By the end of the nineteenth century, medicine in Britain existed legally as a single profession. Besides its lawful status, a number of very general features also characterized this professional group: a core body of knowledge, licensing, recognized educational institutions, educational standards and other trappings, such as the running of learned societies and the publishing of periodicals. In many ways, doctors can be accommodated into the category 'forgotten middle class', when considered in terms of their cultivation of respectability and intellectuality, their professional organization, their praise of meritocracy and their apparent aloofness from the struggle for income. But recent historical work has thrown light on several aspects of medical life in the Victorian and Edwardian eras. In particular, comparison of scholarship from different areas shows that, behind its legal unity, the profession was extremely variegated in its attitudes, goals and standards, and especially in its definition, evaluation and use of science. At the one extreme were those doctors, for whom perhaps T. H. Huxley was a spokesman, who sought the role of scientifically trained expert and intellectual. At the other extreme, however, were a number of physicians who seem to have courted the sort of deference more likely to be associated with landed gentility. These latter practised throughout Britain, but were most obvious in London, particularly amongst those doctors who were Fellows of the Royal College of Physicians and who had appointments at the grand voluntary hospitals. Their cultivation of this role can be linked to the running of hospitals by distinguished lay governors, and to the fact that they practised medicine in the highest social circles, in a world in which the public chose their doctors by evaluating their class attributes rather than their medical skills. Following from this, it is easy to see why some of the leaders of English medicine, especially those in London,
stressed the value of a classical and general education rather than a narrow technical one, and why they praised the attainment of character more than the pursuit of expertise.

Recently, S.E.D. Shortt has analysed historical accounts of the role of science in the language of the nineteenth-century profession. He concurs with current historians in rejecting the older, but still prevalent, model that linked the achievement of professional hegemony in the nineteenth century to medicine's success in harnessing science for the practical relief of sickness. Quite frankly, there is little or no evidence to support this account, which is not to deny its profound importance as an historical ideology serving to sustain the claims made on behalf of twentieth-century medicine. Of greater interest is Shortt's attack on the work of those he calls the 'revisionists'. In the last decade, a number of historians have revealed the peculiarly difficult passage of continental experimental science, notably physiology, into the British medical curriculum. Anti-vivisectionist sentiments, the natural theological tradition, and a long-established preference for anatomy over physiology, meant that many British clinicians snubbed the attempt to introduce the experimental sciences to medical students and denied the claim that these disciplines had relevance to the practice of medicine. Whilst not arguing with the findings of these historians, Shortt suggests that the revisionists mistakenly identify experimental science with some ideal, ahistorical, 'real' science. Such an approach, he suggests, insidiously smuggles a new Whiggism into medical history, for, by thinking of science as meaning only experimental science, historians have been selectively deafened to the rather more general noise made by nineteenth- and early twentieth-century physicians, whether general practitioners or specialists, allopaths or homeopaths - all of whom sought to establish links between science (any science) and medicine. In general, he concludes, 'By forcing the rhetoric of science into the social vocabulary of the period, physicians secured a vehicle for their professional recognition.'

The aim of this paper is to suggest that there was an historical language of late nineteenth- and early twentieth-century clinical medicine which is captured neither by Shortt's account of events nor by his characterization of the revisionist position. In fact, it falls somewhere between the two. Between about 1850 and the Great War, many senior British physicians, particularly those with hospital posts in London, employed a vocabulary which routinely invoked science as the foundation of medicine but which prescribed for science only a limited role in clinical practice. In Shortt's terms, they were indeed using the rhetoric of science to bolster their professional authority, but only in one area, for, equally, they resisted the wholesale conversion of bedside practice into a science - any science. For them, 'professional recognition' depended much more on a rhetoric which brought to public notice the cultured practitioner of arcane skills.

To defend the autonomy of clinical medicine, these physicians invoked an epistemology of individual experience which, by definition, defied analysis. A similar distrust of applied science, an approval of craft skills and the praise of rule-of-thumb practice, can be found in the language of many other contemporary professions, such as chemistry or engineering. But, in medicine the account of the nature of clinical skill was linked to other things. It was used to show that only the gentleman, broadly educated, and soundly read in the classics, could be equipped for the practice of medicine. The equation almost ran: perfect gentlemen alone made great clinicians. This paper is concerned with the remarkable continuity in a rhetorical tradition in British medicine during years which saw profound changes in its organization, educational basis, and social relations. It will suggest that this clinical language was employed to demonstrate the 'natural' qualities of leadership of hospital physicians and, therefore, to protect their interests against competition from scientifically minded practitioners and the pedagogical claims of a new generation of basic science teachers. To admit that clinical medicine could be made a science would be to dismantle a discipline and the patronage system on which it thrived. The use of this epistemology will be illustrated by reference to the attitudes of clinicians towards specialization and the application of technology in clinical diagnosis.

In 1835, a French physician, Julius Herisson, introduced a machine he named the sphygmomanometer. Its purpose was to render the pulse visible by transmitting its beat to a column of mercury. Its existence was soon acknowledged in the British medical press. A typical observer remarked that, it was 'one of the most silly and ridiculous baubles that was ever attempted to be foisted on the attention of the profession . . . a complicated piece of machinery for seeing the pulse when it can be felt by the finger.' In 1835, such an attitude is, perhaps, not surprising. In 1905, however, The British Medical Journal, discussing the recently invented sphygmomanometer, could lament that, 'By such methods we pauperize our senses and weaken clinical acuity.' This same attitude in a journal sailing on the full tide of nineteenth-century science needs explanation. After all, by this time many mechanical aids to medical practice, including the sphygmomanometer, ophthalmoscope, spirometer, laryngoscope and microscope, were readily available.
But such a suspicion of instrumental diagnosis was far from unusual.

The medical act of 1858 had ostensibly united a divided body of apothecaries, surgeons and physicians into a single profession. The trichotomy that existed before professional unity was, however, merely replaced by a dichotomy afterwards, especially in London. Hospital consultant and general practitioner glared at each other across the portals of St Thomas’s or St Bartholomew’s Hospital. This dichotomy was reflected in the structure of the great corporations, the Royal College of Physicians and the Royal College of Surgeons. At the College of Surgeons, for example, a mere member could not be invited to dine with the more illustrious fellows, and, if he wished to enter the building at all, had to do so by the back door. This elite group, ‘dirty minded BATS’, as Thomas Wakely, the founder of The Lancet, called them, controlled London medicine. Their patients were the aristocracy and royalty, and they earned stupendous incomes and moved in the most elevated circles.

What is clear about this group is the dominance of non-medical values over their corporate life. They worked in hospitals controlled by influential lay governors for whom research achievements were of relatively little importance. Men were appointed through nepotism or favouritism, as long as they were well-bred and soundly educated. The system worked well. At the apex of their staffs, hospitals had cultured and astute clinicians. But it was not only hospital governors who cast the mould physicians were made in, patients too had their say. What counted for the rich in choosing a doctor was whether he was a gentleman. It was claimed by a contemporary that Henry Herbert Southey, a Fellow of the Royal College of Physicians, ‘became a great favourite both as the companion and as the physician of many of the great aristocratic families in the north of England’ because ‘he was remarkably handsome, active, athletic and fond of sports in the field’. Doctors, in turn, did not use criteria of clinical urgency when selecting their patients. At Morell Mackenzie’s surgery, it was said,

If you are titled, you would be seen with little delay. If a popular actor or singer, it was only reasonable that you should wait until you had been noted by other patients; you were a first-class advertisement and paid no fees... If you were of no importance, your only chance lay in an initial five-shilling refresher to the butler.

When practising amongst the humble occupants of hospital beds, it was not unknown for ‘the Great’ as they were called, to demand that their patients call them ‘Sir’. It is not surprising, therefore, that such physicians did not describe their practice as anything so simple as an applied science. To represent medicine as a method or discipline reducible to a body of knowledge which had precise rules for its implementation, was to imply criticism of the peculiar claims of these medical men to moral and cultural leadership of professional and national life. More tangibly, it was to place the superior claims of character and breeding on an equal footing with those of scientific merit when making appointments.

Such practitioners can be contrasted with those who, from mid-century onwards, had declared that one of the profession’s aims should be to make clinical medicine a science. Over the seventy-five-year period considered here, the image of what might constitute a scientific clinical practice changed considerably, but two sorts of attempts to change practice can be discerned. First, there were clinicians who urged the use of tools, derived from the sciences, to investigate disease. Second, and perhaps more important, there were others who held that the judgemental elements of clinical medicine were analogous to scientific reasoning and therefore could be learned from a basic science training alone. Such apparent reductionism was anathema to gentlemen physicians, who defined clinical medicine as based on science but described its actual practice as an art which necessitated that its practitioners be the most cultured of men and the most experienced reflectors on the human condition. Patrick Black, a physician of St Bartholomew’s Hospital, told his students:

Your profession demands from you that you shall possess what is called scientific knowledge, and it is expected from your acknowledged station in society that you should not be wanting in those accomplishments which distinguish the position of gentlemen.

Physicians like Black quoted approvingly clerics who thought ‘character’ might matter as much in medicine as it did in the Church. But this did not mean that medicine was an additional accomplishment which, like a hobby, any man of character might acquire. It was in itself a resource for understanding the natural and moral order. As W. H. Broadbent, the St Mary’s physician, explained:

The very business of our lives is the solution of intellectual problems of the most interesting character. On the large scale we see the working out of general laws... We note the vindication of the moral principles of right and wrong, the slow working of God’s mill that grinds exceeding small.

Such an elevation of understanding that medicine wrought upon the mind could only be arrived at after the proper foundations were laid. These,
of course, were provided by the classics. As an Edinburgh physician put it, in 1867:

In demanding a due acquaintance with classical literature... the intention is to set you upon a mental elevation from which, at a glance, you may be enabled to obtain a wide-reaching prospect of the field of science, mental and physical, in which, before the conclusion of your student life, you must plough, sow and reap, the rich harvest you are designed to gather into your mental barns. 37

Or, as Sir Dyce Duckworth, Fellow of the College of Physicians, explained, nearly forty years later:

I am free to confess that I have long seen reason to doubt the assertion that the modern side in any educational institution produces men whose mental culture, width and wisdom are the equals of those whose literary training has been conducted on the older lines. 38

By 1900, however, there were few medical students who had had a broad classical education. Indeed, as early as 1864, one of the Harveian Orators at the College of Physicians suffered the mortification of beginning his lecture in Latin and having to finish it in English. 39 Many were glad to see dead the 'fetish of classics' and called for a 'modern and scientific education'. 40 From others, such demands elicited the response, 'We ought to be men and gentlemen first before we are doctors or men of science'. 41 The praise of educational breadth carried with it the implication that the doctor could turn his hand to anything. As Samuel Gross said of Sir James Paget, 'So great is his reputation for versatility and for the rapid acquisition of knowledge that it has been said of him, 'Give him six weeks and he will lecture on Oriental languages''. 42 It need hardly be added that the medical profession would have been horrified had it been said of some great orientalist, 'Give him six weeks and he will lecture on surgery.'

When women began to enter medicine, 43 they adopted similar standards, competing with men on their own terms. They demanded of new recruits a background precluding a narrow banausic conception of medicine. 'Hence,' said Helen Webb to the new students at the London School of Medicine for Women, 'how desirable that to the study of medicine should be brought a cultivated mind already stored with collateral knowledge.' 44 The emphasis on a general education and the classics was not totally a rearguard action fought by a few London physicians. Clifford Allbutt, one of the greatest clinicians of the century, and a pioneer in the introduction of continental science into English medicine, delivered addresses stressing the importance of the classics. 45 So did Edward Schäfer, the experimental physiologist, who perhaps had real cause to grieve for the neglect of his own discipline in the medical curriculum. 46

Although physicians differed over the value of a classical education, all practitioners agreed that the more immediate basis of medical education should be science. Around mid-century, this usually meant not experimental science, but anatomy and a physiology peculiarly English in its relations with the natural theological tradition. A physician at Guy's Hospital explained in 1859, the year Darwin's The Origin of Species was published:

Both in its own sphere, and equally in collateral subjects, few sciences afford such mental gratification as that of Medicine. Its daily work and investigations afford new pleasure and endless variety, and these increase at every step. The circle widens as the power of observation is enlarged. The study of animal or vegetable life, the laws of chemistry, the beauty of mechanical arrangement, the harmony of the science and of all the work of God in the things around, above, or beneath us, the balance of animal or vegetable life, the constant changes in nature, but its uniform character, adapting it to our condition and comfort, and the terrible consequences of the infraction of those laws under which we are placed afford subjects of intense interest. 47

A decade later, a physician noted at King's College, London:

It is impossible to study Anatomy, Physiology, or Chemistry, three of the most comprehensive subjects in science forming the solid basis upon which we build our superstructure, without being deeply impressed with the infinite wisdom of Divine power. 48

By the 1880s, this sort of science was having to compete with continental experimental physiology, which was being adopted by small groups of men who attempted to introduce it into the medical curriculum. The success of Michael Foster in establishing a physiology department at Trinity College, Cambridge is the best-known example of this emergence of professional life-scientist and basic science teacher. Such men often justified their discipline by citing its relevance to clinical medicine. Many clinicians, however, remained deaf to these claims, and were often quite explicit in defending social skill over the scientific. In 1885, an address to the British Medical Association, Edward Schäfer lamented the absence of experimental physiology in the curriculum and, as The British Medical Journal put it, dismissed the 'apprentice question' with a far too contemptuous observation about 'bumping about on country roads in a doctor's gig'. The journal went on:
This question has been discussed very recently in this JOURNAL, so we will say no more about it, further than noting the fact that authorities on general practice hold very different opinions on the subject. A student should know how to drive a gig and talk to a patient. When he learns these accomplishments he will never be at a loss how to apply them when necessary; whilst the application of a very fair knowledge of physiology is a far more difficult and questionable matter.  

By 1900, many clinicians still disputed the relevance of the new laboratory sciences to their practice and were not anxious to modify their analysis of bedside skills in accordance with these new disciplines. To the critics, as to some later historians, this was a failing, a lagging behind the continent, a stiff-upper-lipped insularity. But to cultured physicians of the time, it was a view of medical training wholly in accord with the concept of how clinical medicine should be practised. Clinical medicine embodied science, but more than that it needed the ineffable wisdom and experience that came only with advanced years, a classical education and the bearing of a gentleman. The basis for the division of medicine in this way was, as physicians pointed out, the Greek distinction between art as practice, and science as theory. For example, pathology was the science which described morbid structures and functions, but the detection of a pathological change in the body was an art. Medicine "is the art of healing" said the Guy's Hospital physician Philip Pye-Smith in 1900, invoking Aristotle as irrefutable proof. Even the analogy of art was not enough for some, only 'fine art' would suffice. Between the science and the art the only mediator was experience. In this regard experience took on a mysterious, indefinable quality that made it the touchstone of all the physician's judgements. The knowledge gained by clinical experience, William Bowman said in 1851, is "incommunicable". A few years later, another physician put it thus: 'Gentlemen, the most valuable knowledge we possess is that which we have acquired by long continued observation and experience. It cannot to any great extent be communicated to others either orally or by writing.' Nearly sixty years later, when the rhetoric of science and its role in the curriculum were all too obvious, there was still nothing science could provide that could compete with experience:

Both in diagnosis and in treatment, one skilled clinician of long experience may be, and often is, much more accurate when not using elaborate scientific methods than is another who is using them.

Once they got to the bedside, students were told that they would find that their scientific book-learning had been very little preparation for the clinical art. As Dr Poore put it, in 1900:

Interestingly, Poore was the teacher of Thomas Lewis, one of the most brilliant clinical scientists of this century. Even as a student, Lewis is known to have had a keen interest in the basic sciences. In 1902, he wrote of Poore: 'He is exceedingly witty but teaches us very little medicine.' Some clinicians indeed argued that prior learning could be a dangerous thing. One of them warned:

We must never allow theories or even what appear to be logical deductions or explanations, however ingenious, or statistics, however apparently conclusive, or authority, however venerable, to take the place of the one touchstone of practical medicine, experience.

"The medical theorists", another said, "incur grave responsibilities." This endorsement of individual experience as the final arbiter in clinical matters was substantiated at times by the naivest versions of traditional naive English empiricism. Octavius Sturges advised Westminster students in their first year:

Begin...practical work at once. Observe disease for yourself...[then]...when you have to study it from a book...[you can] compare your own unbiased impressions with the prevailing systems and opinions. For there is, of course, this great evil in accepting any system of classification that it must in some sort stand between us and the things we would fain see with our own eyes.

The peculiarity of English clinical medicine can be highlighted by contrasting it with German medicine of the same period. In Germany, by the 1880s, there was a move away from the physiological medicine of Virchow and back to the clinic. But here, the emphasis was not on the art and mysteries of clinical medicine but on the possibility of it becoming an exact science, like the basic sciences. This programme was asserted in the Zeitschrift für Klinische Medizin, established by Friedrich von Frerichs in 1880. The main method in the study of disease, Frerichs asserted, 'must be the collection of information at the bedside by every means available to modern science'. English clinicians who were enthusiastic followers of continental science criticized their colleagues for their attitude to clinical medicine. In 1899, Clifford Allbutt said:
Academical or university methods – the theoretical habit of mind – will take an ever-increasing place in education. It will more and more be the duty of mankind to make itself theoretical. Why then the prevailing distrust of theory, especially in England?41

Allbutt had been made Regius Professor of Physic at Cambridge in 1892. Pronouncements from Cambridge, a bridgehead for experimental physiology, are interesting in this respect, for it seems to have been a base for launching appeals for scientific clinical practice. In 1880, John Bradbury, assessor to the Regius Professor, delivered an address declaring allbutt had been made Regius Professor of Physic at Cambridge in 1892. 

In 1880, John Bradbury, assessor to the Regius Professor, delivered an address declaring how clinical medicine had now become scientific and how instruments of precision had worked changes of which ‘an older generation could never have dreamt’. 42

The English clinician’s view of his practice, we have argued, was at one with his attitude to the classics, the basic sciences, the education of the medical mind and his status as a gentleman. It was not a skill practised in working hours, but a manifestation of how life itself should be lived. A physician and a gentleman should have scientific knowledge; it was useful, informative, and could be used to tell a moral tale. But above and beyond that, he practised a clinical art grounded ultimately in his own experience which, of course, depended on his calibre as an individual. The English clinical art was but one face of the cultured gentleman: wise, a man of many parts, yet, above all, broad in his vision – a generalist, immune from sins begotten by the narrowness of specialization.

The English antagonism to specialization was not confined to medicine, but here it was informed by two particular arguments. First, that specialization was a form of narrow-mindedness in the doctor himself. Specialism ran counter to culture, it was a sort of cerebral lop-sidedness. Gentlemen did not specialize, for it prevented breadth of vision. The related argument was the appeal to nature: the body did not specialize either. Special diseases were always part of a more general disturbance. The distrust of specialization had, of course, more tangible origins. Many specialists were perceived as quacks, and therefore competitors. The quack was the very antithesis of the gentleman. He was a fanatic. In 1863, The Lancet was in full cry against what it called ‘this rampant evil of overwhelming specialization’, the reason being:

If men possessing the elements of respectability contained in a college diploma lend themselves to the foundation of such [specialist] institutions, how can we wonder that quacks build up side by side their anatomical museums and syphilitic cabinets? 41

In Austria physicians raced ahead to specialize, and departments were set up in hospitals with each team headed by a professor. In England, physicians who served in the voluntary hospitals solely for the kudos attacked the tendency. ‘The assumption seems to be’, said one, ‘that by this minute sub-division of labour, between us, and bit by bit, we can get to the very heart of things and solve all the mysteries of life and disease.’ Using the cerebral lopsidedness argument, he went on to complain that the specialist ‘devotes his whole mind and thought to a small section...of the body and can see nothing except in relation to it’. Such medical monomania was contrary to a generalist culture. Taking the heart as an example, he said:

I have in mind a refined scholarly sensitive man...[who]...had been led to place himself under the care of an eminent authority who had a special system...The disastrous result was what might have been anticipated by any man of common sense and broad general ideas of a nervous man’s constitution. 44

This attack on specialization as narrow-mindedness was accompanied by the naturalistic argument that diseases were not localized in this way. In 1894, the professor of materia medica at University College, London ridiculed the notion of organ-specific disorders:

It is a common notion [amongst the laity] that each system and organ in the body must be regarded and dealt with as an indistinct entity...another striking tendency is to attribute every disorder or symptom...invariably to one particular organ. I am not at all sure that the profession is altogether free from these tendencies or at any rate, that we realise to their full extent the pathological relations of organs and systems to each other or adequately recognise general morbid conditions. 45

Significantly, it was Clifford Allbutt, the student of continental methods, who criticized the English for their myopia regarding the virtues of specialization. As early as 1882, he said:

It has been too hastily said that specialization has been the bane of modern medicine and that the divergent paths of our closer researchers have led us away from those comprehensive views of our art that alone can give us mastery as practitioners. 46

Allbutt notwithstanding, English medicine remained generalist until well into the twentieth century.

The same attitude manifested itself in the view English physicians took of diagnostic technology. Around mid-century, even the stethoscope had still not yet become an integral part of the physician’s equipment.
Henry Acland, Regius Professor of Medicine at Oxford, characterized the teaching body at St George’s Hospital as ‘able men of the old school, despising the stethoscope and the microscope...[as]...impractical toys’.$^{47}$ By the 1880s, this situation had largely changed, and the English physician, complete with top hat and stethoscope, became the caricature that adorned the pages of Punch, or the father figure who appeared in sentimental engravings. The general use of the stethoscope by this time is hardly surprising, since by the late nineteenth century the detection of local pathology, a style of medicine largely created in post-revolutionary Paris, had become the basis of English practice. The stethoscope was also easily accommodated by British physicians, for it revealed nothing except to the experienced auditor. But even well into the twentieth century, whenever senior English physicians were photographed it was always with books, not with a stethoscope.$^{44}$

In their attitudes to other instruments, a more patterned response is discernible among clinicians. Even the instruments that were adopted by a few enthusiasts were absorbed into the generalist culture. The ophthalmoscope, for instance, made little progress in England. In 1871, Clifford Allbutt noted: ‘The number of physicians who are working with the ophthalmoscope today in England may, I believe, be counted on the fingers of one hand.’$^{49}$ Even these, as George Rosen has shown, were not specialists. They were physicians who stressed the value of the ophthalmoscope as a guide to general medicine. Hughlings Jackson, for instance, wrote: ‘I write as a physician, and not as an ophthalmologist. I have studied ophthalmic medicine merely as a help to the study of diseases of the Nervous System.’$^{50}$ This trend is confirmed by the number of books that appeared which treated ophthalmology from a general medical point of view, such as Gower’s Manual and Atlas of Medical Ophthalmology. A similar situation prevailed with regard to the laryngoscope, though here its value in visualizing small tumours of the larynx which could then be removed encouraged its adoption by surgeons. Much later, the discovery of X-rays did not result, in England, in the rapid development of the speciality of radiology. At Nottingham General Hospital, the X-ray equipment was under the care of the honorary dentist, and at St Mary’s Hospital, London, X-ray pictures of fractured limbs were taken by the theatre beadle.$^{51}$

It has to be remembered, of course, that the attitude of physicians to technology was not determined solely by their own considerations. At this time patients, especially private ones, still retained a great deal of control over what they might permit the doctor to do. Patients, in other words, might want cultured physicians, not scientists. In a comment that reveals a great deal about this and, incidentally, the difference between private and hospital practice, Clifford Allbutt remembered:

> When on the first appearance of Kussmaul’s paper I begged a lady of atonic fibre, afflicted with gastrectasis due largely to an abuse of aerated stomach waters to allow me to wash the stomach out. I begged in vain. Even hospital patients resented it at first...$^{53}$

In the case of the thermometer, its acceptance was governed as much by purely technological considerations as anything else. A new medical thermometry had been put on the map by Karl Wunderlich in his classic work of 1868, On the Temperature in Diseases. Wunderlich, however, employed a thermometer that was nearly a foot long and was left in the patient’s axilla for 20 to 25 minutes.$^{51}$ In 1870, at Guy’s Hospital, Samuel Wilks saw a clinical thermometer come into use. It was a ‘curiosity...and of great length’.$^{54}$ It was really only with the introduction of Clifford Allbutt’s pocket clinical thermometer that the instrument became common. There does not seem to have been the marked resistance to its use that was associated with other instruments. However, physicians remained wary, warning that it could mislead and devalue clinical skill. More important, they warned against reliance on its reading alone as a guide to treatment. It only gave a piece of information to be concocted by the clinical art. As one physician said:

> We in practice direct our attention too exclusively to the higher excursions of the thermometer as indicating, apart from any corroborative symptoms that may or may not be present, a condition which per se calls for active interference.$^{55}$

When physicians did recognize the value of the thermometer, it only pointed the way from a banausic activity to a higher spiritual art. As James Hinton said:

> More than ever now the physician must have knowledge of the soul; must feel, with finer senses, other pulses; and measure heats and chills which no thermometer can gauge.$^{56}$

More obviously, the sphygmograph and the sphygmomanometer had a very chequered career within English medicine until well into the twentieth century. Both of these instruments were essentially different from the foregoing in that they were tools developed within continental experimental physiology. Significantly, both could be used to produce objective records. The sphygmograph, an instrument for recording the
radial pulse, was constructed for Karl Vierordt in the 1850s, though the first satisfactory example of the device was produced by E. J. Marey in 1860. The instrument was taken up in England by a small number of enthusiasts. Thomas Lauder Brunton used it to establish the value of amyl nitrite in angina, and Frederich Akbar Mahomed employed it to demonstrate that patients who went on to develop overt Bright's disease had a prealbuminuric hypertension. It was written and talked about by the leading experimental physiologists in England, such as John Burdon Sanderson and Alfred Henry Garrod, and soon figured in the new textbooks of experimental physiology. Most famously, it was employed by James Mackenzie to elucidate the nature of the heart's irregularities. In 1884, Von Basch described his sphygmomanometer for recording blood pressure. It was subsequently modified by Charles Potain, Leonard Hill and Scipio Riva-Rocci into something like its modern form. This instrument, too, found a few disciples in England such as Thomas Lauder Brunton and Clifford Allbutt. The majority of the profession, however, were not impressed.51 Marey's instrument, for example, was announced in Britain with a curt notice in The Lancet in 1860, that 'it may be doubted whether these instruments, though very ingenious, will ever prove actually useful in practice'.39 Some time later, a typical text on diagnosis could state that, 'as yet it has not done much to add to our knowledge of the diagnosis of cardiac disease'.59 By 1900, Sir William Broadbent in his manual The Pulse, remarked of the sphygmograph:

The readings of its tracings can only be safely undertaken by one conversant with the use of the sphygmograph and the vagaries thereof, and if any special result is expected or wished for, an enthusiastic investigator can obtain it and may, without the least conscious intention, twist facts in the desired direction.

'Physicians,' it was said, should 'eschew instrumental aids and educate the "finger".'41 Even though, by 1900, all the pathophysiological data existed to show the value of measuring blood pressure as a guide to the state of the circulatory system, physicians bypassed it. For example, in a lecture in 1905, James Alexander Lindsay was reported as saying:

Of the various mechanical methods of measuring arterial tension which had been devised such as the sphygmomanometers of Hill and Barnard and of Roy and Adami and the haemodynamometer and arteriometer of Oliver, none had come into general use and the practitioner was obliged for the most part to rely upon the information yielded by the trained finger. This information, if not very precise, would be sufficient for all practical purposes.42

A few years earlier, in 1901, J. Mitchel Bruce had delivered the Lettsonian Lectures on 'The diseases and disorders of the heart and arteries in middle and advanced life'.63 He took various conditions, tobacco heart, alcoholic heart, cardiac strain and so forth, and discussed the state of the heart in each of them and described its assessment. Great attention was paid to symptoms, physical examination of the heart itself, especially auscultation and feeling the pulse for its sclerosity and tension. No reference whatsoever was made to instruments.

The interesting thing about those advocating the use of instruments is that many of them were men who either became experimental physiologists, like John Burdon-Sanderson, or advocated specialism, like Clifford Allbutt, or simply espoused continental science and demanded a greater part for it in the medical curriculum, like Thomas Lauder Brunton. In some instances then, perhaps instruments were advocated not because they were valuable clinical tools, but because they were the children of the experimental sciences. If the advocates of those sciences could somehow show that the instruments had clinical application, then they could argue that room should be made in the curriculum for the disciplines from which they originated. Instruments, perhaps, were a sort of Trojan horse by which a new breed of medical man was attempting to show the value of the new basic sciences to bedside medicine. In other words, the clinicians who resented such instruments had every reason to do so. Perhaps, in many cases, instruments were not much use to the doctor. That is not to say, however, that the resistance of clinicians to such devices was solely disinterested. Indeed, from the evidence of the first part of this paper this seems far from the case. Such devices were a potential threat to the mysterious clinical art which English clinicians had been so anxious to defend. Such tools could make the art mechanical, lay it open, make it merely an applied science. Perhaps also, the use of instruments smacked too much of the artisan – hardly a posture for a gentleman. These sciences did, of course, eventually enter the medical curriculum, especially when the basic science disciplines professionalized outside the medical sphere. As a new generation appeared that had been educated in these disciplines, they brought such instruments to the bedside. After the first world war, clinical science and specialization began to flourish in Britain, though never as luxuriantly as in America. The defence of the clinical art by no means died; it did, however, change its tone. Before these years, especially in London, English medicine was pervaded by the ethos of the gentleman, and the experimental
disciplines had a hard time gaining a foothold in the pre-clinical curriculum and at the bedside. To some doctors this ethos seemed archaic, but to others their account of clinical medicine was quite at one with their estimation of their social status and their educational ideals.

Notes

For reading and commenting on this paper at various stages I should like to thank Lindsay Granshaw, Ghislaine Skinner, Roy Porter and John Harley Warner.

8. This is cited by Clifford Allbutt in *Arteriosclerosis* (London 1915) vol. 1, 61. I have been unable to find the quote, but Allbutt’s citation of it is evidence that a practitioner interested in medical technology detected hostility to it.

Lawrence: Incommunicable Knowledge

21. Ibid.
23. In England and Wales in 1881 there were 25 women doctors, in 1885 there were 45 and by 1911 there were 495.
34. Reynolds, op. cit., 531.
35. George Poore, 'Introductory Address', *British Medical Journal* 1900, ii, 984.
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43. *Lancet* 1863, i, 183.
44. William Carter, 'Authority in and of Medicine', *Lancet* 1897, ii, 897–902. I have addressed the question of the growth of the specialty of cardiology, and its relation to the clinical art in 'Moderns and Ancients; The "New Cardiology" in Britain 1880–1930' in W. F. Bynum and Christopher Lawrence (eds.), *The Emergence of Modern Cardiology, Medical History*, Supplement no. 5, 1985 (forth-coming).
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48. *Mr Punch Among the Doctors* (London 1933). See any of the prints of 'The Good
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49. T. C. Allbutt, On the Use of the Ophthalmoscope (London 1871), 9.


51. Rosemary Stevens, Medical Practice in Modern England (New Haven, Conn. 1966), 33.

52. T. C. Allbutt, System of Medicine (London 1897), vol. 3, 512. See Rolleston, op. cit., 77.

53. Rolleston, op. cit., 35.

54. Samuel Wilks, A Memoir (London 1911), 143.


57. On the study of the heart and pulse with instruments see Lawrence, op. cit.


59. J. Milner Fothergill, Aids to Diagnosis (London 1890), vol. 2, 36.


63. J. M. Bruce, ‘On Diseases and Disorders of the Heart and Arteries in Middle and Advanced Life’, British Medical Journal 1901, i, 566, 700, 818.

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