CRUDE CRAFTSMEN

By ERNEST MORRISON, M.B., B.Ch., F.R.C.S.

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THIS MORNING, ladies and gentlemen, I have the honour and pleasure of addressing you on behalf of the consultant medical staff of this great hospital. A task approached with some diffidence for unlike so many of my illustrious predecessors I am neither orator, historian, scientist or philosopher, but simply one of a long line of crude craftsmen – the title of my address – who have endeavoured since time immemorial to relieve suffering humanity by cutting and in particular cutting for stone.

Advance in any branch of medicine is related to contemporary progress in every branch of science and its strength lies in the number and vigour of its allies. Modern operative techniques are more successful than in the past, not due so much to improved surgical skill, but to advances in the para-surgical subjects. On 8th May, 1967, I carried out an operation that had never been intentionally performed previously in this hospital, that of nephrectomy, knowing that the kidney to be removed was the only one the patient possessed. Prior to operation I knew through the help of my colleagues in the hospital laboratories and X-ray departments, the nature of the disease process affecting the kidney and how that disease was affecting renal function and the patient’s health. I not only knew the position, size and shape of the kidney but had before me in the operating theatre beautifully clear pictures of all its blood vessels large and small. With the best anaesthesia in the world available the operation under such circumstances was a simple anatomical exercise and so I could assure my patient, a woman of 37 years, beforehand that there was no danger to her life. Also I could tell her that life could be adequately maintained post operatively by renal dialysis and later renal transplantation.

Like so many of the life saving measures now employed by the medical profession, transplantation of the kidney has taken its place in the therapeutic armament only after a stormy passage. For many years the utilisation and so the development of blood transfusion was declared illegal and prohibited by all the influential professional bodies in Europe. The Faculté de Medicine and the Royal Society opposed its use. Rome condemned it as completely inexcusable. The introduction of anaesthesia was similarly condemned by many of the medical profession as a dangerous experiment and by divines as a violation of the law of God. Renal transplantation, in spite of opposition from medical and laymen, church and state is now generally accepted as a definitive line of treatment and can I hope be left in the capable hands of those medical men and women specially trained in that science and art, remembering that our profession has continued to work for centuries under a code of conduct formulated long before the Mother of Parliaments was established.
The science of urology has achieved a position of enviable importance in the realm of medical science for the outstanding progress it has made within a comparatively short period of time. As the oldest surgical speciality it stems from a single operation; that of removal of stone from the urinary bladder. “Cutting for stone” has been claimed as one of the first empirical operations to be practised by man. Circumcision and trephination of the skull are probably of comparable antiquity but they were carried out for religious or superstitious reasons. Stone in the bladder has been known since earliest times, the oldest so far discovered in man was found at El Amara in the skeleton of a mummy, dating from about 4700 B.C., it consisted like so many of today, of uric acid, oxalates and phosphates. Operative urology was practised by the Hindus, early Egyptians, Greeks and Romans, but it was not until 1886 that modern scientific urology had its inception with the perfection of the cystoscope by Max Nitze and Joseph Leiter.

Prosper Alpinus related that there was a practice in Egypt of ancient origin and extensive employment for the removal of stones from the bladder, which consisted in distending the urethra by blowing into it with a tube and then urging the calculus to descend by pressing on it with the fingers introduced into the rectum; a procedure highly unlikely to have much success.

Lithotomy

The operation of lithotomy was obviously well known before Hippocrates’ time for in his oath he stipulates that he will not cut for stone. He may have thought that the operation should be performed by others better equipped than himself or that the operation was being carried out by unscrupulous and irresponsible men. For the learned and unpractical physician of the day the operation of lithotomy was considered too menial a task. Sufferers from stone had to turn to the working craftsmen – the itinerant lithotomist. We today are all too familiar with the discomfort that urinary calculi can produce, how much worse must the agony have been in the absence of analgesics and anaesthetics. The patient who today has little fear in seeking relief from his symptoms was often faced with the choice of continuing suffering ending perhaps in death or with the still greater torture of an operation – it is extraordinary that the latter course was so often chosen.

Although Ammonius of Alexandria, surnamed Lithotomus, practised lithotomy 200 years B.C., it was not until the Roman Celsus published his “De Medicina” that we find a detailed description of the operation. The operation was only possible when the stone was of considerable size and could be felt per rectum, the procedure involved cutting through the perineum in the midline down to the stone after it had been manoeuvred into the neck of the bladder by rectal and abdominal palpation.

Lee’s description reads as follows:

“Precipitation in this operation would be incompatible with the dangers inseparable from it. Neither is it to be tried at all seasons, nor in every age, nor in every case but in Spring alone and only between the ages of 9 and 14 years. And also when the cause is urgent, that it can neither be overcome by medicine nor protracted and that the patient must die if the operation is prolonged. The body should be prepared by a proper regimen for some days previous, i.e., food in moderation, he must drink nothing but water. In the meantime the patient must take exercise by walking in order to facilitate the descent of the stone to the neck of the bladder.”
The method is as follows:

“A strong and intelligent person being seated on a high stool, lays hold of the patient in a supine position, with his back towards him and his hips being flexed on his knees, with his legs drawn backwards he orders the patient to seize his own hams with his hands and to draw them towards his body with all his power and at the same time he secures them in that position, but if the patient be rather powerful two able men must sit beside him. Then the physician having carefully pared his nails introduces his index and middle fingers of the left hand, first the one gently, then the other into the anus and places the fingers of his right hand lightly on the lower part of the abdomen. First the stone must be sought about the neck of the bladder and when brought into that position a lunated incision is made over and extending to the neck of the bladder, the stone comes to view, the colour of which is not of any consequence. The stone if small may be propelled forward by the fingers or if of considerable dimensions, a crochet expressly made for the purpose is introduced. This instrument is smooth on the outside when it comes in contact with the body, rough on the inside when it touches the stone, when it is evident that the stone is grasped a triple motion is employed to disengage it. When the stone is extracted, if the patient be strong and not much affected we may permit the haemorrhage, in order that the inflammation may be less and it is not improper for the patient even to walk a little, that any coagulated blood within would fall out. But if it should not cease spontaneously, it must be suppressed lest the strength be entirely exhausted. To obviate this the patient should sit in strong vinegar to which a little salt has been added, by which means both the haemorrhage is arrested and the bladder contracted and the inflammation abated.”

Only a knife and a hook were used in this operation. It became known as the lesser operation or the operation of the Apparatus Minor. No mention is made of anaesthesia, either none was used or what is more likely alcohol in some form in excessive amounts, perhaps in the form of mandragora wine was poured into the wretched patient until he was at least partially benumbed. It was not until the 13th century that we read of Theodoric producing the so-called soporific sponge, the medieval substitute of anaesthesia. This sponge was steeped in a mixture of opium, hyocynamus, mulberry juice, lettuce, hemlock, mandragora and ivy; the sponge when impregnated with the mixture was dried and then moistened before being inhaled by the patient. Patients were kept without sleep as long as possible before operation so that soporific would take greater effect.

The operation described by Celsus was employed for roughly 1400 years, the only modification being in the location of the incision and the introduction of new instruments. Paul of Aegina, in the Byzantine period (167–732 A.D.) described an operation closely following that of Celsus, he recommended that the patient be shaken or made to jump from a height to favour the precipitation of the stone into the neck of the bladder. He used a lateral incision. During the eighth to the twelfth centuries medicine chiefly in the hands of the Arabians contributed nothing to lithotomy nor for that matter to surgery in general, partly because of the Arabians belief that to touch the human body under certain circumstances was both unholy and unclean, operative surgery was considered by them as unworthy of a man of honour and was left to the despised lithotomists. The medieval period (1096–1438) is also characterised by a dreary lack of progress in surgery, lithotomy continued to be practised by these wandering lithotomists, described by William Clowes as “no better than runagates or vagabonds, shameless in countenance, lewd in disposition, brutish in judgment and understanding.” Certain families became famous as lithotomists, the nature of some of the procedures they carried out were
often carefully guarded secrets, and handed down as such from one generation to another so that little is known of the actual methods employed. Certain cities became renowned for the operation, the most famous in England being Norwich, a town still famous as being the one to produce most stones in England.

It was during the Renaissance (1453–1600) that the first great improvement in the technique of perineal lithotomy since the time of Celsus appeared. The method, first published by Marianus Sanctus Barolitanus in 1524, became known as the Marion operation. It consisted in the introduction of a grooved staff into the bladder upon which the urethra was opened in its membranous part. Gorgets and dilators of various kinds were then passed along the groove into the bladder, the posterior urethra and vesical neck were sufficiently dilated and torn to permit introduction of forceps to remove the calculus. On account of the great number of instruments devised and used in this technique the procedure became known as the method of the “great apparatus”. Although this operation was a great improvement over the old method of Celsus, yet in many cases parts of the bladder and prostate were often removed with the stone, it still carried a very high mortality rate and post operative complications, such as haemorrhage, extravasation of urine, abscesses, fistulae and incontinence of urine were common. The bad results were naturally not all recorded. Children frequently recovered from the operation, but adults seldom.

The Marion operation remained in vogue until the end of the seventeenth century. Travelling lithotomists were at this time often in charge of an extensive and well managed organisation, one is reported as having 14 assistants. Their visits to cities were timed to coincide with annual fairs, patients were attracted by side show features, such as buffoonery, rope dancing, theatricals and even dancing bears, their departure was, no doubt, timed with equal care and forethought. One of them, Pierre Franco, wrote: “Physicians and surgeons can defend themselves when unfortunate but if we lithotomists have a mishap we must run for our lives.” On reaching a city the lithotomists were obliged to secure a licence from the Guild of Physicians before operating. Physicians then and still the aristocracy of the medical profession, were only in special cases called in, they prescribed diets, purged and bled, they attended to pre- and post-operative care of the bowels as this simple task was considered beyond the capability of the surgeon. Towards the end of the seventeenth and in the early part of the eighteenth century a number of lithotomists in England, France and Germany began to improve on the Marion operation, the outstanding character amongst which was Frère Jacques. Jacques de Beaulieu (1651–1714) started his career as a trooper in a cavalry regiment, then joined a travelling stone cutter called Palloni learning what he could. At first his technique was crude and his mortality high, he was quite ignorant of anatomy, he operated quickly and recklessly and although provided with very imperfect instruments he extracted the stone with such invariable facility and dispatch that though many of his patients died and comparatively few made complete recoveries he acquired great reputation as well as the friendship of some of the most distinguished French surgeons. By one successful operation he gained the favour of the Royal Court in Paris and was given the opportunity to perform 50 lithotomies in Paris hospitals. Some reports state that he was so successful that the jealous Parisian surgeons chased him out forcing him to resume his travels, others that his results were so bad that he was ordered to go off and learn his anatomy before
continuing to practice. It is reported that, though insensible to the dangers that attended his mistakes, he was a man of great benevolence and accepted only sufficient fees for his services to live modestly, he became so interested in lithotomy that he put on a monk's robes and devoted his life to cutting for stone. He travelled to Holland, operated on hundreds and was there held in such high repute that he was presented with a set of gold sounds which he had immediately melted down for charitable purposes. Crowds of up to 200 came to watch him, tickets were issued and guards posted. Although his reported mortality and morbidity rates were disastrously high (7 died in one day at the Charité) his notices in travelling claimed that his operations never endangered life and that there were no complications. “Your operation is done, God heal you” was his parting comment to his patients. He is credited with having operated upon 5,000 patients in his life time.

Cutting for stone was in invitation to the charlatans; it was so easy for an unprincipled surgeon to “palm” a stone, to perform a bungling operation and show the palmed stone to the patient. Sentences for such deceit were, however, severe, and in France where the laws were strictest two surgeons are reported to have been executed for such an offence.

One of the famous patients of this heroic era was Samuel Pepys who had a stone the size of a tennis ball successfully removed from his bladder in 1658 and celebrated the event annually. Auto-lithotomy like any other operation carried out by a surgeon on his own body must be extremely uncommon. Yet such is claimed by Jan de Doot, a Dutch blacksmith, who in 1651 removed a four-ounce stone from his own bladder with a knife.

The suprapubic operation was first performed in 1556 by Franco of Lusanne. Franco who had no medical training performed this operation in despair. The patient was a child of 10 years and the parents desired that the child should die rather than live in agony. The task was accomplished by putting two fingers into the rectum pushing the stone forwards on to the abdominal wall, and cutting down on the stone. A stone the size of a hen’s egg was withdrawn and though the child recovered Franco wrote afterwards: “However, I do not advise resorting to this means, rather employing the method we have invented previously.” It must be remembered that though lithotomists were possessed of daring qualities few would ever show themselves more daring than to adopt the mode of treatment which had been originally described. The edicts of Hippocrates and of Galen uttered centuries before had been so deeply stamped upon the surgeon of the day that few were bold enough to go against them, to do so the surgeon would not only risk his reputation but his life. It is scarcely possible for the modern surgeon brought up in the immaculate theatres of today with their rigid ritual of asepsis to visualise the situation that prevailed even 100 years ago. The abdominal cavity was never opened, to do so was almost tantamount to signing the patient’s death warrant. In the suprapubic method the peritoneal cavity was always at risk, the difficulties induced by a straining conscious patient and an infected peritoneum were unsurmountable.

Occasional operations are mentioned in the seventeenth and eighteenth centuries as using the suprapubic route, but it was not generally adopted; few were willing or so daring as to repeat Franco’s operation. And so almost 200 years were to pass before Rousset proposed that the suprapublic route was far superior and more
practical than the perineal. Well aware of the difficulties and dangers of the perineal route he wrote:

"The most dexterous operators know well that they have often been constrained to leave their work imperfectly performed and to grab, tear away and bring along with their instruments a good portion of the bladder with the calculus, why then should one submit to this danger of incision without need."

Rousset was one of the most ardent partisans of the caesarian operation and perceiving that the latter was easy to perform, he was of the opinion that the bladder could be reached by the abdominal route without danger. Although Rousset clearly demonstrated the advantages and possibilities of this method it was attempted only in occasional cases, and Rousset himself as far as one can ascertain never used the method in a living person.

John Douglas, an Englishman and brother of James whose name is perpetuated in the famous "pouch" and "fold" was the first to make a successful trial of the suprapubic method. James, an expert anatomist, had made a special study of the approach to the bladder, he presented his anatomical preparations before the Royal Society in 1717–18, and it is almost certain that it was from these studies that John conceived the idea of removing a stone by the abdominal route. His first four operations were carried out on December 23rd 1719, March 23rd 1720, May 12th 1720 and August 20th 1720. All except the third did well and John Douglas became famous. He now offered his services to the Westminster Hospital and was appointed to the staff. He showed the three living patients before the Royal Society and was elected Fellow of the Royal Society and given the Freedom of the City of London. He was even permitted to advertise in the newspapers that any poor person who wished to be cut for the stone could be admitted to the Westminster Hospital under his care and undergo the operation without charge. He also offered in true Hippocratic fashion to teach other surgeons his technique. They all with one exception rejected his offer with scorn; that exception was Cheselden, whose name had already been closely linked with the operation of lateral lithotomy and whose skill and dexterity had never been equalled not to say surpassed. Cheselden studied the anatomical specimens of James Douglas and himself made experiments on the cadaver before trying his technique on the living subject. He soon surpassed John Douglas his teacher and performed the suprapubic operation eight times in 1723.

"All of which operations succeeded to the entire satisfaction of several of the most eminent physicians and surgeons in town." He published his early results in a "Treatise on the High Operation" in which he gives credit to John Douglas for the revival of the operation. Unexpectedly, however, his enthusiasm for the suprapubic operation soon passed. Following his initial success many surgeons tried the method but the peritoneum was often opened with disastrous results, Cheselden admitting that this had happened in some of his own cases. Controversy and doubt still held the stage and soon the operation which to all of us seems the logical and practical method came into universal discredit and Cheselden, unhappy about his own results, proceeded to devise a better method of perineal lithotomy, in which he distended the bladder with warm barley water prior to cutting and in which he used a grooved steel catheter as a guide. James Douglas writing of this improved technique in 1726 says: "When no accident happens, he has seldom been above a minute, sometimes less between the beginning of the first incision and extraction of the stone."
A swift and gentle operator, Cheselden's record time for removal of a stone was 45 seconds. William Dease, the elder, founder of the Royal College of Surgeons in Ireland, was a great exponent of lithotomy in the latter half of the eighteenth century; his work is said to have been on a par with that of Cheselden. By the middle of the eighteenth century most surgeons had at last learned of the advantages of the suprapubic method; it became the method of choice even in France where Francois Colot had for so long condemned it. In 1758 Frère Côme defying Colot's teaching practised the method, he devised new instruments for the operation and published detailed histories of 100 cases, finally placing the operation in the position where it belongs.

**LITHOTRITY**

The heavy mortality and morbidity associated with lithotomy drove surgeons to seek less fatal methods of getting the stone out of the bladder, and so the opening of the nineteenth century saw the birth of yet another method of dealing with bladder stone. Crushing of stone was said to have been known to Ammonius of Alexandria about 230 B.C. It was certainly spoken of in the writings of the Byzantine physicians. General Martin of Lucknow claimed in 1783 to have broken up a stone in his own bladder by means of a small curved metal sound with its end slightly roughened. But it is to Jean Civiale of Paris to whom credit for putting the operation of lithotripsy on a sound basis is generally ascribed. He became interested in stone when still an impecunious medical student and spent his entire career fighting for the acceptance of his methods. Civiale performed his first public demonstration of lithotripsy on a living patient in 1824 with an instrument which he called a litholabé. This consisted of two straight tubes, one fitting inside the other, the inner terminating in three curved spreading arms which closed by retraction of the inner into the outer tube. When seized by these prongs the stone was held firmly by pushing forward the outer sheath on to the inner tube, it was then forcibly bored and crushed by an iron rod with a screw tip. To prepare for the introduction of the lithotrite the urethra was dilated by passing wax bougies of increasing size over a period of a week or more, itself a painful enough procedure.

Surgery in the nineteenth century was to progress further than it had done in the preceding 1,000 years due to the introduction of the routine use of surgical anaesthesia to antiseptic and later aseptic methods, yet Civiale even after the introduction of anaesthesia would never employ it in lithotripsy, arguing that its use tended to make the surgeon less careful and delicate in his manipulations. Lithotripsy was brought to England by Baron Heurteloop from France. Of the early English lithotomists practising this method the most famous was Sir Henry Thompson. He had an enormous practice and gained a great European reputation operating successfully in 1866 on Leopold I, King of the Belgians, 18 months after Civiale had failed. Ten years later he operated on Napoleon III, but this patient died after the second sitting. Thompson confined his operating time to two minutes, the whole procedure might take as many as 25 sessions altogether. Morbidity and mortality figures for lithotripsy were at first little published. Thompson had much better results than his contemporaries, but the overall mortality showed little to chose between lithotripsy and lithotomy.
Having crushed the stone, there remained the real problem of evacuating the fragments. Surgeons had for years realised what an advantage would be secured by the immediate and complete evacuation of all the particles from the bladder. Sir Philip Crampton who introduced lithotritry to Ireland in March 1834 invented a suction apparatus consisting of a glass bottle, from which the air was withdrawn by a syringe, and connected to the bladder catheter by a rubber tube and stop cock; the idea was a good one but the instrument crude and ineffective and it was left to Bigelow of Boston to perfect the method of litholapaxy. To secure removal of the stone fragments large calibre straight and curved metal evacuating tubes were provided with an aperture at the top end so that the bladder could not be drawn in by suction. To the outer end of the evacuating tube was attached a large and powerful rubber bulb evacuator with a glass container below into which the fragments were received and seen.

Bigelow, one of the foremost advocates of anaesthesia after witnessing its first administration by Morton in Massachusetts General Hospital in 1846, published his method in 1878 after an experience of 14 cases and claimed that the operation performed under ether anaesthesia could be extended to one or two hours or even longer without detriment to the patient. This produced a great sensation in England where the famous Thompson was limiting his sessions to two minutes and naturally surgeons were for a time loath to accept the method and give credit to the inventor. Nevertheless it was soon generally adopted all over Europe. Bigelow was invited to London in 1881 where he demonstrated his instruments and was made a member of the exclusive London Clinical Society. He was honoured in like fashion by the French National Academy of Medicine. This new method of litholapaxy greatly lowered the mortality in all age groups. Bigelow's instrument slightly modified is still in everyday use throughout the world.

Operations on the Kidney

The most fascinating chapter of surgery is that devoted to the development of operative intervention on the kidney. Early procedures dating from 400 years before Christ consisted of simple drainage of tuberculous and non-tuberculous infected kidneys, the opening of peri-nephritic abscesses and incisions into swellings in the loin due to renal stone. Hippocrates, Celsus and Galen wrote extensively and accurately on the symptoms associated with renal stone, but all three were opposed to surgical intervention on the kidney because it led to fatal consequences. Ten centuries later Serapion and Avicenna wrote that although the operation was practised by certain disreputable people it was extremely dangerous, liable to be followed by death and, therefore, advised against its performance by a physician. There are numerous accounts of the removal of stones from the kidney in France, Germany and England in the fifteen century, but in all of these there was a distinct external swelling or the stone could be palpated in a sinus.

The first recorded attempt of nephrolithotomy was that of the celebrated French archer of Bagnolet in 1474. Unfortunately the Physicians of the Faculty of Medicine of Paris, who performed the experiment on a living patient, failed to record their observations and the exact nature of what was done or the technique employed varies with the historian. One account is as follows:
"The doctors of the Faculty of Medicine of Paris, having learned that an archer from Bagnolet, who had been affected a long time by stone had been condemned to death for his crime, petitioned the king and the magistrates to kindly deliver him into their hands in order to prove on him if the kidneys could be opened for removal of the stone without depriving him of his life. The operation was so successful that the man survived for many years afterwards in excellent health."

The first authentic account of operation for stone in the kidney is given by Cardan, a surgeon of Milan in the early sixteenth century. He deliberately opened a lumbar abscess and removed eighteen stones. The story of the operation on the British Consul of Venice in 1633 is of special interest. Charles Barnard gives the following graphic account:

"Mr. Hobson, who was consul for the English at Venice having long been affected with stone in the kidney was at length attacked with a fit of such duration and violence that he was reduced almost to desperation. Finding no relief from any means that he had used, he addressed himself to Dominicus de Marchetti, a famed and experienced physician at Padua, imploring him to cut the stone from his kidney. He added that he was not insensible to the danger, but that death itself would be infinitely preferable to life and the misery under which he had long groaned. Marchetti seemed very desirous of declining not to operate, since the operation represented the extreme hazard, was impracticable and one he had never attempted, and that to proceed to it was in effect to destroy him (i.e., Hobson). But Mr. Hobson persisting, said that if he refused he would not desist until he had found someone who could do the operation. His resolution and importunity at length prevailed upon Marchetti to undertake the operation.

"Having prepared his patient as he thought convenient he began with his knife cutting gradually upon the region of the kidney affected, until blood disturbed and blinded his work he could not finish the operation at one attempt. Wherefore dressing up the wound till the next day he then repeated the operation and accomplished it by cutting into the body of the kidney and taking thence three or four stones. He dressed it up again. From this instant Mr. Hobson was freed from the severity of his pain and in a remarkably short time was able to walk about his chamber having been in no danger either from the flow of blood or fever. Marchetti continued to dress the wound for a considerable time, but he was not able to close it up. It soon became fistulous from the continued flow of urine through the sinus. Being in other respects restored to his former health and vigour and the matter discharged being little, Mr. Hobson took leave of the professor and returned to Venice under the care and management of his wife. One morning she was dressing the wound she fancied she felt something hard and rugged as she wiped and, upon examining it a little more closely with her bodkin, which served her instead of a probe she found it to be a stone of the shape and size of a date stone, which being removed Hobson never afterwards complained of the least uneasiness in that part."

"About ten years later Hobson returned to London, he was without complaint but a sound could be passed deep into the sinus which persisted. The matter discharged was little but smelt strongly of urine. The orifice closed for 3 or 4 days and then broke down again. Hobson was able to perform the functions of life and to undergo fatigue as any man of his years, was able to ride post 40 or 50 miles a day."

The scientific development of modern renal surgery began with the physiological experiments of Zambecarri and Etienne Blancard. The former in 1670, the latter 20 years later, reported the results of their experiments in which a kidney was successfully removed from a dog, they established the fact that animals could live in perfect health after the removal of one kidney. They went on to suggest that in man a kidney destroyed by stone or infection might be removed as a definite line of treatment. The idea containing so much wisdom and foresight was ridiculed,
deemed impractical and of too great danger by contemporary surgeons. In 1757 Havin in a critical review of nephrectomy stated that unfortunately the animal experiments were inconclusive and were likely to lead young surgeons into ways that would be dangerous to the lives of their patients. As late as 1801 Benjamin Bell concluded:

“That the operation of nephrectomy will probably never be received in general practice however much it may be recommended by some, who in order to raise a reputation which they might not otherwise obtain will sometimes step forward and propose with confidence that which no practitioner of character would think right to attempt.”

Removal of a stone from the sound kidney unaffected by abscess formation was, therefore, considered absurd and dangerous.

In 1841 Rayer, the father of renal pathology, published his “Traité des maladies de Reins”. This work was the foundation of modern knowledge of the pathological processes which noted that stones usually occurred in the renal pelvis leading to the formation of renal and peri-renal abscesses and to fistulae which could open into the extra-peritoneal tissues, the skin of the lumbar region, the inguinal region, into the colon, duodenum, peritoneal cavity or lung. With better knowledge of the pathological processes surgeons became more daring and were encouraged not only to operate on cases with palpable stones and abscesses but on patients with symptoms suggestive of kidney stones. Annadale in 1869 and 1875 and Gunn and Denham in 1870 made incisions into the kidneys of patients suffering from the symptoms of stone, but in which there was no supperation or tumour. In none of these four cases was a calculus found, but curiously enough the patients were all relieved of their symptoms. Pyelotomy and nephrolithotomy were nevertheless on the way and Bryant in his “Manual of the Practice of Surgery” in 1881 suggested the plan for incising the undilated kidney through an incision in the loin for the purpose of removing renal calculi before the kidney had become greatly disorganised by suppuration. And to Henry Morris must be given the credit of first removing a stone from the healthy kidney by nephrolithotomy. He demonstrated that it was possible to remove calculi from the kidney by operation and that the danger of haemorrhage was unimportant because the great vessels in the forepart of the hilus were not severed in incising the pelvis from behind.

The discovery of X-rays by Roëntgen in 1895 aided greatly in the diagnosis of renal stones, and by its use McIntyre of Glasgow in the following year demonstrated films with stone in five cases which were later confirmed at operation. On 2nd August, 1869, i.e., exactly 100 years ago, the first epoch-making, successful and deliberate nephrectomy was carried out by Gustave Simon in Heidelberg. Simon, unlike many of his colleagues, was most impressed by the experimental work of the physiologists. He repeated their experiments on dogs noting that they lived in perfect health after nephrectomy. He also noted compensatory hypertrophy of the remaining kidney. Until Simon's operation it had never been clearly established that a single kidney was adequate for the needs of the body and compatible with a normal life. The successful performance of ovariotomy by the American surgeon Ephriam McDowell as far back as December 1809 had led the way to surgical intervention in the abdomen and ironically enough kidneys were soon being removed in place of ovaries. In these cases it was noted that though the patient often died
afterwards of sepsis urine was copiously secreted from the remaining kidney. Nine of the first 20 recorded nephrectomies were performed accidentally, the kidney being removed usually for an abdominal tumour. Within a decade of Simon's successful nephrectomy the operation was second in frequency to oophrectomy, and with the development and perfection of antisepsis and later asepsis the operation mortality was soon reduced from 80 per cent in the first ten cases to less than 8 per cent.

The modern surgeon consulted by a patient suffering from stone can not only offer him immediate relief of his pain, but can within a few hours tell its situation, size and whether it is adversely affecting renal function, and advise accordingly. But in spite of centuries of experience and more recent exhaustive research there is still no unanimity of opinion regarding the mechanism of renal stone formation. In urology as in every other branch of medicine there is still a lot to be done. The words of Percival Pott are as apt today as they were when spoken 200 years ago:

"Many and great are the improvements which the cirurgical art has received in the past 50 years, and many thanks are due to those who have contributed to them, but when we reflect how much still remains to be done it should rather excite our industry than influence our vanity."

What matters most is the future and what remains to be done. The future lies with the young people in my audience, and it is up to them to do at least some of what remains to be done; it is to the students in particular that I address my final remarks.

You have come I hope to this hospital and medical school not simply in search of a medical qualification, but to prepare yourself for a life in medicine. Your immediate task, to become familiar with the common ailments affecting your fellow man from the moment of conception to the grave, is a formidable, indeed, an impossible one; nowhere is there a richer challenge. The deeper you delve into this most interesting of tasks the more you will be conscious of your inability to master and achieve all your aims, but do not shrink from it. "The man of character," writes Charles de Gaulle, "finds a special attractiveness in difficulty, since it is only by coming to grips with difficulty that he can realise his potentialities." And take comfort from Lord Monynihan: "The happiness of life lies in its responsibilities, the true joy in the quest for what may after a weary journey prove unattainable."

Your teachers, who are after all only students in a different grade, realise your difficulties. They know that the medical curriculum is bursting at the seams, that medicine is now far too extensive for any one doctor to grasp even the elementary aspects of the whole field. In this, as in every other medical school, committees have been working almost constantly since World War II with a view to improving and remoulding the curriculum, but when we reflect on what has been accomplished so far you may feel, as I do, that there is too much intellect around and not enough commonsense.

Reading through centuries of medical history - a pastime which I strongly recommend to all of you - one finds that the habit of relying too much on ancient authority has remained entrenched in medicine ever since early Egyptian times, when doctors were obliged to practise only according to the sacred books. Sanctions
enforcing the practice were rigorous even to the death penalty. Galenical dogma completely dominated medical thinking and teaching for over 1000 years. So men even of original mind find it difficult to loosen the shackles of tradition and disregard the authority and teaching of their respected predecessors. At the risk of engendering a good deal of opposition and unpopularity, may I suggest we break some of these traditionally binding chains?

Early in my address I mentioned how the Father of Medicine advised about cutting for stone. “I will not use the knife either on sufferers from stone, but I will give place to such as are craftsmen therein.” If he were speaking to you today I believe he would say: “Do not attempt to treat any patient whose illness you do not fully understand.” In essence this means that I am asking you all to aim at perfection in medicine, but as one man’s share of recorded medical knowledge must be either superficial or narrow, perfection must surely mean specialisation in a particular field, the narrow road may be more difficult but infinitely more satisfying.

Most young people who wish to read medicine do so because they simply want to be good doctors and few know what branch they wish to follow before the end of their first year as house surgeon. During these early formative years the student should be introduced to the widest possible experience in all branches of medicine, but his studies need only be in outline and not exhaustive. With knowledge accumulating at a terrifying pace we cannot expect you to learn it all in a few years, so limits must be set as Sir Charles Illingworth has put it: “If we cannot enlarge the curricular pint pot we must condense the quart of dogma to be poured in, we must choose some of the ingredients more carefully and get rid of the windy diluent.”

Lord Platt writes: “Human diseases leave no time for the humanities; the only culture we know is the bacteriologist’s broth.” If we are to enjoy our work and our rightful share of culture then we must organise our studies and our practice to allow of the time to do so.

History has shown that most advances come from the young; so let us give our young colleagues more voice in the shaping of their studies and future. For the enthusiastic and idealistic young entrants to the medical faculty who have gained sufficiently high passes in the requisite subjects, the first year of medicine is not only a waste of time but highly frustrating. In your own magazine you have rightly labelled it “Boredom” in capital letters. The advantages claimed that can be gained by medical students spending their early days with other faculty students are over emphasised, so let us get rid of the first year; it is a luxury no student or parent can afford.

As a keen anatomist I join with those who have already criticised the amount of time given to the basic sciences, particularly anatomy; undue emphasis in detail is neither necessary nor desirable. The long laborious hours spent in the dissecting room at this stage are mainly wasteful, particularly in these days with so many beautifully illustrated atlases and models available for study.

Students at all stages spend far too much time preparing for, worrying about and sitting examinations, cramming with facts for such occasions is not learning. One can say of so many of our successful candidates with Thomas Huxley: “They
work to pass, not to know; and outraged science takes her revenge, they do pass and they don’t know.”

The time devoted to much of our clinical teaching can also be faulted. Why, for example, do we spend hours arguing about the clinical appearances of a breast lump when histology is all important as far as the patient is concerned?

With realistic and determined pruning of the curriculum you ought to be able to qualify on broad principles in less than five years, thereafter you must study in depth. Before World War II, the great majority of doctors in these islands were general practitioners accustomed to dealing with a wide variety of ailments. Social modes change and today there is an increasing demand for specialist care, specialisation in its turn demands the need to modify our medical institutions. It has long been argued, for example, that for undergraduate teaching there are great advantages in having general wards staffed by general physicians and general surgeons. Our elders have often used this argument as an excuse to discourage the development of many of the specialities. In 1860, a surgeon appointed to the staff of St. Mary’s Hospital, London, was forced to resign for simultaneously accepting an appointment at St. Peter’s Hospital for stone. “He knows” said the Medical Committee in condemning his action, “that special hospitals in general and special hospitals for stone in particular are not only useless but worse than useless.” The attitude lingers on. Yet Sir William Lawrence, writing in 1825 of Moorfields, London, the very first specialist hospital founded by J. C. Saunders in 1804: “You may see more diseases of the eye in this institution in three months than in the largest hospital in 50 years.”

The patient’s foremost need is to be under the care of whoever has most knowledge of his kind of illness; isn’t it likewise desirable that medical students be taught only by the highest possible standards. Beside medicine can be quickly acquired if intensively taught by the right people. The modern practice of medicine demands teams of physicians, physiologists, radiologists, surgeons and pathologists working in close harmony in large units. One man, however intelligent, conscientious and well trained cannot fail to deteriorate in isolation; he needs repeated transfusions of new ideas, and to be able to discuss his clinical and other problems with his colleagues. If this great hospital is to continue to serve this city and province as it has so efficiently done in the past, then it must become fully departmentalised, the generals if and where they exist must go. To the already existing special departments we require to have gastro-intestinal, cardiac and peripheral vascular, endocrine and urological departments staffed by teams such as I have already mentioned, and providing not only exemplary care for the sick, but exemplary teaching in the undergraduate and postgraduate fields. Each should have an active research department. Such re-organisation may not at first appeal to student, house-surgeon or budding specialist, and certainly not to many of my colleagues. It is, however, my prescription for greater efficiency and excellence in the art and practice of medicine in the “Royal” of the future.

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