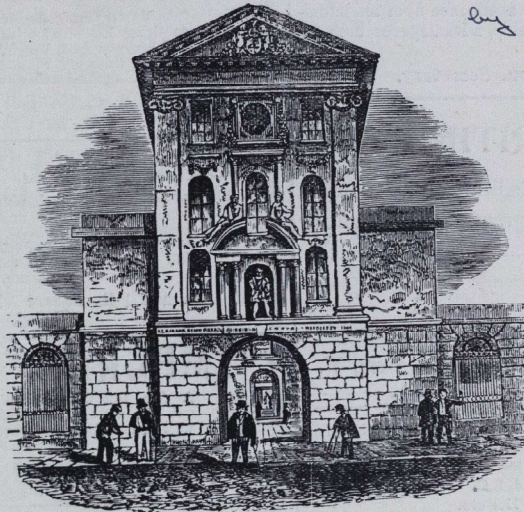


St. Bartholomew's Hospital Journal.

*Elizabethan Revival of
Surgery
by D'Arcy Power*



VOL. X.—No. 1.

OCTOBER, 1902.

[PRICE SIXPENCE.]

CONTENTS.

	<i>PAGE</i>		<i>PAGE</i>
The Elizabethan Revival of Surgery. By D'Arcy Power, F.R.C.S.Eng. ...	1	Hospital Studies. By a late H.P. ...	13
Cystitis and its Bacteriology. By G. E. Gask, F.R.C.S. ...	4	Notes ...	14
The Country Doctor: his Trials, Recrea- tions, and Rewards. By E. C. Cripps, M.R.C.S.Eng., L.R.C.P.Lond. ...	8	Dinner to Mr. Willett ...	15
Smithfield Letters.—IV ...	12	Dinner of the Cambridge Graduates of St. Bartholomew's Hospital Club ...	16
Obituary ...	12	Appointments ...	16
		New Addresses ...	16

THE BRITISH MEDICAL TEMPERANCE ASSOCIATION.

President.—PROF. SIMS WOODHEAD.
Vice-Presidents.—SIR VICTOR HORSLEY, PROF. MCKENDRICK,
PROF. SIMPSON, etc.
Hon. Sec.—J. J. RIDGE, M.D. Lond., Carlton House, Enfield.

Abstaining Medical Students are invited to join as Student Associates. No subscription or pledge required. Each receives a copy of the 'Medical Temperance Review.' The only requisite is personal abstinence from all intoxicating liquors during membership, advantageous both for work and sport.

Apply to the Hon. Secretary.

TYPEWRITING.

Special experience in Medical Work, Theses for M.B. and M.D. degrees, &c. HIGHEST REFERENCES from MEDICAL MEN and others. For Terms, write to

MISS NIELD,
42, FitzGeorge Avenue, Kensington West, W.

ST. BARTHOLOMEW'S HOSPITAL TRAINED NURSES' INSTITUTION.—The public can be supplied with thoroughly competent NURSES, trained at this Hospital.—Apply to the Superintendent, 13, West Smithfield, E.C. Telegraphic address, "Rahere, London." Telephone, 981 Holborn.

H.R.H. PRINCESS CHRISTIAN'S TRAINED NURSES.

Fully (Three years) Hospital Trained Nurses for Medical, Surgical, Infectious, Mental, Maternity, and Massage Cases

CAN BE SUPPLIED ON THE
SHORTEST NOTICE.

Apply by Telegram or otherwise to—

THE SUPERINTENDENT,

1, Clarence Villas, WINDSOR.

Telegraphic Address,
'Nurses, Windsor.'

Telephone,
Windsor, 0187.

SOME OF Taddy & Co.'s

CELEBRATED TOBACCOS.

"MYRTLE GROVE."

COOL—SWEET—FRAGRANT.

Pleasant both as a Cigarette or in a Pipe.

"At Myrtle Grove, Sir Walter Raleigh was soothing his mind with the tobacco he had brought from Virginia, when his Irish servant, thinking his master was on fire, dashed water over him."

In 1 oz. and 2 oz. Tin Foil Packets, or $\frac{1}{4}$, $\frac{1}{2}$, and 1 lb. Air-Tight Tins.

"GRAPNEL" Mixture.

A delightfully cool pipe tobacco, combining the sweetness and fragrance of the better class Virginia Tobaccos with the rich flavour of Latakia. Rather full flavoured, but an eminently pleasant mixture.

In 2 oz. and $\frac{1}{4}$ lb. Square Tins, with Plain White Label.

"IMPERIAL" Tobacco.

A ripe, full flavoured pipe tobacco, fine cut. In a good well-seasoned binar or a well coloured meerscham it will be found admirable.

In 1 oz. and 2 oz. Tin Foil Packets, or $\frac{1}{4}$, $\frac{1}{2}$, and 1 lb. Air-Tight Tins.

"ORBIT" Brand.

A sweetened tobacco, manufactured in bond, of mellow flavour, medium cut. Essentially a pipe tobacco, and a very excellent one.

In 1 oz. and 2 oz. Tin Foil Packets, and $\frac{1}{4}$, $\frac{1}{2}$, and 1 lb. Tins.

"PREMIER" Navy Cut.

A first class pipe tobacco, sold in three strengths, Mild, Medium, and Full, thus pleasing all classes of pipe smokers.

In 1 oz. and 2 oz. Tin Foil Packets, and 1 oz. and 2 oz. Enamelled Tins, and also in 2 oz., $\frac{1}{4}$ lb., and $\frac{1}{2}$ lb. Air-Tight Tins.

"RAMPART" Mixture.

Mildness combined with coolness. Does not bite the tongue nor leave a bitter flavour in the mouth. A very successful blend for a smoker who desires a reasonably mild tobacco.

In 1 oz. and 2 oz. Tin Foil Packets, and 2 oz. and $\frac{1}{4}$ lb. Tins.

TADDY & CO. (Established 150 Years), MINORIES, E.

St. Bartholomew's Hospital



JOURNAL.

VOL. X.—No. 1.]

OCTOBER, 1902.

[PRICE SIXPENCE.]

NOTICE.

All Communications, Articles, Letters, Notices, or Books for review should be forwarded, accompanied by the name of the sender, to the Editor, ST. BARTHOLOMEW'S HOSPITAL JOURNAL, St. Bartholomew's Hospital, Smithfield, E.C.

The Annual Subscription to the Journal is 5s., including postage. Subscriptions should be sent to the MANAGER, W. E. SARGANT, M.R.C.S., at the Hospital.

All communications, financial or otherwise, relative to Advertisements ONLY, should be addressed to J. H. BOOTY & SON, Advertising Agents, 30, Holborn, E.C.

A Cover for binding (black cloth boards with lettering and King Henry VIII Gateway in gilt) can be obtained (price 1s. post free) from MESSRS. ADLARD AND SON, Bartholomew Close. MESSRS. ADLARD have arranged to do the binding, with cut and sprinkled edges, at a cost of 1s. 6d., or carriage paid 2s. 3d.—cover included.

St. Bartholomew's Hospital Journal,

OCTOBER, 1902.

"Æquum memento rebus in arduis
Servare mentem."—Horace, Book ii, Ode iii.

The Elizabethan Revival of Surgery.

By D'ARCY POWER, F.R.C.S. Eng.



SHORT account of the progress of surgery in London is the easiest way to understand the great revival which took place in this branch of medicine during the reign of Elizabeth, a revival which converted surgery from a business into a profession, and was yet so temporary that it left but two surgeons to carry on its traditions through the seventeenth century.

Two surgical guilds had existed in London from the earliest times recorded in the annals of the City: a civil body—the Guild of Barbers; and a fellowship recruited from the military surgeons—the Fraternity of Surgeons. The Barbers' Guild contained two groups of members: the Barbers proper, who also let blood and

drew teeth; and the Barbers exercising the faculty of surgery. The Barbers, being stay-at-home people who attended the City magistrates when they were ill, soon became a numerous body, of sufficient importance to be incorporated as the Barbers' Company in the year 1462, whilst the Fellowship of Surgeons remained few in number; and though they had great interest with the king and the nobles, they only used it intermittingly, for many of the members were often away from London.

Foremost amongst this small body of men was Thomas Morstede, surgeon to Henry IV, Henry V, and Henry VI, who served as the king's surgeon at Agincourt in 1415. Morstede had a long and prosperous career, and was buried in the church of St. Olave Upwell in the Jewry, in 1450, leaving to "Roger Brynard, my apprentice, ten marks sterling (50 13s. 4d.), meum librum Anglicanum ligatum cum duabus latitudinibus, omnia instrumenta mea Chirurgie, cum omnibus suis pertinentibus, meum cornu argenteo ornatum et meum magnum pyxidem argenti. (My liber Anglicus fastened with two straps, all my surgical instruments and appliances, my drinking-horn mounted in silver, and my large silver plaster case.)"

If we except John of Arderne—and after all he was only a tradesman—we owe to Morstede the first serious attempt to make surgery a profession in London, for he took a leading part in the formation of a conjoint faculty of medicine and surgery, which was nearly five hundred years in advance of its time. The scheme of the faculty is preserved in a petition to the Mayor and Aldermen, dated 15th May 1423. The petition prays that all physicians and surgeons practising in London may be considered as a single body of men governed by a Rector of Medicine with the help of two Surveyors of the Faculty of Physic, and two Masters of the Craft of Surgery. There was to be a common place of meeting, consisting of three separate houses at the least: one fitted with desks for examinations and disputations in philosophy and medicine, as well as for the delivery of lectures; the second house for the use of the physicians; and the third for the convenience of the surgeons. The Rector of Medicine, when he was in London, was to act as president and ruler at the meetings in either house; but if he were absent each faculty was to act as a separate body, the physicians by themselves, and the surgeons by themselves.

The rector, the two Surveyors of Physic, and the two Masters of Surgery were to be re-elected yearly, and were then to be presented to the Mayor and Aldermen to be sworn to the due performance of their duties. The Rector of Medicine was to be a Doctor of Physic and a Master of Arts and Philosophy, or at the least a Bachelor of Physic of long standing. But if no such person could be found the faculty of medicine was to be governed by the two surveyors only, and in like manner the surgeons by their two masters. No one was to be chosen rector, a Surveyor of Physic, or a Master of Surgery unless he had been born within the realm of England, and an effort was to be made to choose for each office the wisest, ablest, and most discreet persons of mature age.

No surgeon was to be allowed to practise in London unless he had been examined by the rector, the two Masters of Surgery, and the majority of the craft, after which he was to be licensed by the Mayor and Aldermen, under penalty of 100 shillings fine.

Every surgeon called upon to treat a case which seemed likely to end in death or permanent dismemberment was obliged to call into consultation the Rector of Medicine or one of the Masters of Surgery within three days of his first attendance, and a like course

was to be taken by every surgeon before he performed any serious operation. This regulation was made in the interests of the surgeon as well as of the patient, for it is expressly laid down that the rector, surveyors, and masters shall be always ready to attend the consultations without any fee, under pain of twenty shillings. But the Rector of Medicine is to give no opinion in a surgical case without the consent of the Masters of Surgery.

A surgeon duly convicted on credible evidence of malpraxis or of infamous professional behaviour was to be brought before the Mayor, who should punish him with fine, imprisonment, or "puttyng him out from all practice in chirurgery for a tyme or for evermore after the quantite and qualite of his trespass."

A patient needing a surgeon, who had fallen into such poverty that he was unable to pay a fee, was to appeal to the rector and the Masters of Surgery, who would assign him a good practitioner, "busily to take heed of him without exence."

The rector, the two Surveyors of Physic, and the two Masters of Surgery, associating with themselves two apothecaries, were to search the shops of suspected apothecaries for adulterated drugs. If the drugs were found impure or rotten they were thrown into the street to be trampled underfoot, and the apothecary was haled before the Mayor. This curious right of search was afterwards given to the Royal College of Physicians of London, and was an established custom rigorously carried out as late as 1830, when the four censors of the Royal College of Physicians visited not only the apothecaries' shops, but the warehouses of the wholesale druggists and the vendors of patent medicines.

The petition of the physicians and surgeons was duly granted on 28th May, 1423. Master Gilbert Kymer was sworn before the Mayor and Aldermen as rector of the Faculty of Medicine, with Thomas Morstede and John Harwe, the king's surgeons, as the Masters of Surgery. But it was not until 27th September, 1423, that Master John Sumbreshele and Master Thomas Southwell were presented and sworn as supervisors of physic, Dr. Gilbert Kymer being again appointed Rector of Medicine on that day.

Dr. Gilbert Kymer was educated at Oxford in Durham College, whose site is now occupied by Trinity College. He was a Master of Arts, a Bachelor of Law, and a Doctor of Physic before 1420. He acted as a Proctor of the University in 1412-13, being at that time Principal of Hart Hall. He was presented to the living of Lutterworth in Leicestershire whilst he was still a layman. He was Dean of Wimborne Minster and Treasurer of Salisbury Cathedral in 1427, yet he was not ordained a sub-deacon until 28th February, 1428, and in 1434 he was presented to St. Martin's, Vintry. He was Chancellor of the University of Oxford from 1431 to 1433, and again from 1440 to 1453, and in that capacity he was constantly begging for money and materials to complete the building known to us as the Divinity School. Some of his begging letters are very amusing instances of the shifts to which the University was put to obtain money; thus there is one addressed to the Master of St. Thomas's Hospital in London, in which the University, by the hand of Dr. Kymer, "confidently begs that you will intercede for us with the wealthy citizens of London that they may assist us in building the new schools, and that you will advise our Chancellor how to cast his net on the right side of the ship when he applies to them for assistance."

For a long time Dr. Kymer held the office of physician to the household of Humphry, Duke of Gloucester, uncle of Henry VI, and from 1439 to 1446 Duke Humphry, presumably at the instigation of his physician, made gifts of books to the University. These gifts were afterwards increased by similar gifts from the same library, obtained by the good offices of Master John Sumbreshele, or Somerset, who was also the Duke's physician, and one of the Surveyors of Medicine. These books, with a few which had belonged to Bishop Thomas Cobham of Worcester, formed the nucleus of the first University library which was of sufficient importance to require a local habitation. The library increased so rapidly that a keeper was appointed in 1513, but it was sold and destroyed by the King's Commissioners in 1550. For thirteen years the library lay desolate, until it was at length refounded by Thomas Bodley. It may, therefore, be said fairly enough that Dr. Kymer belongs the honour of founding the first public library in Oxford, and the profession of surgery in London. He became Dean of Salisbury in 1449, but continued to practise medicine, for he was summoned to Windsor in June, 1455, to attend Henry VI during the fit of imbecility which attacked him soon after the first battle of St. Albans. This is the last event in the life of Dr. Kymer which has been traced. He died in 1463.

So long as the coalition of the physicians and surgeons of London

lasted, it was formidable to the Guild of Barbers, for the College chose to exercise its penal powers on the Barbers who practised surgery, alleging that they were ignorant and unauthorised practitioners. The Barbers became alarmed, and realising their danger obtained in 1425 a confirmation of the power to practise surgery which had been granted them in 1415 during the mayoralty of Thomas Fauconer, "notwithstanding the false accusation of the Rector and Overseers of the Physicians and the Masters of Surgery."

We have no means of knowing how long the conjoint faculty of medicine and surgery lasted in London. The City records contain no notice of the swearing-in of a Rector of Medicine after September 27th, 1424, nor is there any other indication of the continued existence of a conjoint college after 1425. Dr. Kymer was transferred to the west of England in 1428, and Morstede probably took part in the more active military operations in France when the Earl of Salisbury invested Orleans. The guiding hands of Kymer and Morstede being thus removed, the physicians and surgeons may have ceased to work harmoniously, and the partnership was dissolved, not to be again renewed until 1883, when the Royal College of Physicians of London agreed to act with the Royal College of Surgeons of England, and it became compulsory for every student to be examined in each of the main branches of his profession before he was allowed to practise either medicine, surgery, or midwifery.

The two bodies of physicians and surgeons seem to have gone each their own way after the separation. Little is known about the physicians from 1427 until they were incorporated in 1518 by letters patent of Henry VIII as the President and College of Physicians of London, at the solicitation of Thomas Linacre, and on the recommendation of Cardinal Wolsey. The surgeons steadily pursued their plan of consolidating the craft, and in 1435 they appear as an established body with a code of laws for the government of their society. They consisted at this time of seventeen persons, of whom Thomas Morstede is mentioned last, whilst Thomas Bradwardine, his old companion in arms at Agincourt, is first on the list. The ordinances still exist at the Barbers' Hall as a little quarto book written on vellum. They enact that every member was to help his fellow so far as in him lay, and it was most strictly ordained that none should flech another's patient. The members of the guild had authority to take apprentices, who were to be made free of the fellowship after serving their indentures for six years; or if any apprentice proved unsatisfactory he was allowed a second term of six years, when "if he be not found in these twelve years well adapted in the manner aforesaid, he is never to be chosen a master surgeon."

The guild received a charter of incorporation in 1462, and in 1492 it obtained a grant of arms. At this time, too, it was living peacefully with the Barbers' Company, for in 1495 the two bodies entered into a Composition which is dated May 12th, and is signed by representatives of each society. The Composition recognised the independence of the two fellowships of "surgeons enfranchised within the City of London," and of "barber-surgeons and surgeons barbers enfranchised in the said City." It was agreed that neither body should admit any one, except a regular apprentice, to practise surgery without the consent and knowledge of the other; and to ensure this being carried into effect every stranger seeking a licence to practise in London was to be presented to the Mayor by the four Wardens of the two guilds. Dangerous and doubtful cases were to be brought under the notice of the four Wardens, instead of, as heretofore, coming only under the observation of the two Wardens. The friendly feeling still remained in 1513, when the Surgeons' Guild applied to Parliament to be "discharged of constableness, watch, and all manner of office bearing any armour, and also of all inquests and juries within the City of London;" and the guild prays that this exemption may extend to all barber-surgeons admitted and approved to exercise the mystery of surgery. We hear no more of the Guild of Surgeons until 1540, when they were formally united with their old competitors and more numerous rivals, the Incorporated Barbers, to form the United Company of Barbers and Surgeons, an alliance which continued until 1745, when the two bodies were separated, the Surgeons to form the Surgeons' Company, from which is descended the present Royal College of Surgeons of England, whilst the Barbers still exist as the Barbers' Company in Monkwell Street.

The Barbers had much ado to vindicate their privileges in the early part of the sixteenth century, for the country swarmed with quacks and unlicensed practitioners, who owed allegiance neither to Surgeons' Guild nor Barbers' Company. The prestige of the Company, too, received a severe blow in 1511, when an Act of Parliament transferred the approbation and licensing of surgeons in London to

the Bishop of London and the Dean of St. Paul's, and to the bishops and their vicars-general in various parts of the country. But the Act speedily became unpopular, and was amended by another still more retrograde, for it made it lawful "to any person being the King's subject, having knowledge and experience of herbs—by speculation or practice—to minister in and to any outward sore or wound according to their cunning." This Act remained in force until 1540, when the United Company of Barbers and Surgeons was called into existence, and there can be but little doubt that its effect was to flood the country with quacks. By so doing it acted most injuriously on the practice of surgery, for it led the Barbers' Company to lower the standard of knowledge demanded of candidates for its licence, and in some cases quacks themselves were allowed to buy the licence of the Company on very easy terms as regards their professional knowledge.

From very early times, too, in England the surgeons had felt it a grievance that they were not allowed to take complete charge of their patients. They were looked upon merely as craftsmen, able indeed to wield the knife and saw, but wholly incapable of ordering medicine or regulating the diet of those upon whom they had operated. A physician had to be called on every occasion if more than a trifling change was required in the regimen or medicine, and the surgeon was thus kept in a wholly subordinate position. The better class of surgeons felt this to be an intolerable hardship, and next to the due regulation of unlicensed practitioners they devoted themselves most actively to promote the unity of medicine and surgery. But the power of the physicians was too great, and instead of being able to free themselves the surgeons were soon in a worse plight than before. In June, 1622, the College of Physicians procured an Order in Council with a clause to the effect that "no chirurgeon doe either dismember, trephan the head, open the chest or belly, cut for the stone, or do any great operation with his hand upon the body of any person, but in the presence of a learned physician, one or more of the College, or of His Majesty's physicians."

The Order was rescinded in 1635, but it was not until after the year 1800 that a hospital surgeon was allowed complete control of his cases.

Surgery was thus a mere trade in London, but throughout the reign of Elizabeth a determined attempt was made to elevate it into a profession by a band of men to whom we must ever be grateful, and to whose work I wish to direct your attention more particularly this evening. Some of the members of this band lived in London, others in the provinces. The Elizabethan revival of surgery, therefore, is truly English, and not a revival in London like that inaugurated by Kymer and Morstede a hundred years before.

The best known members of the Elizabethan band of surgeons were Thomas Gale, William Clowes, John Halle, John Read, and John Banester. Gale and Clowes were well known to their contemporaries, for they held high office in the United Company of Barbers and Surgeons. Halle practised in Kent, and Read lived at Gloucester, whilst Banester was first at Nottingham and afterwards in London. All, with the exception of Read, who married John Banester's daughter Cicely, had seen service either in the army or navy. They were thus bound together by the ties of good fellowship, and their service abroad had opened their eyes to the degraded state of surgery in England. It is difficult to trace the beginning of the revival, but it appears to have begun with Richard Ferris, Serjeant-Surgeon to Queen Elizabeth, who wrote nothing, but exercised a powerful influence for good over his fellow-surgeons. The methods of reform adopted at first were rough, and the reformers rarely measured the terms of their abuse; but their methods were suited to the times, and it must be remembered that they had often to deal with the very lowest of the population.

Thomas Gale was the senior in point of years. He was born in 1507, and died in 1587. He was apprenticed to John Field and to Richard Ferris, Serjeant-Surgeon to Queen Elizabeth, from whom he seems to have learnt his zeal for the profession. Gale practised as a young man in London, then he served at Montreuil, in 1544, in the army of Henry VIII. He was at the battle of St. Quentin with Philip II of Spain in 1557, when Ambroise Paré in the French army was dressing the wounds made by the English. Guise took Calais in the following year, and the war being ended, Gale returned to London, and was Master of the United Company of Barbers and Surgeons in 1561. The only record of his mastership is that there was a great shooting match of the Company for a supper, and they had Hall, and Master Gale and his side won the supper, and they had six drums playing and a flute, as Master Machyn tells us in his diary. Gale seems to have been a straightforward surgeon, who tried to advance his art in a threefold manner: (1) by eliminating

quacks; (2) by enforcing a higher standard of education; (3) by protecting surgery against the encroachments of the physicians.

Gale's first picture of the degraded state of surgery due to the abundance of quacks is drawn at Montreuil. He says, "I remember when I was in the wars at Montreuil in the time of the most famous prince King Henry the VIII, there was a great rabble there that took upon them to be chirurgions; some were saw-gelders, some were horse-gelders, with tinkers and cobblers. This noble sect did such great cures that they got themselves a perpetual name, for like as Thessalus' sect were called Thessalians, so was this noble rabble for their notorious cures called Dog-leeches, for in two dressings they did commonly make their cures whole and sound for ever, so that they neither felt heat nor cold, nor yet no manner of pain after: but when the Duke of Norfolk, who was then General, understood how the people did die, and that of small wounds, he sent for me and certain other chirurgions, commanding us to make search how these men came to their death, whether it was by the grievousness of their wounds or by lack of knowledge of the chirurgions; and we, according to our commandment, made search throughout all the camp, and found many of the same good fellows which took upon them the names of chirurgions, not only the names, but wages also. We, asking of them whether they were chirurgions or no, they said they were. We demanded with whom they were brought up; and they, with shameless faces, would answer either with one cunning man or us a pot or a box which they had in a budget, wherein was such trumpetry as they did use to graze horses' heels withal, and laid upon scabbed horses' backs, with nerval and such like. And others that were cobblers and tinkers, they used shoemaker's wax with the rest of old pans, and made therewithal a noble salve, as they did term it. But in the end this noble rabble was committed to the Marshalsea, and threatened by the Duke's grace to be hanged for their worthy deeds, except they would declare the truth what they were and of what occupations, and in the end they did confess as I have declared to you before. Whereupon the Duke's grace gave commandment that they should avoid the camp in pain of death, and if at any time they came within the camp afterward they should immediately be hanged as murderers, his Grace calling them by the name of dog-leeches, commanding his captains that they should entertain no more such."

Matters, however, were but little better more than twenty years later, for he says, "In the year 1562 I did see in the two hospitals of London called St. Thomas's Hospital and St. Bartholomew's Hospital to the number of 300 and odd poor people that were diseased of sore legs, sore arms, feet, and hands, with other parts of the body so sore infected that a hundred and twenty of them could not be recovered without loss of a leg or an arm, a foot or a hand, fingers or toes, or else their limbs crooked, so that they were either maimed or else undone for ever. All these were brought to this mischief by witches, by women, by counterfeit javils, that took upon them to use the art, not only robbing them of their money, but of their limbs and perpetual health. And I, with certain others, diligently examining these poor people, how they came by these grievous hurts, and who were their chirurgions that looked unto them, and they confessed that they were either witches, which did promise by charms to make them whole, or else some women which would make them whole with herbs and such like things, or else some vagabond javil, which runneth from one country to another, promising unto them health, only to deceive them of their money. This fault and crime of the undoing of this people were laid unto the chirurgions—I will not say by part of those that were at that time masters of the same hospitals,—but it was said that carpenters, women, weavers, cobblers, and tinkers did cure more people than the chirurgions. But what manner of cures they did I have told you before—such cures as all the world may wonder at; yea, I say such cures as maketh the devil in hell to dance for joy to see the poor members of Jesus Christ so miserably tormented.

"What shall I say hereunto, but lament and pray unto our Lord Jesus Christ for His precious blood-sake that He shed upon the cross to illuminate the hearts of the magistrates for amendment hereof. And that this rabblement of runagates, with witches, bawds, and the devil's soothsayers, with tinkers, cobblers, and saw-gelders, and all other their wicked cohorts, of these same devilish and wicked sects, which doth thus abuse this noble art of medicine to the utter defacing of the same, may be reformed and amended, and every one to get their living with truth in the same arts that they have been brought up and well exercised in, either else to be grievously

punished as they be in all other countries, and as they have been here in this country in times past."

It is clear that Gale had a high reverence for his work, for at a time when he confesses that "few who have well brought up their son will put him to the art of surgery, because it is accounted so beggarly and vile," he says that "the chirurgeon must also in these his operations observe six things principally. First, that he doth it safely, and that without hurt and damage to the patient. Secondly, that he do not detract time or let slip good occasions offered in working, but with such speed as art will suffer, let him finish his cure. Thirdly, that he work gently, courteously, and with so little pain to the patient as conveniently you may, and not roughly, butcherly, rudely, and without a comeliness. Fourthly, that he be as free from craft and deceit in all his workings as the east is from the west. Fifthly, that he take no cure in the hand for lucre or gain's sake only, but rather for an honest and competent reward, with a godly affection to do his diligence. Last of all that he maketh no warranty of such sicknesses as are incurable, as to cure a cancer not ulcered, or elephantiasis confirmed, but circumspectly to consider what the effect is and promise no more than art can perform; and you shall do these things much the better (yea, without these you cannot anything profit your patient) if you understand the manner and exact ways of making tents, splines, stuphes, bolsters, and convenient rollings."

Addressing the young surgeons of his own day he says, "I pray you remember that ye be very studious in this art, and diligent and neat in the practising thereof; and also to be modest, wise, and of good manners and behaviour, and that you lack none of these good properties that we have spoken of before, lest when you shall be called for in the time of necessity, to serve princes and other noble persons, ye do not only dishonour yourselves and your country, but this worthy art also. Remember, I pray you, what great charge is committed unto you in the time of wars. Ye have not only the charge of men's limbs, but also of their lives, which if they should perish through your default, either in neglecting of anything that were necessary for their health, which you ought to be furnished withal, either else through lack of knowledge which ye ought to have in your art—I say, if these defaults be in you and the people perish in your hands you cannot excuse yourselves of your brother's death."

Speaking of the decay of surgery, he says, "The princes with their people are not only evil served—and sometimes not served at all,—but the noble art of chirurgery is utterly overthrown and brought to ruin, and the true professors thereof at this day be so few in number that it is to be wondered at. I have myself in the time of King Henry VIII helped to furnish out of London in one year, which served by sea and land, threescore and twelve chirurgions which were good workmen and well able to serve, and all Englishmen. At this present day there are not four-and-thirty of all the whole company of Englishmen, and yet the most part of them be in noble-men's service, so that if we should have need I do not know where to find twelve sufficient men. What do I say! sufficient men? Nay, I would there were ten amongst all the Company worthy to be called chirurgions, and let the rest do such service as they may; for if there be need of service, I think their chirurgery shall appear to some man's grief and pain."

Gale was in advance of his time because he had a clear perception of the unity of medicine. Until about 1850 the training of a surgeon was wholly distinct from that of a physician, and so far as might be the two branches were kept as separate as possible, the physician maintaining that the surgeon was merely his servant, whilst the surgeon strove as far as in him lay to emancipate himself and to do without the aid of the physician in the treatment of his cases. Yet Gale very wisely observes, "But for to counsel with the physician, being a grave and a learned man in the principles of this art—in matters of weight,—I take it to be very necessary; for what is he that is wise that will refuse the counsel of a wise and learned man, and specially of him that possesseth the principles of the same art? for physiologia, whereof the physician taketh his name, is the first and chiefest part, which he that worketh in the art of medicine doth prove, for that it doth consist in the knowledge of the seven natural things, and in the residue thereunto appertaining. But yet this doth not follow that a learned and expert chirurgeon should not use diet and purgations and other inward medicines at all times when need doth require. For if you would so understand it, one part of their sayings should so repugn against another and so confound the whole, but their meaning was that the unlearned chirurgions, and those that be young men, which be not well practised, that they should take counsel as well as of the learned

physician as of the learned chirurgeon, for this art is so joined together that neither may the parts be divided, neither yet the instruments, without the overthrow and destruction of the whole art."

And in another place he continues the same argument, saying, "Thus I do conclude that these three instruments—the use of the hand called *chirurgia*, convenient diet called *dieta*, and the ministering of convenient medicaments named *pharmacoa* or *medicines*—are most necessary for those men that shall cure hurts, griefs, and diseases, and in no case may be separated or taken from them. For like as the carpenter and shipwright must of necessity use like instruments to finish and bring to pass their work withal, even so must the artists in this art, by what name soever you will call them, have and use convenient instruments to bring to pass the desired health, which is the end of this art. If the carpenter should say unto the shipwright, thou must not use the axe, the saw, the piercer, nor yet the hammer, for that they be proper instruments for my art: then the shipwright might answer him and say, they be proper for my art also, and without these instruments I cannot build my ship, nor bring to pass the desired end of my art. Even in the like manner it may be said in the art of medicine, for whether he be called by the name of a physician, or by the name of a chirurgeon, or by the name of a leech, or by what other name you will call him, if ye will admit him to cure wounds, tumours against nature, ulcers, or what diseases soever they be, it is necessary that he have his proper instruments apt and meet to bring the same to pass withal. . . . The chirurgions ought not to be forbidden neither the ministering purgations, nor yet of diet, forasmuch as they be their chief and principal instruments, without which they cannot bring to pass their desired scope of health."

(To be continued.)

Cystitis and its Bacteriology.

By G. E. GASK, F.R.C.S.

MR. PRESIDENT and Gentlemen,—The object of this paper is to give a short account of our knowledge at the present time of the subject of cystitis and its causation.

Historical survey.—At the beginning of the nineteenth century very vague notions were held concerning the causation of cystitis. The ammoniacal decomposition of urine was put down to a purely chemical process acting through the medium of certain unorganised ferments, such as mucus, pus, and extractives. Pasteur, in 1860, was the first to make the great discovery that the decomposition of urine was due to the action of micro-organisms, and so lead the way to a proper study of the disease.

His theories were at first supported by many followers, but they had very many opponents. The action of micro-organisms outside the body was admitted by these, but they would not admit their action in the bladder during life.

It was not for twenty-five years that the microbic theory was generally admitted, and that more advanced work began to be done.

By a large number of the opponents to the microbic theory the cause of cystitis was held to be such things as retention of urine or traumatism, circumstances which we now recognise only as predisposing factors. For several years after the microbic theory was well established very little was made out, for bacteriological methods were very imperfect. Without making cultures and getting pure cultivations of the different varieties of micro-organisms one could not give any definite opinion as to the exact species of bacterium which was causing the disease.

A great impetus was given to the study by the introduction by Koch of the method of making plate cultures. By this means the different growths could be separated and distinguished, and so a deeper and more accurate insight into the disease was gained.

Bumm, in 1886, was the first to make use of Koch's plate cultures for the investigation of eight cases of cystitis in puerperal women. These were all cases of cystitis following catheterisation, and the urine was acid and contained pus. In each he isolated an organism of the diplococcal form, cultures of which grew like the *Staphylococcus pyogenes aureus*. Pure cultures of this organism injected into the bladders of goats and dogs produced no cystitis, but after injury to