remove a large and hard calculus at one sitting was an attractive one,and that I was predisposed to regard favourably any plan by which we may hope to take away once and for all the hard and angular fragments which must remain after an uncompleted sitting". My experience has confirmed, perhaps even beyond my expectations, the prepossessions thus expressed for this endeavour to complete an operation by lithotripsy in a single effort, but more prolonged than heretofore; and I have no hesitation in stating that we owe to Professor Bigelow the assurance that so much manipulation is tolerated by the bladder in the process of removing the stone, provided we take it away entirely, or nearly so. It is quite true that the presence of sharp broken fragments in that viscus does more damage to it than the prolonged, but of course careful, use of instruments for their removal. My former partial but not complete recognition of this fact for years past led me to observe the value of a prompt and free use of the lithotrite and of Clover's aspirator when inflammation of the bladder has been produced by fragments: a fact to which I have called especial attention on repeated occasions. Under such circumstances, I have with those instruments removed from one hundred to one hundred and fifty grains at once, and thus instantly checked a violent cystitis.* It is unquestionably better, however, to prevent than to cure; and this lesson, I think, is one which may be deduced from the foregoing cases.

There is one observation I may make, and it is this. When the great bulk of a calculus of considerable size has been removed, say in fifteen or twenty-five minutes, or thereabout, and it is quite obvious that a small piece or two only remain, I would advise that, if another effort or two to remove these last be unsuccessful, it is better not to repeat fruitless manipulations, but to give over the search to a future attempt. As far as my brief experience above given enables me to judge, it is wise, I think, to leave, as I did in three or four cases, a fragment or two, which seemed unwilling to be caught, until a day or two later, when they may be found in a tranquil bladder without difficulty, and meantime had clearly done no harm.

Lastly, there is a fact about which I have now no manner of doubt; viz., that large and clumsy lithotrites are unnecessary for our purpose; and that the instruments which I have described above are more efficient, safe, and speedy in their action than the large and unwieldy lithotrites which have been proposed.

THE TELEPHONE AND DISEASES OF THE EAR.

THE introduction of new inventions amongst the practical requirements of civilised life brings with it its disadvantages. The telephone, when further improved, is no doubt destined to become a most useful agent in daily intercourse; and I do not wish to create unnecessary alarm by pointing out a possible source of inconvenience in its use. The following case which has come under my notice will exhibit a way in which the ear may be more or less injured during the use of the telephone.

A woman, about thirty-five years of age, manageress at a smallware manufactory in Manchester, which was connected with its office (two miles off) by a telephone, was listening to a message, when a violent clap of thunder took place, and which appeared to be conveyed through the wire. The effect on the listening ear was that of complete numbness and deafness, accompanied by a sensation of giddiness, slight nausea, and tinnitus aurium. These symptoms, with the exception of the deafness, passed away in a few minutes. I did not see the patient for three or four days after this occurrence, and cannot, of course, speak to the amount of deafness at first produced; but, on the fourth day, I examined the left ear (the listening ear), and found the hearing distance twenty-fourth-eighths of an inch. As my patient had always had perfect hearing with both ears, and had never experienced any difficulty in hearing before, I think it very unlikely that this degree of deafness was due to any previous affection of the ear. She stated that she had never had anything the matter with her hearing until using the telephone during the storm. I have examined her lately, and found both ears and hearing distance quite normal; nearly a fortnight elapsed, however, before perfect hearing returned. This case was no doubt due to a concussion of the auditory nerve. In its present form, the telephone is almost useless to those who have even a comparatively slight degree of deafness.

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† Among other instances, the following is from a clinical lecture given at University College Hospital, December 1875, reported in the *Lancet*, January 8th, 1876. "Treat any cystitis that may occur during the course of the sittings, especially if it is severe, by freely crushing the stone without delay. I have for some years insisted on the importance of this practice in my teaching. . . . The more I see of the operation, the stronger is my conviction of the great importance of this practice, and the more ready I am to adopt it. . . . Under these circumstances, I place the patient under the influence of ether, crush freely all the large and sharp pieces, and wash out the debris with Mr. Clover's aspirator." The same principle was laid down, although less absolutely, in the second edition of my *Lithotomy and Lithotripsy*, 1871.

OBSERVATIONS ON MEDICAL EDUCATION.

BEING THE

President's Address delivered at the Annual Meeting of the Metropolitan Counties Branch.

By JOHN WOOD, F.R.C.S., F.R.S.,

Senior Surgeon and Professor of Clinical Surgery in King's College Hospital.

GENTLEMEN,—In taking the Chair just vacated by our esteemed and eminent retiring president, I cannot but feel that I come short of that perfect adaptation of the man to the place which has so satisfactorily characterised his term of office during the past year. I cannot lay claim to the comprehensive business capacity and impelling energy which has aided so powerfully in forwarding the progress of the Metropolitan Counties Branch of the Association, and in guiding its councils during a period of extensive development of its usefulness by the establishment of district branches in various parts of this great city. Nor can I hope to equal him in the experience of his decided views upon the various important and moot points of medical politics which are now under discussion by the medical profession, and under review by the general public.

But I may justly satisfy my desire to prove myself in some degree worthy of the great honour you have done me in electing me your president, to the extent of saying that, in the high estimation in which your suffrages are held, and in gratitude for such a mark of your favour and consideration as my present position carries with it, I yield to no one who has heretofore been so honoured as to occupy this chair. To the utmost of my humble capacity, I will endeavour to aim at a standard of usefulness which will justify at least your choice, and will also, I trust, advance your business satisfactorily.

It is customary, I believe, on the occasion which I find before me to declare (as more important ministers are wont to do) what may be called a policy, or to offer, at all events, an opinion for your consideration upon some topics of professional interest. It would not be becoming in me to trouble you with many things, and we have scarcely the time (before our more festive development) to say much. It is best, therefore, that what I have to say should concern what has been one of the most important functions of my professional career—viz., medical education. I feel sure that a man can tell most effectively and most to the advantage of his hearers about matters that he has practically dealt with most of the days of his life. Thus one may be able to "point a moral" which may hit a mark.

History is said to be continually repeating itself. Reflection upon the history of medicine and its professors has convinced me that social developments of this kind certainly do so to a considerable extent—but with a difference—a difference which reflects the altered conditions of the social circumstances. Before I can point the moral that this form of analogy offers, I must lead you through a short tale which it adorns. Let me hasten to assure the more apprehensive of my hearers that I am not going to begin at Tubal Cain or the immediate posterity of Noah, nor yet at Machaon and Podalirius, the "wise physicians skilled all wounds to heal", who were "worth more than armies to the public weal"; but I will begin at a period succeeding to the great revival of learning, when our now time-honoured medical corporations had their somewhat humble origins under the palladium of the Lord Mayor as worshipful companies of the city. At this time, there were three bodies in charge of the health of the lieges of the sovereign, viz., the College of Physicians, the Worshipful Company of Barber-Surgeons, and the Company of Apothecaries. To the first belonged the privilege of prescribing the treatment then deemed proper for all injuries and diseases to which the human frame is liable. The two others were respectively the right hand and the left of the prescribing body; the one to perform all the operations then deemed safe and necessary, from bleeding to shaving of the head; and the other to compound the nauseous and strange pharmaceutical or alchemical remedies which were in vogue. The Fellows of the College of Physicians were graduates of the Universities of Oxford or Cambridge, or of Leyden, Paris, or Padua, and were deeply imbued with, and often no mean proficient in, the classical, philosophical, and mathematical learning of the day. The study of Hippocrates, Dioscorides, and Paulus Aegineta, and of Galen and Celsus, made them accomplished classical scholars, and attached

them strongly to the elder traditions of the Universities, then closely connected with, and overshadowed by, those pervading influences which formerly had united two professions in the persons of the monastic practitioners. These influences still were strong enough powerfully to incline physicians to the classical and literary side of their art, and gave an elevation of mind and gracefulness of diction which frequently led inferior pretenders into pomposity of expression and that affectation of learning to which the immortal comedies of Molière gave an ineffably absurd and ridiculous aspect. Such aspirations impelled the physician of that day to disdain the manual details of the healing art, and to leave surgery and pharmacy to persons inferior to themselves in learning and polite literature, but very often their superiors in the practical and empirical knowledge of the treatment of injuries and disease, which formed, and still form, a very large part of the practice of medicine and surgery. They were apt to bow down slavishly to classical authorities, true worshippers of the *Idola Theatri* of whom Bacon spoke, as afraid to differ from those who had played great parts on the world's stage. We may be permitted to hope that they were not just illustrations of Pope's satire :

"The boastful blockhead, ignorantly read,
With loads of learned lumber in his head."

In Garrick's time, a famous and fashionable physician, yclept Dr. John Hill (perhaps having read in Galen that *Æsculapius* wrote comic songs to promote by laughter the circulation in his patients), wrote farces while he practised physic. Garrick said of him :

"For physic and farces his equal there scarce is,
For his farces are physic, his physic a farce is."

Some eminent physicians were much more popular for their literary ability than for their skill in healing. Such was Richard Blackmore, and such was Akenside, the author of *The Pleasures of the Imagination*, who was called by Smollett (himself a medical man) "*Smellfungus*". Among the pleasures of that nature likely to be indulged in by a candidate for practice, he omitted to enumerate that of contemplating in a solitary room an imagined crowd of patients with guinea fees in hand.

The many brilliant exceptions who gradually developed out of the common rule, such as Caius, Harvey, Linacre, Sydenham, Arbuthnot, Mead, and others, handed onwards the lamp of medical knowledge with increased illuminating power. One incident of the time may be taken as emblematical of the antagonism then arising between the scientific and the literary aspects of the profession. Dr. Mead is said to have quarrelled on some point of precedence, and fought a duel, with Woodward, the scientific geologist, in the archway of Gresham College, Bishopsgate, where two sculptured figures still commemorate the feat. As Mead stood over his fallen antagonist with drawn sword, and said, "Will you beg your life?"—"Never!" was the unvanquished and ready answer; "Never, till I am your patient, Doctor!"

While the heads of the profession and its chief representatives to the upper classes in the metropolis discussed high philosophy and literature with Johnson and Swift, wrote verse and satires with Dryden and Pope, collated the Galenic and other ancient manuscripts, met in learned discussion at the rooms of the Royal Society in the city, and prescribed for the fashionables of the period, the barber-surgeons and apothecaries were labouring steadily and empirically among the country people and humbler classes. The former had split up into two parts; the barbers, who still remain the original civic representatives, and retain the spiral bandage on a bleeding pole; and the surgeons, the more educated portion, who, emulous of the rank and position of the physicians, obtained a separate charter, studied to some extent the classics, and more especially became the patrons and cultivators of the working and experimental method of scientific investigation. To them the genius and industry of John Hunter gave the final stamp of scientific eminence, and the legacy of the famous museum to the Surgeons' College formed a centre of scientific culture and education, which has gone on increasing in importance and brilliance every year up to the present time. Both the surgeons and apothecaries kept up the old system of apprenticeship to the business of healing as to any other city trade. All the petty details of bone-mending and pill-making were carefully and painfully taught and learned. Practically and empirically, the lower ranks of the healing art were made real handicrafts, and seven years were served for this Leah of manual aptitude before the Rachel of mental culture could be indulged in. And this culture, when it came, was obtained usually from the side of the natural sciences; chemistry and botany for *matéria medica*, anatomy and physiology for surgery. Some of the greater discoverers in the latter subjects "had but little Latin and less Greek". Even the great Hunter himself could not spell rightly the Latin and Greek names of some of the animals he mentions. For this we have the authority of Sir James Paget (*Hunterian Oration*, 1877).

But these two corporate bodies at last succeeded, through the indifference and supineness of the College of Physicians, in obtaining by far

the greatest part of the medical practice of both town and country, and in supplanting to a great extent the physicians as the family medical attendants. One of the most powerful agents in this achievement was the assumption of the humble office of midwives to the community. Despised by the physician, and left by the medical ecclesiastics to the old women in the middle ages, the superintendence of man's entrance into the world was deemed by the surgeon-apothecaries of almost as much importance as the regulation of his way of leaving it. At any rate, it gave them the charge of the children; and the educationists, religious and otherwise, are now finding out and acting upon the same maxim of progress: "If you get the children and the mothers, you are finally sure of the fathers and the brothers." In the hands of Dr. William Hunter and his successors, the processes of generation and parturition became a true scientific study; a powerful agent in physiological education; and, finally, it has produced almost a separate class of scientific experts, with the distinct and very classical denomination of "gynæcologists".

When the social question of organised gratuitous assistance to the poor arose in the beginning of the eighteenth century, the apothecaries were strong enough to enter upon this subject into a struggle with the College of Physicians (who had then become alive to its importance). In 1718, Dr. Samuel Garth, the physician and poet, brought the influence of his poetical genius to bear on the side of the College by the publication of his poem *The Dispensary*. The literary qualifications of the physicians, and the higher social position derived from these, turned the scale in the metropolis in their favour against their more illiterate competitors.

But still the medical attendance upon the lower middle and artisan classes was in ever increasing extent monopolised by the surgeon-apothecaries. This was, no doubt, chiefly secured to them by the lower scale of charges which prevailed among them. The robustness of the faith of all classes, at that time, in the efficacy of medicine supplied in a bottle or pill-box, led them to ascribe all the symptoms which ensued upon the swallowing of a potion to the subtle power of the inworking medicine as the *causa causans*. The natural history of disease was but little known, even by the profession, much less by the public; and *post hoc, propter hoc*, was, with but few exceptions, received as a logical sequence. As the apothecaries kept a written record of the prescriptions, or "bills", as they were formerly called, emanating from the pens of the most famous and learned doctors of the day, it was naturally argued by the public that they (the apothecaries), knowing the name of the disease, once authoritatively and oracularly pronounced by the physician, and having the bill and the drugs all ready to hand in their shops, would be able to supply the antidote, during the whole lifetime of the patient, whenever the bane required it. When it ceased to be efficacious, the same or some other famous doctor was applied to to modify or alter it. Thus the family doctor, equal to so much in combatting the greater ailments, would be able, *componere magna parvis*, to engage single-handed with the minor ailments of families, and would naturally know more about their *constitutions* than even the famous doctor himself.

The surgeon who devoted his attention to injuries and diseases requiring instrumental interference was able, even at a very early period, to withdraw himself from the physician's leading-strings, and to set up shop for himself. This independence was greatly facilitated by the decided advance in practical scientific knowledge made by Hunter and others in relation to the repair of tissues and the treatment of aneurisms, and of amputations, by Ambroise Paré's famous method of ligation of arteries.

Natural Science now began to prove her usefulness in mental training, and her power as a rival in education to classicism and polite literature. The knowledge of things themselves as they are in nature's workshop asserted its supremacy over the knowledge of the mere words which stand for them, and of the opinions and speculations of the famous men of old, whose interpretations of natural phenomena were proved to be very commonly false, and to be founded upon imperfect observations; and their disputes about words and philosophies presented very distorted images of the substances or things for which they were supposed to stand. The idealism of Plato had obscured the realism of Aristotle and Hippocrates; and the disputes of the schoolmen about forms of reasoning went to prove that "naught was everything and everything was naught", and "thinking", therefore, "an useless waste of thought". Whenever and wherever the study of anatomy and the natural sciences flourished, as in Alexandria and the famous schools of Italy, the art of medicine and surgery had cast off these trammels of learning and become more simple, reasonable, and practical.

The influence of the study of natural science has been ever since on the increase; and the discovery of the powers of the compound microscope has given a great impulse to the progress of knowledge of the

minute forms of anatomy, both human and comparative, as well as to physiology. Powerful aid has also been derived from the applied sciences of optics, dynamics, etc.

And now, subjects such as these have assumed towards medical studies the same relative position that classics and philosophy formerly held. They are in an unquestioned attitude of supremacy in regard to medicine and its relative pursuits; and are even combating the claims of classicism and Greek, as educational agents, in the sacred precincts and very stronghold of the latter at the University of Oxford. In the late newspaper controversy between Canon Liddon and Professor Odling, I do not think that the champion of modern illuminism and natural science has by any means had the worst of it. The defence of the old positions has assumed a half-hearted and apologetic character about it, as if the battle were already half lost. And in medicine, so complete has been the decadence of classicism, that physicians have even ceased generally to write their prescriptions in Latin. *Ecce signum*. The ancient badges have been entirely thrown off in the route of defeat. The watchword is no longer "Galen and the ancients", but "Science and modern illuminism". And now I approach the point of my moral.

Human nature and its progress has been compared to a drunken man trying to mount a horse. He springs too vigorously into his saddle, fails to keep a *juste milieu*, a *media via*, overshoots his mark, and beyond it comes again and again to grief; "and at a bound high overleaps all bounds", like "mad ambition overleaps itself, and falls on t'other side." Science is now supreme—*facile princeps*—in medicine, surgery, and, I suppose I must add, gynaecology. She has vaulted into the vacant place of honour, and is trying to improve and keep her seat. But is she not in danger of being overweighted, of becoming top-heavy? She has been levelling upwards (to use a political phrase) too fast, and may have to level downwards to a scale more adapted to the limited capacity of ordinary human nature. She is certainly beginning at the beginning in education. She is paramount almost in our board-schools; she is chief in our preliminary examinations of all kinds.

"Naturam licet expellas furcâ, tamen usque recurret."

Students will now sometimes come up well primed in scientific physics, who cannot even spell their mother tongue, and murder atrociously the classical nomenclature used in natural science. What has been crammed in through the scientific funnel has forced out the groundwork through the bottom.

The area of the sciences, preliminary to the arts of medicine, has been extended with a rapidity commensurate with the rapid progress of scientific discovery. To the simples of the old pharmacy has been added materia medica; to materia medica, botany; to botany, vegetable physiology and the cell-theory; and to this, the geographical distribution of plants. From the first employment of minerals in medicine—the *currus triumphalis* of Paracelsus—has proceeded pharmaceutical chemistry; and thence physics, with electricity, optics, and acoustics. To human anatomy has been added comparative anatomy, histology, and physiology; and from the last, the most widely embracing and absorbing of all, have been developed all the subjects now included under biology; comparative physiology; vital dynamics; physiological chemistry and experimental physiology—bringing with it the somewhat unexpected, but powerful, public opposing force, the humanitarian outcry against vivisection. In the art of medicine have been developed auscultation, medical electricity, metallotherapy, and forensic medicine—bringing in its train psychological medicine and its associated philosophical speculations; and sanitary science, with its wide-embracing problems and many points of contact with jurisprudence.

In surgery have been evolved abstruse problems of mechanics and dynamics, modified progressively by discoveries in anatomy and physiology. Its latest outcome—the antiseptic system of treating wounds and sores—opens up another wide field of knowledge and investigation into the very lowest forms of life and mouldiness, and their agency in the production of disease. And this, again, is now entrenching upon the domain of medicine proper. And the art of midwifery has developed into the treatment of the special diseases of women and children; and the knowledge of those hidden and mysterious processes of nature, whereby one springs from the other, and the inheritance of the whole earth is secured. These recondite mysteries of Isis have been wont to be decently veiled from the eye of the *profanum vulgus* by their ministering priests. The saddest and most rotten of the "fruits of philosophy" has been the rending of this veil by the hand of one of the sex for whose shame's sake it had been drawn.

It must be conceded that this long list of subjects, about which much must be known by a candidate for medical diplomas, is likely to be somewhat overwhelming, if not absolutely deterrent, to an unhappy and doubting student on its first being presented to his astounded gaze. His perplexity cannot be lessened by the multiplicity of teaching insti-

tutions which now offer at various scales of fees to be his Mentor and faithful guide through these labyrinthine mazes. No fewer than nineteen establishments in the United Kingdom solicit, nay compete for, the privilege of implanting into his mind these separate roots, whereby he may grow into all medical knowledge. Each of them is cultivated, watered, and trained by special professors and lecturers, and then carefully pruned and digged about and dunned by assistants, demonstrators, and tutors. Formerly, the resulting grain was sifted and hopped and winnowed into flour fitted for the baking-oven of the examination-room by special and independent millers or grinders; but now, such is the paternal care of the educational system, that all the grinding is done at home, under careful supervision, and the candidates are polished *usque ad unguem* as an acknowledged part of the educational system. Some of these schools offer the obvious advantage of examining their own pupils, and conferring on them degrees which carry the qualification to practise. This gives them a decided advantage in the public competition, as exhibited in the advertising pages of the medical journals. A lad may be taken as a recruit from the plough-tail almost, may be put in at one end of the educational machine and dropped out at the other a complete and capped Doctor of Medicine, ready to go anywhere and do anything medical, surgical, and obstetrical.

These abundant facilities for acquiring medical knowledge and obtaining medical degrees have in one respect been productive of public good, in supplying a very fair average of medical skill to that numerous class who are unable to pay a high price for it, and who, if they cannot get easily the genuine article, fall into the hands of quacks and persons unqualified to prescribe for and treat disease.

And here we touch another point where the history of medicine repeats itself. As the Apothecaries' Hall, gradually rising superior to all merely shop interests except the till, by instituting, after the example of the physicians and surgeons, examinations not only in the subjects proper to pharmacy, but also in medicine and midwifery, and, by so elevating the educational standard of its licentiates, trod on the heels of the colleges in prescribing: so followed upon them, and in their turn encroached, the class of chemists and druggists who succeeded to the ancient inheritance of the apothecary in the compounding and sale of medicines to the public. They have instituted a Society (the Pharmaceutical Society) with a regular educational course, and they examine for a diploma to dispense medicines. By virtue of their examination, they think themselves as competent to prescribe as the apothecary himself. And the lower class of the public, still retaining the ancient faith in the bottle of medicine and the pill-box, endow the dispenser thereof with the attributes of wisdom possessed by the prescriber, and invest the shilling at the temple of Æsculapius in the druggist's at the corner with the same touching confidence as did their fathers display in the apothecary of the eighteenth century. Hence has arisen counter-practice, prescribing, and the sale of patent quack medicines. The most powerful agency by which this encroachment has hitherto been kept in check has certainly been the plentiful and cheap supply of properly educated men from the medical schools. We see it operating in the fact that Doctors in Medicine of all the more popular universities may be found practising among the poor, doing on the whole useful work, and gaining a good livelihood too, at the inadequate remuneration of a shilling a visit, medicines included. Some, under the flimsy guise of a provident dispensary, strive to gain an unfair advantage over their fellow-practitioners by an assumption of the outward clothing of a charitable and economic establishment. This is an abuse to which the attention of your Council has been lately directed, and it is hoped that the reprobation of professional opinion will be effectual in removing this hypocritical stain from the medical character.

Now, as a liberal and classical education was in its place a good thing in professional men, so an elevated scientific training is even a better thing. But as a too exclusive ambition led our forefathers to excess in the former direction, and to the pretentious pomposity of vulgar pretenders in the same line, so there is a danger now of overburdening the professional student with a parade of all the sciences with the effect of repressing or excluding the more useful and practical knowledge and manual aptitude for the cure of injuries and diseases, which, after all, is the medical man's *raison d'être*. Already, in Germany, the prolific land of -ologies and -pathys, of water-cures, and milk-cures, and grape-cures, the most odious of all forms of quackery—viz., *scientific quackery*—is wellnigh rampant.

As the literary physician of the last century was fully prepared to point out and to imitate the classical beauties of a prescription by Celsus, or (as satirised by Coleridge) to personify and apostrophise the then newly introduced cure for smallpox, thus—"Hail, Inoculation! heavenly maid!"—(after having very vigorously opposed its introduction), so now the fully developed scientist is ready to demonstrate the chemical conditions of the protoplasm which produced an Achilles or a Hamlet.

Nihilism in politics and Materialism in religious matters are accompanied by a tendency to belief in the wonders of science, which may be both slavish and superstitious. Nature again revenges herself for being expelled with the fork of infidelity. New theories in the art of healing are broached, which might be tolerated as hypotheses adapted for classifying facts, but which, pushed to hasty practical conclusions in the morbid anxiety to gather results, serve now, as they have often done before, only to disorder, confuse, and delay the onward march of true science. There is little reason why the views of the most advanced workers in physiological science which have not yet stood the test of time and the fire of criticism should be shovelled into the brain of a junior medical student, and occupy his time to the exclusion of more useful and practical knowledge, merely for the object of having it again brought up without either rumination or digestion, for the admiration or disgust of examiners in science. If the man be not clever, the mass simply overwhelms him, and renders him more hopeless and more useless than before. If he be clever, he is in danger of being transformed into a priggish scientific pedant, "crushed", as Renan said of Germany politically, by the weight of his own armour. Some few, and but few, have the sublime confidence which prompted the answer of David when arrayed in Saul's armour, "I cannot go in these, because I have not proved them." How many facts in physiology, for example, cannot safely be applied in the treatment of disease because they have not been proved? And of what use to the young recruit in medicine if he cannot go in them?

It will probably occur to many of my hearers that it is much easier to find a fault than to find a remedy. And the situation in which we find the question of medical education is by no means an easy one.

We are in the *crux* which commonly occurs in periods of transition. We have nearly entirely demolished the old substructure of the apprenticeship system, whereby the elementary rules and practical details of medical practice were learnt, and which occupied a period of five to seven years. And we now expect that a lad, fresh from the Latin, Greek, and mathematics of the schools, shall get up all the array of learning I have before reviewed, and, in addition to that, acquire the practised manipulation of disease, injury, and parturition in a period of four years.

The consequence is, that the elementary and preliminary work encroaches on and displaces the work in the hospital wards. The College of Surgeons has led the way in requiring a preliminary examination in classics and mathematics, and a primary one in anatomy and physiology. In the latter, about one-third of the candidates fail in the first attempt, and are referred to their studies, thereby postponing their hospital work. Now much of this want of success is caused, in my opinion, by a want of preliminary education and preparation. Such is the universal upheaval of the standard of general education, that it is impossible to go back and lower the medical standard. *Nulla vestigia retrorsum* has ever been the watchword of knowledge. We cannot, indeed, diminish the amount of knowledge required, but we can shift its incidence; we can make the acquisition of the preliminary sciences come in at an earlier age, and put the knowledge of things into the minds of our pupils during part of the time now occupied in gaining a knowledge of words and ideas. This will be rendered more possible in future by the action of the board-schools pushing upward the standard of the middle class school, and the action of the older universities in general academic training.

The medical schools will find it necessary to relinquish the preliminary training of students and the teaching of the elements of science, which they undertook in order to supply a pressing deficiency. Medical education must, for the future, be more strictly a technical education. Botany, mechanics, physics, chemistry, and the elements of anatomy and physiology, both human and comparative, should be taught in a scientific college or institution, as part of the applied sciences. The same may, perhaps, be said of psychology and the laws of scientific evidence and jurisprudence. Certificates of proficiency in these subjects should be obtained before a student is entered at the hospital at all. The effect will be to specialise medical education at an earlier period of life than at present prevails, and also to raise the average age at which men enter upon a hospital career to a period in their mental development when they will be better able to know their own minds, and to set to work seriously at the real business of life. And a more real and serious business than the struggle with disease and death it is impossible to conceive!

I feel quite sure that no fear need be entertained that the pursuits of natural science will suffer in such a change. The genius for science is strong enough and developed enough to take good care of itself. Our future Owens, Huxleys, Parkers, and Flowers, will find ample scope for development in the schools of science proper to furnish forth the demonstrators, teachers, and professors for carrying on the work of

investigation and teaching. Nay, it will be done far better than it is now, and it will be far better paid.

A powerful means for effecting the above change will be the establishment of one portal of examination for the State licence to practise. This, it is to be hoped, will not be long delayed by the action of the Scotch schools, who have hitherto shown no remarkable anxiety to smell at our nosegay. In due course of time, it is to be hoped that its attractions will begin to prevail among them, and finally overcome the national tenacity to cling to ancient privileges, so as to induce them to embrace some conjoint scheme.

It may not be essential for the foregoing purposes that the Government should be called upon to set its seal upon both the preliminary and the pass examinations; upon the portal of entrance to as well as upon that of exit from the hall of medical education—the gate of humility as well as the gate of honour. The present examining bodies can well guard the former as well as the intermediate steps of medical instruction. But a proficiency in the art of spelling and writing the English language with propriety should certainly be required at the pass examination, in setting forth the knowledge of the practice of medicine and surgery acquired in the schools.

In all this, the question of the expense of medical education has a preponderating influence. The number of medical practitioners must be kept up to the public demand, or an increase in the counter-practice of chemists and the competition of quacks and unlicensed practitioners will inevitably ensue. The lower classes must be supplied with cheap doctoring, even in places where hospitals, infirmaries, and provident dispensaries are not established. The expenses of a medical education are already as high as can well be borne by the classes supplying the greatest number of students. But the rearrangement of education does not necessarily imply an increased cost. The co-operation of the medical bodies in scientific teaching will, in the end, prove as saving and economical as in trading. A less adulterated article will likewise be supplied, and a less cost of distribution will be the direct result of concentration.

As time goes on, and the influence of the elementary and intermediate education begins to tell upon the middle classes, we shall, in the first place, have a better prepared material for technical training. Up to the present time, the medical schools and examining bodies have supplied the want of preliminary knowledge, and, considering the appliances at their command, have done it well. The burden is now, however, getting too heavy for them. They must lighten the load of preparation that they may the better do their own business. The educating energy of our younger physicians, surgeons, and obstetricians will thus become concentrated upon the more practical details of their profession, rather in the hospital wards than in the class-rooms. By their help it will be possible, even in large schools, for the students to be taught practically and thoroughly the diagnosis and treatment of disease under the superintendence of the experienced and skilled physician or surgeon who may have, by his reputation and success in teaching, attracted a large clinical class. The way is, simply to apply the demonstrator system, which has worked so well in practical anatomy and physiology, to the practical teaching of medicine, surgery, and obstetrics in the wards of the hospital. The total effect will be a lightening of the cost of medical education to the student and his friends. This question of increased expense of the medical curriculum has an important bearing upon the proposed prolongation of the period of education, by fixing the age of going up for the pass examination at twenty-two years instead of twenty-one. This would increase the expense of education to the student by the cost of the additional year. The answer which to my mind is the most satisfactory to this objection is, that this year might be spent in learning pharmacy, compounding, and the details of practice with a general practitioner, as an unqualified assistant or articled pupil. By such a plan, the student would certainly be placed in a better position for doing practical medical work directly on passing his final examination. He would be worth more and would earn more as a qualified assistant; would be fitter to take charge of a passenger-ship, and fitter for beginning practice for himself. He would have his money's worth in being better prepared for the real business of life—for earning his own living.

There seems to be (judging from the answers given to the queries recently propounded by your Committee on Medical Education, originating with our late president) a great preponderance of opinion among general practitioners in favour of the revival of this old-fashioned plan, sanctioned by the experience of our forefathers. Not less than 70 per cent. have declared for it, while only 14 per cent. have expressed an adverse opinion, in which a very small majority of the present and past teachers of surgery have coincided. The College of Surgeons have always looked with approval upon the custom of articled pupilage, and have admitted it as equivalent to a year's study at a medical school to

be taken before entering at such school. The Scottish schools admit it only after the first two years of education at a medical school. The latter system has certainly the advantage of giving to the practitioner a more instructed, and therefore a more efficient, pupil. Whether such increased efficiency would be deemed by the master an equivalent for the expense of maintenance of the pupil, so as to lighten the expense of his prolonged education, is a question, I think, to be referred entirely to, and decided by, the general practitioners only. It is nearly certain that it would be a greater benefit to the pupil himself, than the system of requiring it before entering a medical school, as stated in the list of queries before alluded to. If, however, a preliminary examination in botany, chemistry, physics, and the elements of general anatomy and physiology were required *before the articulated pupilage* as well as before admission to a medical school, most of the advantages of the latter system would be gained without the interruption of the student's regular course of technical medical education, an interruption of a year's absence, which would intensify the frequent forgetfulness of anatomy and physiology even now complained of by the examiners in surgery at the pass examination.

I am very glad to observe a most marked and decided "consensus" of opinion of both teachers and practitioners to question 5 in the same series, viz., that a full two years should be spent in the wards of the hospital after passing the primary examination in anatomy and physiology. It is, in my opinion, one of the most important of all the detailed matters connected with medical education, and it should be accompanied by a much stricter method of enforcing attendance of actual clinical examinations, and of signing certificates of fitness of each individual student, than is now usually enforced.

Medicine as an art, gentlemen, has always and must always continue to precede medicine as a science, if a science it can even now be called. This is true, even to a greater extent, of surgery. We cannot wait in the emergencies of human suffering, and hold our hands, for a rational explanation of our methods of relief. Hence the necessity for empiricism; hence the various and absurd theories which have been given for practices which have proved successful. Men drew water from wells ages before Torricelli explained the pressure of the atmosphere in the action of the pump. And you will even now find twenty men who know what to do sooner than one who can render a valid reason for what he does. So medicine and surgery must be taught in the doctor's private dispensary and in the wards of our hospitals, as an art to be practised before it is explained as a science. "*Oportet discitem credere*" comes before "*Oportet edoctum judicare*" in the maxim of the old world philosophers.

Gentlemen, we are living in changeable if not stirring times, and it is at least very open to question whether we can decide, off-hand and straightway, all these nice adjustments of medical education in the way most advantageous for our posterity.

While we are, on the one hand, most sensible of the evils of multiplying and competing licensing bodies, and endeavouring to remove them by the establishment of a common State portal, we are, on the other, on the point of adding one more licensing authority to the nineteen already existing. The new Victoria University arises to compete with the Universities of Oxford, Cambridge, and London, in the face of the effete and collapsing warning of the University of Durham.

Concentration and redistribution in learning, as in politics, go hand in hand in our reforming land. In all the learned professions, everything seems to be somehow very wrong, and must needs be set right at once and without delay. We have all our hands full; and the strongest and toughest have perhaps rather a better chance of survival than the best and fittest. We have, like the one in the parable, often "bought a yoke of oxen, and must needs go and prove them", when we should have been wiser to prove them before buying them.

In the Church, we have priests and laymen, and bishops and priests, and bishops and laymen, wrangling in courts of law, and pugnacious in newspapers. In the Law are alterations, amalgamations, and radical changes, conducted, albeit, in close chambers, and usually with all the shrewd reticence of the gentlemen of the long robe. But from the arcana of even these quiet councils issue forth occasional explosions of a somewhat volcanic nature. The ecclesiastical judge bites his thumb at the Queen's Bench justice, and somewhat indecorous and personal attribution of motives emerge in the public papers.

Similar outbreaks occur in architectural and in engineering circles. The House of Commons itself, the "collective wisdom of the nation" is passing through the uneasy stages of an eruptive fever, and uncontrollable by the ordinary usages and traditions, gets mobbed into a confusion somewhat chaotic upon Home Rule and foreign affairs. Trivial causes bring on, in this tetanic condition, very violent convulsions; and the presence of a cat-of-nine-tails in the august custody of the Ser-

geant at Arms is sufficient to make everybody from the honourable the Speaker downwards "out of order".

"It is a reeling world, my lord", as Catesby says in *Richard the Second*. There is surely something in the air, or in the weather, or in the sun-spots! That the result of the medley will tend somehow to the advancement of learning and science in promoting the greatest happiness of the greatest number is not open to doubt. Movement of this kind is usually evolution; and we may rest confidently in the hope that in some future happy time the competitions of the nineteen medical degree-granting bodies will develop into a professional "happy family", with no encroaching licentiates assuming titles which do not fairly belong to them, when "the envy of Ephraim and the vexations of Judah" will cease from troubling the dignified repose of the General Medical Council; and when both practitioners and students, unfettered by regulations, can be trusted to be *a law unto themselves* (as advocated by some of our enthusiastic, though somewhat *doctrinaire* advisers). Then will medical science and experience be among those good things which that wonderful compendium of all sorts of knowledge which was wrapped up in the brain of Shakespeare designates as "Begot in the ventricles of memory, nourished in the womb of the pia mater, and delivered upon the mellowing of occasion" (*Love's Labour's Lost*, Act IV, scene 2).

THE GENERAL PRACTITIONER OF MEDICINE: HIS POSITION AND EDUCATION.

Being an Extract from the Introductory Address delivered at the Annual Meeting of the South-Eastern Branch.

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It has been suggested to me that "the General Practitioner" should be the burden of my song to-day; and, as for nearly twenty years I had the honour of being very actively engaged in that capacity, I trust I am not incompetent to approach the subject without prejudice or reserve.

The general cry for higher education, for medical reform, the discussion on medical titles, our relations with the State and with the public, all betray an unsettled state of the *mens medica*, a disturbed condition of our professional relations with each other and with the public. We are in the throes of change, and the efforts of our admirable British Medical Association will still be needed, as they have hitherto always been employed, to conduct these changes along the right paths and make all things work together for good. On the subject of higher education, although I admit that in one sense no education can be too high for such a profession as ours, I am entirely a nonconformist to the view that of all who enter its portals the same high standard should be demanded.

Let us consider for a moment our relations with each other, consulting physicians and consulting surgeons acting as general practitioners, and general practitioners sporting their degrees and thinking themselves, as no doubt they very often are, as good as the physicians and surgeons. Then, again, think of the specialists and what they arrogate to themselves, and how on their particular subjects they ride over everybody. Is it wonderful that with such glaring incongruities the public are puzzled, and often take what appear to us very irregular means of satisfying their own particular medical requirements?

A Frenchman who had committed a murder for gain, when asked by the judge why he had been guilty of such a crime, replied: "Il faut vivre", to which the judge replied, "Je ne vois pas la nécessité", and immediately ordered him to be hanged. Now, "Il faut vivre" is probably the only, but still very potent, reason why many physicians and surgeons enter into competition with the general practitioners, and the same may be said of those consulting surgeons who prescribe for medical cases. I fear this axiom will continue primarily to live at the root of our actions, however we may try to alter, disguise, or avoid the imputation. The same applies also to the prescribing chemists, to the unqualified practitioners, and last, but not least, to the lowest and most mercenary of all, the common quack.

We are apt to forget in our wallings for medical reform, that it is by no means the duty of the legislature to take up the cause of the doctors, and to give them various forms of protection; on the contrary, a statesman should, and would doubtless as a rule, see it to be his duty to do the greatest good for the greatest numbers; and it is on this ground that I take leave to differ from the general almost universal cry of raising the standard of medical education to an uniform height. I do not see what is to happen to the impecunious, the lower class of tradespeople, to the artisans, and to all those labouring but independent