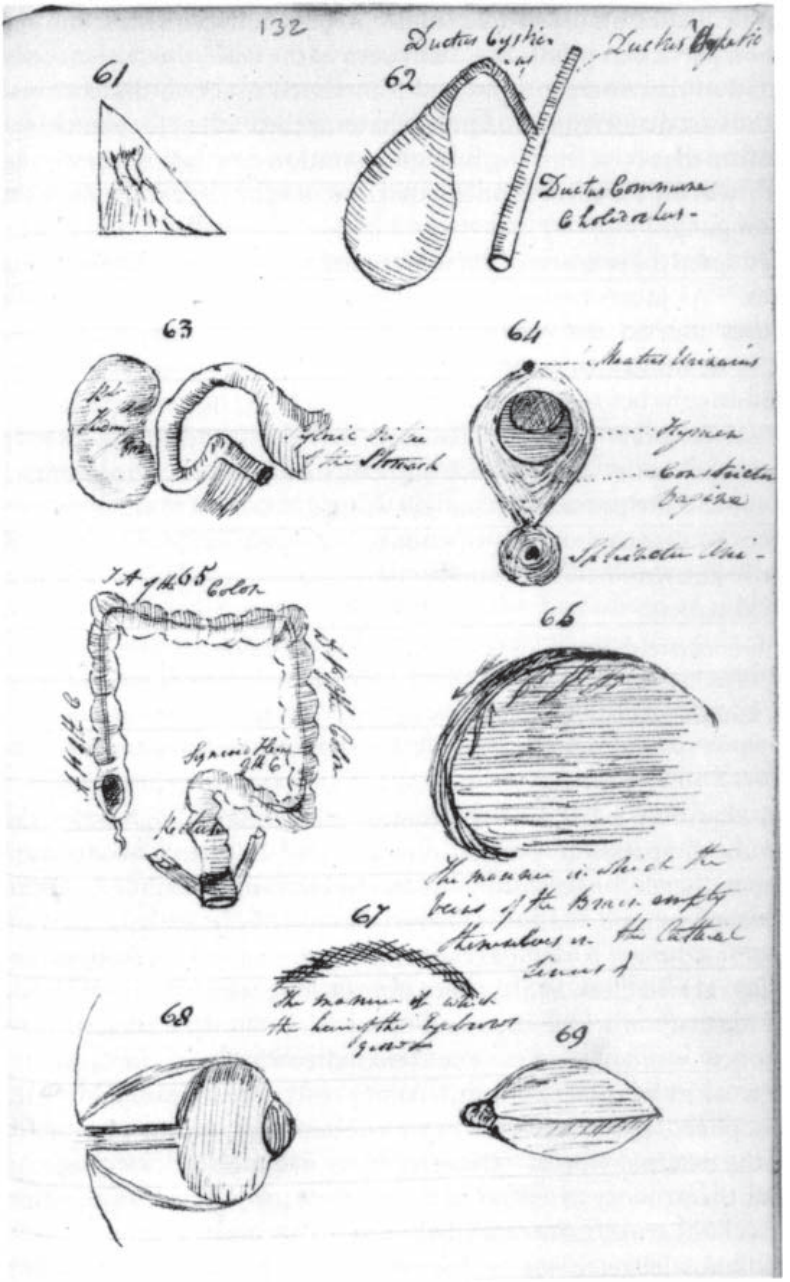


Fig. 53. Anatomical drawings, in John Abernethy, 'Lectures on anatomy, physiology, etc.', notes made by D. D. Dobree, *c.* 1814, p. 132.

to illustrate his lecture' (see fig. 53). While Dobree's comment shows that Abernethy supplemented his use of anatomical preparations with illustrations, likely to focus on particular points not easily seen in the flesh, the student only copied information that someone else had transferred to a two-dimensional medium. For the vast majority of students, whatever their talent for sketching, their notes confirm that even learning by demonstration centred on translating sensations into words, however inadequate those might be, rather than on transcending language.

Physicians adopted the rhetoric of demonstration subjects when introducing clinical lectures.[52] As James Parkinson put it in his advice to students in 1800: 'Clinical lectures are, to the practice of medicine, what dissection is to anatomy – it is demonstration. By clinical lectures, disease is, as it were, embodied and brought before the student, as a subject for his leisure examination.'[53] Clinical lecturers generally assumed that the student had already taken courses in the theory and practice of medicine. The structured contact with cases, then, had the primary pedagogic value not only of discussing particular instances of disease but also of connecting sensation with what was already formally known. William Hamilton explained that when confronted with the clinical patient

> you are made immediately judges of the accuracy of the representation [given in systems], a deeper impression is made on the mind, than by any description, and at the same time that knowledge may be communicated, your faculties of observation are exercised and improved, and you are thus able to acquire future knowledge without aid of instruction.[54]

Hunter and Hamilton both used the central image that being shown the 'object' made the 'impression' formed on the mind by direct observation somehow 'deeper', hence longer lasting. At one level, then, pervading Lockean sensualist philosophy supported and informed the epistemological justification for demonstration courses. As long as the senses were in good working order, the mind would receive clear and distinct impressions which were the basic foundation of ideas upon which the mind operated.[55]

Although touch was sometimes considered rhetorically as the primary sense, since it worked by direct contact, vision preoccupied most eighteenth-century philosophers. Eyes were effectively the most important organs for knowledge of the external world.[56] Commonplace metaphors linking light to reason bear out the primacy of vision as the sense at the pinnacle of the hierarchy, with touch, hearing, taste and smell of quite secondary importance.[57] To teach sound knowledge, therefore, the instructor linked correct terms with what the pupil *saw*. The other senses, such as touch in anatomy or smell in materia medica, certainly provided data supporting the impressions given by sight, but these secondary sensations were rarely discussed or described explicitly during the lectures.

Underlying all the demonstration courses, however, was the assumption that the lecturer prepared the students' senses by explicit association with appropriate vocabulary, showing an object, patient or procedure and leading him to experience a controlled 'sensation' for which he already had conceptual knowledge; that is, he learned to fit the appropriate categories (words) to what the lecturer presented for him to perceive. Examined from this perspective, London lecturers both acknowledged that words alone were inadequate as a basis for sound knowledge, yet would have heatedly denied that a correct medical education could be constructed from experience alone.

Lecturers used a second technique to illustrate how knowledge emerged from controlled experience: they discussed either experiments they had performed or cases they had seen. This method allowed them to filter out extraneous data, to present a purely verbal and structured model that the student might follow. In these discussions, the instructor indirectly demonstrated the (correct) source of knowledge through sensory experience. John Hunter's and John Haighton's detailed descriptions of their experiments exemplify this procedure. Both bombarded their audiences with the image of a practitioner who would hardly accept what anyone else had observed without repeating the experiment for himself. Reported accounts and 'speculation' were thus officially undermined in favour of direct personal observation, ironically distant from the pupils, who had no chance to sharpen their own perceptions or to form their own judgements.[58]

Illustrating general points about diseases or injuries with case histories that the lecturer had personally encountered offered a much more convoluted approach to how the student could link conceptual, verbal knowledge with sensory experience. As emphasized above, most eighteenth-century teaching focused on abstract definitions, not depictions of the conditions actually seen in the idiosyncratic patient, although it required a complex 'sensory' vocabulary. Turning to the comments which overtly or implicitly reveal how students were to deal with living patients thrusts us into the nuances of eighteenth-century clinical relationships. Lecturers on both medical and surgical topics offered 'clinical' instructions, usually through case-exemplars, which suggest that the traditional 'internal' (or medical) versus 'external' (or surgical) division between illnesses did not strictly separate physicians from surgeons, but rather represented a spectrum of conditions, in part defined by how they could be recognized by the practitioner and his patient. As London teaching from the mid-eighteenth century centred around educating the *de facto* general practitioner, the elite dichotomy between physician and surgeon was increasingly unrealistic. The eighteenth-century surgeon-apothecary-man-midwife already practised in multiple realms of conditions and treatments. Unless we imagine him metaphorically changing hats when asked first to set a fracture and then to

prescribe for a fever, we need to view eighteenth-century medical and surgical knowledge as forming a consistent system.

If we take 'external' to refer not to what surgeons did, but more generally to conditions giving rise to perceptible, localized changes on the body's surface and accessible orifices, then both surgical and medical lecturers agreed that 'external' conditions came most directly under the practitioner's senses. In 1758, Dr Donald Monro, physician to St George's Hospital, summed up a prevailing eighteenth-century opinion in his bald statement: 'internal diseases are of the same kind to external only they can't come under the notice of the senses'.[59] Or, as Dr Fordyce later put it more carefully:

> The nature of the disease must be known by its external appearances, as pleurisy is known from a pain in the side, owing to some inflammation on the pleura . . . Now we can't see the pleura or the lungs, but there are symptoms attending the disease, namely the pain accompanied with a cough, a hardness and fullness of pulse and an increased circulation, which are all evident to the senses.[60]

Here 'the senses' clearly refer to what the practitioner and patient perceived as indirect indications of the disorder which, if external, would be far easier to grasp; for, as Fordyce remarked, in such cases 'the parts become visible'.[61] William Hunter pessimistically reminded his students 'it is very hard to guess at the nature of internal disorders whatever some people may pretend to do'.[62] When Astley Cooper, surgeon to Guy's Hospital, instructed his auditors that the pulse provided an important clue to the seat of inflammation, being 'small, contracted & quick' in abdominal inflammations, but 'full and hard' in thoracic ones, he clearly articulated how surgeons also relied on common medical signs in their clinical encounters where the suspected disorder was not patently external.[63]

Certainly lecturers covering surgical conditions routinely mentioned the key symptoms offered by the practitioner's visual inspection and touching of parts normally hidden or clothed. Their advice amply confirms that the 'surgical point of view' was focused on organic changes the surgeon (and his patient) must perceive. Henry Thompson, in his 1759 lectures on surgery, for example, declared that 'wounds are distinguished by the Sight–Touch–Smell etc.'. Looking showed the type of wound and its location; touch revealed the wound's depth, direction and the presence of foreign bodies; 'cadaverous smell' suggested gangrene, while an unspecified odour would indicate if the intestines were injured.[64] Dozens of examples would unnecessarily confirm that surgeons coupled touch with sight both to distinguish surgical conditions and, of course, to operate. Henry Cline provided typical remarks. In 1788, he described the early diagnosis of a scirrhous tumour in the breast by noting 'if we place the hand on any part of the breast, one part will feel harder than the other'.[65] Cline's vagueness about the details of this examination points to the trouble several lecturers had in describing the sensation offered by touch.

For external conditions such as wounds, fractures, visible tumours and ulcers, both practitioner and patient expected the surgeon to inspect and touch the parts involved. But several London physicians also taught this approach, referring to physical examination in certain very specific contexts. Dr Donald Monro, in his course on the practice of physic, took 'physic' to cover all medical and surgical conditions. When dealing with head wounds, for example, he stated 'the first thing to be done is to examine the extent of the wound' and gave a detailed description of moving the fingers carefully across the skull, feeling for fractures. To diagnose a bladder stone, he emphasized that the decision was not positive 'until we feel it by A catheter or examining by Anus with our finger'.[66] Dr Fordyce detailed how the practitioner could distinguish inflammation of the cellular membrane lying under the psoas muscle from 'a local external abscess'. He instructed: 'lay the patient on his back and squeeze the Tumour if it be a Lumbar Abscess the matter will be pressed into the cavity of the Abdomen, but if it be on the part itself, no alteration takes place'.[67] In these examples, and similar ones, physicians followed what were recognizably surgical procedures on understood external disorders. Similarly, in dealing with childbirth or women's diseases, vaginal examination by surgeons, man-midwives and physicians was widely accepted and taught, although hedged with advice on appropriate times and procedures. Henry Cline, for example, emphasized how to pass a catheter in the female '*without seeing the parts* it being more decent and agreeable to the patient'.[68]

Beyond the realm of clear-cut surgical conditions, students were also taught that investigating by touch could be problematic. When William Hunter discussed the diagnosis of uterine cancer in the 1770s, he noted that one should suspect this condition when the patient had 'tiresome gnawing pain, sallow look & foetid discharge'. He went on to attempt to describe the examination:

> you examine & feel there is a cancer (ie) you perceive all the parts about the vagina are bloody & unequal & if you touch them it brings blood or you only feel that the uterus is schirrous [*sic*]. As to ye cancerous feel when the Parts are spongy & uneasy I have never been deceived, but as to schirous [*sic*] I have several times (ie) I have imagined a woman to have a schirus [*sic*] which I thought in ye end would become a cancer, but yet it subsided, so that altho' there has been considerable hardness, yet I have been deceived.[69]

Hunter could not quite convey precisely how a scirrhus felt and, although he clearly upheld the importance of the examination, it was obviously of equivocal utility even for someone with his expertise.

Hunter's example demonstrates the area of ambiguity where 'external' diseases and procedures overlapped with anatomically 'internal' ones. Here pupils frequently found that physicians and surgeons agreed that examining by touch often gained only a little additional information on the seat of the

disease over what could be learned by close attention to the patient's general symptoms, discovered by sight and the patient's account. Inflammations in the abdomen or thorax, dropsies and fluid in the chest particularly fell into this grey area.[70] Henry Cline, for example, discussed the identification of general versus encysted dropsy. In general ascites, 'we may feel the fluctuation' of the fluid, a well known diagnostic technique. Yet the typical fluctuation could occur when manipulating a large cyst, as in ovarian dropsy. Cline went on to argue 'we are only able to distinguish the disease by attending to the patients general health which is very good in the encysted Dropsy or Dropsy of the ovary' while quite poor in a general dropsy.[71] Dr Monro noted 'the water collected in one or both cavities of the chest is difficult to discover, because the Bulk etc. prevent its pushing or feeling of fluctuation with your finger'. He then stressed that the important signs were the patient's 'difficulty of breathing in a lying posture & when erect a difficulty toward ye Diaphragm' without evidence of inflammation or fever.[72] Similarly, Percival Pott, surgeon to St Bartholomew's Hospital, detailed the diagnosis of hydrops pectoris according to how the patient breathed in various postures, lack of expectoration and heart palpitations. He told his students: 'it has been asserted by writers that you may know this disease from the fullness of the thorax, but I was never able from any such appearances to ascertain the existence of this disease'.[73]

In these discussions, surgeons did not present a distinctly 'surgical point of view' in the sense of upholding physical examination – or 'objective' practitioners' accounts – as the key diagnostic technique for all disorders. Visual inspection of the clothed body and the patient's reports served both the surgeon and the physician to distinguish many 'internal' conditions. The patient's description of pain, in particular, was among the 'internal' sensations that eighteenth-century medical men of all stripes assumed gave objective knowledge, even though not directly perceptible to the practitioner. Pain, with its teleological function of naturally revealing injury and disease, has, of course, a long clinical pedigree.[74] Each generation of students, nevertheless, had to be taught to interpret the particular significance of this uneasiness, ranging from the pricking pain sometimes associated with pleurisy to the unmistakable agony caused by the descent of a kidney stone through the ureter. Pain, in fact, provided considerable data about the seat of a disease or injury, whether known only from the patient's description or used in conjunction with physical examination. In thoracic diseases, for example, lecturers routinely emphasized that inflammation of the liver could be distinguished from pleurisy partly by the obtuse pain felt in the former compared with the acute pain in the latter, presumably carefully elucidated through questions.[75] Similarly, pleurisy gave rise to a sharper pain than pneumonia, and the practitioner could track its dispersion along the membranes in part according to the spread of the pain.[76]

Both William Hunter and Dr Fordyce pointed out that one (of the many) uses of a thorough knowledge of relational anatomy was the consequent ability to localize patients' internal sensations. Hunter commented 'in considering what viscus is affected, when the patient shows us the place of his pain we must remember that the Viscera ascend & descend or go to one side with the different positions of the Body'. Fordyce, in recounting a case of inflammation of the intestines, praised anatomy for helping the practitioner rule out other conditions, such as a stone in the bile duct, according to the differing sensations of pain.[77] Surgeons regularly reported how pain provided a key guide to localized injuries as well as internal disorders. Henry Cline, for example, while discussing skull injuries that brought on general symptoms of febrile inflammation, noted that if there is no 'external mark we ought to press in various parts about the skull and if the patient cries out more at any one part in particular there the operation [of trephan] should be performed'.[78]

In general, physicians and surgeons thus presented the same views about what could be learned about disease by rudimentary physical examination and patients' accounts. Surgical courses clearly contained far more references to touching than those on physic did, but when it came to diseases often taught by both kinds of practitioner (such as dropsy), the approaches to identifying (and explaining) the conditions were often quite similar. No distinctly 'surgical' approach – beyond, not surprisingly, more descriptions of morbid anatomy – fundamentally distinguished the eighteenth or early nineteenth-century surgeon from his medical counterpart.

As the discussion of the spectrum between external and internal conditions suggests, the student was instructed to use his senses in the complex context of interaction with the patient. What the practitioner perceived was constantly tempered by the patient's account of his or her internal sensations and previous symptoms. For the eighteenth-century pupil, the patient's responses – unless he or she were delirious or unconscious – were vital for the entire process of interpreting what he learned visually. In several courses, lecturers taught students how to question the patient and to integrate all the parts of the clinical encounter into a coherent picture of the patient's past, present and anticipated condition.

Physicians, not surprisingly, more frequently gave the most explicit advice on how to question the patient. In his clinical lectures, for example, Dr Fordyce told his students to keep the rules of evidence in mind. For him the patient did not necessarily know the truth about his condition and was often beset by the peculiar ideas he had of an illness, such as fever or venereal disease. 'It is with the utmost difficulty', he noted, 'that this kind of Prejudice can be overcome & in many cases it cannot.' For Fordyce, the famous story of Galen's perspicacious diagnosis of Glaucon, in which Galen deduced by subtle clues the patient's liver disease and asked only confirmatory questions, was

hardly a model to follow. 'The Patient finding his Physician has found out several of his Complaints, thinks he knows them all.' Instead, Fordyce advised, let the patient talk at length about his symptoms without asking leading questions. 'You ought never to ask him if he has a Pain in such a Situation, or in such a Place, excepting after he has given you the whole Description of the disease as far as he is Master of himself.' Then the practitioner can ask about other feelings of 'uneasiness', but without using any manner which would lead the patient to answer what he thinks the practitioner wants to hear. The account the patient gives, moreover, must certainly not be taken at face value. Fordyce summarizes his cautions by saying 'such bad evidence Patients are'.[79] Other lecturers similarly warned their pupils that patients sometimes dissembled or lied.[80] In several instances, teachers stressed conditions, often illustrated by particular case histories, where the patient might in fact feel better and claim recovery, while the practitioner would know full well that relief was an illusion often portending death.[81]

At every stage of the clinical encounter, therefore, London lecturers taught that both the practitioner's and the patient's sensations were to be interpreted in light of medical and surgical theories and formal vocabularies. Social assumptions about appropriate methods of diagnosis, moreover, also cut across the presumed boundaries between physicians and surgeons. This point is best illustrated by a close look at how lecturers discussed specific cases. In his surgical lectures, for instance, John Abernethy offered numerous examples from his own practice. Many of these were clearly designed to display particular methods, techniques and treatments; they also obviously served to highlight Abernethy's own elite surgical status and clinical acumen. Yet these reports further demonstrated the varying relationships that Abernethy had with his patients and, as models for his pupils, suggested that a successful surgical practice required the practitioner to listen and interrogate as much as to touch and to operate. Abernethy, one of John Hunter's students, emphasized constitutional, or non-localized, causes for surgical conditions. For him, disordered digestion was the root of nearly all systemic evil and he regularly urged his pupils to enquire about the patient's diet, lifestyle and evacuations, very much as physicians did.[82]

For external, obviously surgical conditions, Abernethy was as ready as the next man to exert the surgeon's authority to see and to touch all parts of the body. Yet his sensitivity to the patient's willingness to be examined appears strikingly in several cases he described to his pupils. He recounted how women suffering from painful or difficult urination could become so desperate that they would even 'consent to exposure' to be sounded for a bladder stone. This, Abernethy urged, was often quite unnecessary. A lady 'of rank' once consulted him at last for this procedure. She had pain and the desire to make water, but, according to Abernethy's account of her report, urination 'was not succeeded

by that horrible pain, as in the case of Stone'. He continued: 'Her tongue was furred, and Bowels as wrong as possible. I said to the other Medical Attendants that there was no necessity for exposure, but advised them to give her the Blue Pill, and Decoction of Sarsaparilla.' The lady became well in a short time, having suffered from a constitutional disorder consequent upon poor digestion.[83]

The lessons here for Abernethy's students are unmistakable. A properly educated surgeon, well versed in medical as well as surgical knowledge, would know when to forgo physical examination. Understanding the nuances of pain and recognizing the symptoms of disordered functions that the patient reported encouraged the practitioner to see certain conditions as 'internal'. Identifying such illnesses with the preferable repertoire of polite visual inspection (of, e.g., the tongue) and verbal interrogation clearly pleased the refined client. Only when both patient and practitioner agreed that a disorder was 'external' or surgical, did the broadly educated medical man put on his surgeon's hat and cross the social boundaries to discover what he could by intimate observations and his own hands-on manipulation.

London lecturers in the eighteenth and early nineteenth centuries thus offered their students a wide ranging rhetoric on how to use their senses both to learn medicine and to practise it. Faced with many pupils who came from apprenticeships and intended to practise as surgeon-apothecaries, these teachers had two sometimes conflicting goals. They wished to glorify observation and sensually based knowledge, yet, at the same time, to uphold the formal, didactic presentations that gave them part of their incomes and enhanced the professional status of non-university-educated practitioners. While demonstration courses nicely combined the visual display of objects with disciplined words, they were designed to structure sensations through verbal discourse. Case reports and clinical advice similarly offered models of how to acquire knowledge by sight, touch and judicious questioning from recalcitrant patients at the same time that they depicted the understood social context in which the practitioner used his senses.

Patients' accounts of their symptoms were so intertwined with practitioners' observations in the lecturers' clinical descriptions and case examples that it is quite anachronistic to seek to untangle the 'subjective' from the 'objective' data informing medical knowledge, misleading to assert that physicians necessarily relied on verbal interrogation more than surgeons did, and dangerous to assume that the patient's understanding of his or her illness was more crucial for dealing with 'internal' than 'external' diseases. In both surgical and medical courses, pupils learned that the patient's responses contained much information that was as important and 'real' as that available to the practitioner's own senses. From this perspective, London medical teaching highlights the shared spectrum of assumptions about how both the patient and the medical

man could discover and treat 'internal' and 'external' disorders. The complex social and intellectual relationships between the ill person and the medically trained individual tempered the supposedly positivistic and progressive role of 'the surgical point of view' in the late eighteenth and early nineteenth centuries.

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