THE FOUR APOSTLES OF SURGERY: AN HISTORICAL SKETCH.

*Being the Address at the Annual Meeting of the Glasgow and West of Scotland Branch of the British Medical Association.**

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At the end of the fifth century, worn out by sensuality and internal disintegration more than by age, paralysed by internal dissensions and the weakness of satiety, the Roman empire received her *coup de grace* from the vigorous Northmen. Degenerated and contemptible as Rome latterly became, still what there was of science dwelt within her walls, and was well-nigh extinguished as she was overthrown. In her colonies, and especially at Alexandria, some life still remained. Though the great heart was still, the limbs quivered. "The Dark Ages", however, descended like a pall when the mistress of the world disappeared, and continued till the thirteenth century. What knowledge existed was alone found among the Arabs or Saracens, who, securing the Greek authors in their conquests, translated them into their own language. They deserve our gratitude for thus preserving the ancient literature and keeping alight the sacred fire. Their writers—Rhazes, Geber, Avicenna, Avenzoar, Serapion, Haly-Abbas, Averroes, and, before all as regards surgery, Albucasis—were at best copyists, commentators, and occasionally mutilators of the Greek authors, and did almost nothing for the advancement of medicine—"when the Greek ceased to communicate the Saracen ceased to advance" either in philosophy or medicine.

Albucasis used the immovable apparatus in fractures, and did most things with that cautery which we now again so much, but more legitimately, employ. The Arabs introduced senna and rhubarb as purgatives in place of hellebore, and they also first used musk, carbonate of soda and potash, the mineral acids, alum, corrosive sublimate, etc. The great popularity enjoyed for long by the Jews as physicians arose from their knowledge of Arabic, and hence of the Greek fathers.

Bagdad and the Saracen kingdom fell before the Turks in the thirteenth century, and we have to turn elsewhere for the centre of the learning of the time. That men, even in that dark and unfavourable period, parched for knowledge is well proved by the extraordinary enthusiasm with which some sought for it. Constantine, a native of Carthage, as the story is told, in the eleventh century, made the long and arduous journey to the Euphrates valley and further India, seeking from every source for medical information. After the sore travel of forty years, he was rejected as a sorcerer by his native city and cast out. Salerno received him, and in return he bestowed on her those treasures which he had acquired, re-translating into Greek the Arabian classics. Thus arose the first, and for long the most renowned, medical school in Europe, a school to which the returning Crusaders were wont to add their hard-earned experience. At Salerno, degrees in medicine were first bestowed, and the custom of the temples of crowning the student at the end of his curriculum with laurel was afterwards changed into the use of a cap, a practice which is followed, as you all know, in our own universities.

The early physicians had, in some respects, an advantage over our modern practitioners, as we find they took an oath to receive no fee from a poor man, and to take no part of the profit derived from the sale of drugs. Would it were so still!

As learning slowly awoke, the great universities became established. Bologna led in the twelfth century, and afterwards those of Italy, France, Spain, Great Britain, and Germany followed, for the most part, in rapid succession. Students crowded to learn, so that in some of the university towns the gownsmen exceeded in number the other inhabitants. Roger Bacon and Lanfranc, during the thirteenth century, did much for medicine in England and France.

The Church again associated itself closely with medicine. During the middle ages, the physicians were nearly all in holy orders. Popes and councils could not divorce the unnatural compact nor altogether hinder the priests from shedding blood. It was, however, in order to secure the services of laymen to bleed and do the lesser operations of surgery that the physicians introduced the barbers into the citadel—a traitorous step which exacted a heavy penalty. The short razor which

the barbers used both in their special craft and in surgical operations is represented by the straight bistoury which we all employ. In every country in Europe, they acted as a disturbing force in the upheaval of surgery; but, in France, during the fifteenth and sixteenth centuries, they occasioned most annoyance. There many a fierce fight, not with words alone, but also with enraged hands and lethal weapons, took place between the surgeons of the long and the short robe, as they were respectively called, and much discredit and scandal to surgery were thereby occasioned. I am not aware when the connection between the barbers and surgeons was dissolved in France, but in England it occurred in 1745, and in Scotland in 1722, while it subsisted in Spain up to 1863. I may say in passing that apothecaries and grocers were incorporated in England by James I, and pastrycooks had the sole right to sell drugs at one time in France and Germany, as the surgeons in Scotland had to vend "*aqua vitæ*".

One section of the barber-surgeons in France were called "cutters" or operators, and they alone undertook such operations as lithotomy, herniotomy, and the removal of cataract. Fractures and dislocations were assigned to a special sub-class. These cutters were as a body rough, ready, and somewhat reckless. They were a sort of surgical bagmen, who travelled about seeking employment. They carried various antidotes and appliances in their wallet, and were glad to engage themselves by the job or for a certain period to any individual or corporation who agreed to pay them. From them came the brass basin and striped pole which still often marks the shop of the barber. The colours on the pole, and also those red and blue bottles which distinguish the apothecaries' windows, were suggested by the colour of the blood, and the white stripe on the pole represented the bandage. From the ranks of this illiterate and almost degraded class, however, sprang some of the most distinguished men of the time—Frère Jacques and Frère Côme, Franco, and, before all, Ambroise Paré, were barber-surgeons and "cutters". Up to very recent times, the learning of the profession (which chiefly consisted in being able to read bad Latin and write worse) was credited to the physicians, and to them belonged the duty of teaching anatomy to the surgeons. I understand that the charter of the Royal College of Physicians of London gives to the Fellows of that learned body the right to perform surgical operations.

Just before the sixteenth century, surgery had reached the lowest depths. The priesthood had so shackled its limbs that it was powerless to advance. All the professors of medicine in the Italian universities were in orders, and priests alone were eligible for degrees. Nay, more; the possession of the tonsure was requisite to the mere study of medicine in many of the great schools. Some of the most celebrated physicians of the time held high Church preferments, and thus theology and medicine were so conjoined as to lead to endless difficulties in the progress of both departments of knowledge.

In the charter of the College of St. Côme, secured by Pitard's influence in the fifteenth century, it is expressly stated that the practice of surgery had fallen into the hands of "murderers, thieves, coiners, spies, deceivers, and usurers"; and, in Germany, an artisan would not take an apprentice who was related to a barber, bathman, or butcher.

In the enormous flood of evil which has flowed in on the profession during past ages from empirics and charlatans, it would be wonderful if no grain of good had occasionally been cast up. It cannot be denied that, at long intervals, real improvements and discoveries have been made by irregular practitioners. Thus it was that plastic surgery was advanced during the fifteenth century in Italy by the Brancas (father and son), who performed with wonderful address those remarkable operations which, being described during the following century by Taliacotius of Bologna, often go by his name. The Norsini, too, for several generations, were distinguished for their success in lithotomy and in radically curing hernia. This last named operation appears to have attracted much attention during these times, and such atrocious expedients as sewing the testicle into the canal, excising that gland and the cord, laying open the sac, and applying the cautery, were among the measures employed.

In the fourteenth century, and long afterwards, Montpellier was the leading school of medicine, and that partly because of the fostering care of the Popes while resident at Avignon, and perhaps mainly from the rich store of Arabian manuscripts the university had acquired, and which in these days, before printing was invented, was in itself a sufficient claim to distinction. It was there that the celebrated Guy de Chauliac taught. For two hundred years, his *Chirurgia Magna* was the text-book of the schools, and contained many important practical lessons. He used metallic sutures, united tendons as we are beginning again to do, compressed exuberant granulations by metallic plates, and cut subcutaneously various structures. His book is, however, far from being free from the ridiculous superstitions of the time in which he

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lived. He tells us that, when he studied under Mundinus at Bologna (he who first systematically taught human anatomy), the whole subject was comprised in four demonstrations. In one was explained the nutritive organs, in another the spiritual, in a third the animal, and, lastly, the extremities.

I must pass over the names of many men of some mark, in both general and special surgery, who taught in Italy during the period of which I have been speaking, and my time will not allow of any reference to the institution, at that time, of examinations on entering the profession in France; but I must allude to the uprise of surgery in England, where now it began to make some head. The close connection which then existed between France and England caused English surgeons to study at the then celebrated French schools; and thus it came about that John of Gaddesden, John of Arderne, and our own Peter Lowe received their professional instruction in France. The first two lived in the fourteenth and the last in the sixteenth century. From that date till Woodall, at the beginning, and Wiseman, at the end of the seventeenth century, appeared, there was no surgeon of any note in England. Wiseman was evidently both an able and polished man, but, like the rest, he believed in the Royal touch, used red-hot knives to amputate limbs, and the cautery to arrest bleeding.

Interspersed through the writings of various authors, in the fifteenth and sixteenth centuries, are some curious illustrations of the truth of the Preacher's lamentation: "Is there anything whereof it may be said, See, this is new." John de Vigo dressed his stumps with cotton, as Guérin is now advocating. Carpi used mercurial inunction, as Sigmond has strongly recommended. Paracelsus subcutaneously divided varicose veins, and tried to close them by the cautery. Arculanus ligatured the veins at two points in varicocele, and removed a portion of the vessels between. Sponge was administered in goitre. Paré, during the latter part of his career, treated wounds with alcohol to render them non-absorbent, as the French surgeons have again been doing these last few years. Montagnard recommended the head and shoulders of the patient to be lowered when the taxis was employed. Allartons's median operation is just the old Marian, with better means of dilating the wound; while, as regards acupressure, Archigenes of Apamea, as far back as the first century, put a needle below the blood-vessel and fixed it to the flesh—a plan revived by Guillemeau in the sixteenth century, and in our own day by the lamented Sir James Simpson.

Before the period usually described as the revival of letters, the ancient Greek and Latin authors were discovered in various quarters, and had come to be studied in their original language. The works of Celsus appeared before those of Hippocrates and Galen, and they gave a great impulse to medical education. The long dawn at last culminated in the full brilliancy of the sixteenth century. To this rehabilitation of the literary world, it is generally admitted that three chief forces contributed. The discovery of printing, before all; the reformation of religion, by which the rights of private judgment and criticism were secured; and the grand enterprise of Columbus confirmed the revival which, since the beginning of the thirteenth century, had been slowly advancing. The compass allowed long voyages, though it brought the penalty of a new disease. Men travelled further, and acquired greater information. The folly of the schoolmen was patent to many, and the views of the Church on science were seen to be in many essential points erroneous. A crisis came in the mental world, and a deeply pervading fermentation resulted. In medicine, many active agencies were at work. The great universities and schools had begun to influence men. Pathological anatomy was established. Many new diseases—several of them epidemic, others of a most striking nature—appeared. Syphilis was, for the first time, recognised as a widely diffused and Protean malady. Gun-shot wounds caused dismay, but stirred observation and ingenuity.

Germany, where almost no man of repute in surgery, except Gersdorff and Würtz, had appeared, gave birth to a most eccentric genius in Paracelsus, whose example and writings did enormous service in exploding that blind and disastrous reliance on authority, which was then universal. He was no mean empiric, though, in his drunken humours, he gave forth much that was foolish and untenable. He was, in truth, the most erudite and original man of his time, and his views on medicine gave subject for thought and discussion in every university in Europe for a century after his miserable death in a poor's-house. He died at forty-eight, notwithstanding his infallible elixir. I have stood beside his grave in the cemetery of St. Sebastian at Salzburg; and there learned that, during the great cholera epidemic, the ignorant peasants crowded round his tomb to pray for succour, though his ashes had lain there for four hundred years, so great was the tradition of his skill. He it was who originated the maxim of Hahnemann: "Similia similibus curantur," and inaugurated that chemical treatment of dis-

ease which, in the hands of Van Helmont and others, became subsequently famous. Amidst his inebriate ravings, he gave utterance to many scintillations of wisdom and genius, and is said to have foreshadowed not a few of Hunter's discoveries.

In the sixteenth century, responsive to the call of an awakening intelligence and advancing knowledge, came the third great apostle of surgery, Ambroise Paré. The long shadows of the dark ages were nearly withdrawn. The authority and tyranny of the Church were broken; the true value of the ancient writers was more accurately understood; and many of the various medical corporations had been established, not only abroad, but in our own land. Born of poor parents, forced upward by no influence but that of his own genius and enterprise, Paré made, at nineteen, his first great discovery, when he accidentally found how injurious it was to employ the cautery and boiling oil in gun-shot wounds. The story of how this came about is too well known to require recital. He had the intelligence to comprehend the full import of the observation, and to work it out into new principles, which have been since the means of preventing much misery and saving innumerable lives. The old leaven of superstition, however, crops out in his use of the celebrated "oil of whelps", to concoct which live puppy dogs were immersed in boiling oil, and added to an infusion of earth-worms in white-wine, and which he substituted for the cautery. This he finally abandoned for alcohol, having turpentine and aromatics mixed with it, and this he used as an antiseptic during a terrible outbreak of hospital gangrene. His crowning discovery was, of course, the ligature in amputation, and so obviating the horrors of that ghastly plunge of the quivering flesh into boiling liquids, or the slow agony of the copperas button. These terrible cruelties unfortunately survived Paré's denunciations, and were in use for long after his time. It is obvious, from Paré's statement, that he was ignorant at the time he used the ligature in amputation that Celsus spoke of it at all, and that it was from meditating upon its use in recent wounds that he determined to employ it in amputation. He attributes the idea to the special inspiration of heaven, "for the good of mankind and the honour of surgery". He drew out the mouth of the bleeding vessel with forceps, and tied it in the first instance, and, if bleeding recurred, he passed a thread through the tissues from the skin, round the vessel and out again to the surface, so as to fix it to the flesh. Paré was the first also to tie a band round the limb, so as to command the bleeding during amputation. Before his time, the tape had been merely used to hold back the soft parts.

It is well that the gentleman of the household of the Prince de Rohan, whose limb was first amputated by the new method, should be immortalised. It was of him that Paré used the oft-quoted expression: "I dressed him and God healed him." Perhaps no single discovery has had so happy and wide-spread an influence on the progress of surgery. With it, a proper covering could be sought for the bone, and amputation performed in sound textures and not alone in mortified parts, and those terrible engines which had been suggested for the more rapid severance of the limb were no longer thought of.

Contemporary with Paré were Sylvius and Vesalius, or, to drop the conceit of their latinised names, Dubois (or De le Boë) and Wittings. The former taught in Paris, and the latter, though born in Brussels, professed at Padua. To them, anatomy owed much. Sylvius invented anatomical injections; and the great work of Vesalius, published when he was but twenty-nine, was the starting-point of the modern system. No stronger proof can be given of the influence of authority in these times than that, when Vesalius demonstrated the monstrous errors in human anatomy into which Galen had fallen, he was persecuted for his temerity, as men preferred to err with Galen than be corrected by Vesalius.

In Paris, at the same time, Vidus Vidius (Guido Guidi) of Florence did much for surgery by vulgarising its study, as he taught in the vernacular. In 1572, Paré published his great work on surgery. It marked an era in the history of the science, and was adopted throughout Christendom. No man could have a higher personal and professional reputation than Paré, whose worship, as was said, was after that of God, directed to science.

Other contemporaries of Paré, were Fabricius d'Aquapendente and the "cutter" or barber-surgeon Franco. The latter lived in an obscure provincial town of France. He was a very great operator and original genius. To him we owe the lateral operation for stone, as now practised, and also the suggestion of the suprapubic operation.

Just as Hippocrates was but one of a great fellowship of gifted men, so Paré lived contemporaneously or closely preceded many great thinkers, physicists, and writers on numerous subjects, which established that renaissance which seemed like a new creation of intelligence and vigour on the earth.

Anatomy, on which surgery intimately and necessarily leans, was advanced during the following centuries by a host of distinguished men. In Italy, Eustachius, Fallopius, Cæsalpinus, Fabricius, Asellini, Malpighi, Morgagni, and Scarpa followed close on one another. In Switzerland, Hildanus and Haller, "the father of physiology", brought renown to their country and credit to medicine. In France, appeared Belloste, Dionis, Le Dran, Winslow, Anel, Petit, and Desault; in Holland, Scultetus, Ruysch, Nuck, and Boerhaave; in Germany, Heister, Albinus, and Richter. In England, Lord Bacon expiscated the laws which should govern observation and judgment; while Harvey immortalised his age by his great discovery; and Sydenham, "the modern Hippocrates", and others, practised and wrote. The French Academy of Surgery, founded in 1743, acquired the highest authority, and its *Memoirs* are replete with valuable observations and reflections.

Along with all this progress, there was, however, much gross quackery and ignorance. Sir Kenelm Digby, with his sympathetic powders; Crazy Sally, and others, with their unscrupulous pretensions; cancer-curers, witches, the Royal touch ("Rex tangit te, Deus sanat"), fasting-girls, and a host of other impostors, flourished in the sixteenth and seventeenth centuries. An account of their doings forms one of the most curious, as it is one of the most humiliating pages in the history of our country. The ridiculous dress and manners, too, of the regular practitioners of that time did not tend to exalt the profession in the eyes of the public, but called forth much satire and contempt. Morel made the first attempt to produce the tourniquet, which Petit completed, and thereby added a most important item to the surgeon's armamentarium.

If my time had allowed, I would very gladly have referred to the careers of two very different men who lived in the eighteenth century, and who, though not surgeons, had a great influence on the medical opinion of their day. I refer to Cullen and Brown. The former did admirable service, and, by establishing clinical teaching in Edinburgh, contributed largely to the early celebrity of that school. The latter, though said to have originated a system, and to have much interested the speculative theorists of his day, was in reality so crazy or eccentric as to have well merited the epithet of "the Paracelsus of Scotland".

[To be continued.]

USE OF THE ACTUAL CAUTERY IN PHARYNGEAL DISEASE.*

FOR the last six months, I have had in use at the Throat Dispensary the method recommended by Dr. Carl Michel (*Deutsche Zeitschrift für Chirurgie*, 1873) for granular and nodular thickenings of the mucous membrane of the pharynx. I can fully corroborate the statements made by him and others as to the admirable results of this mode of treatment in this usually intractable affection. Not only in thickenings of the mucous membrane, but also in enlarged tonsils (chronic), may a rapid and effectual change for the better be confidently anticipated from the use of the cautery.

For private practice, the galvano-cautery (a convenient form of which was supplied to me by Messrs. Mayer and Meltzer) is best suited; but, in dispensary practice, I have from the first used simple cautery-irons, which are heated in the fire and applied forthwith to the throats of the patients. These cautery-irons are made of thick wire with a tapering bulb at one end and a hook at the other end. The bulb is necessary to retain the heat, as a wire is soon cooled by the mucus, and the application thus deprived of its efficacy. The whole length of the iron is fifteen inches: the thickness of the bulb being about a quarter of an inch. The hook at the end facilitates the carrying of the iron when in a heated state. By arranging matters so that the patients sit with their backs towards the fireplace, the process of heating may be carried on without exciting any alarm; and if, as should always be the case, the iron be applied at a black or very dull red heat, the patients do not as a rule object to the use of the cautery. I have now treated eighty-three cases of chronic pharyngitis with thickening of the mucous membrane by various methods. Of these eighty-three cases, thirty-five have been treated by the actual cautery, and I have adopted it almost exclusively in the treatment of this disease.

It is important to notice that each thickened nodule should be separately cauterised. Dr. Riesenfeld uses a sort of knife-shaped cautery, with which he strokes the surface of the pharynx. This appears to be destructive of the sound as well as of the diseased mucous membrane, and therefore unnecessarily severe.

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* Abstract of a paper read before the Medico-Chirurgical Society of Glasgow.

CLINICAL LECTURES ON THE VARIETIES OF PHTHISIS.

Delivered at the Hospital for Consumption, Brompton.

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LECTURE I.—PATHOLOGY AND CLASSIFICATION.

GENTLEMEN,—The disease which we are called upon to treat in this hospital on a large scale, phthisis pulmonalis, has been the subject of many attempts at classification in the hands of careful observers. Some have taken an anatomical basis for their arrangement, others a clinical one; others, again, have tried a compound of the two, and have made the classification partly clinical and partly pathological. A fourth set have declared that it is impossible to divide phthisis into any satisfactory classes at all, and have stated that the only safe arrangement would be, according to duration, into acute and chronic cases, all other distinctions being purely dogmatic and artificial, and the disease one and indivisible. While the difficulties of any definite arrangement are very great, it must be admitted that the attainment of this object is highly desirable simply for convenience sake; for we find ourselves talking about scrofulous phthisis, pneumonic phthisis, laryngeal phthisis, and so forth, without explaining what we really mean by those terms; and, if we could separate cases of consumption into groups, not necessarily sharply defined, but each presenting some leading anatomical or clinical feature, we should considerably improve our chance of securing good records and adding largely to our stock of well arranged knowledge. In order to do this, we must take a survey of the chief pathological elements of consumptive disease, as in the preponderating influence of each of these in different cases lies often the secret of the varied forms the disease assumes. In too many instances, the *post mortem* examination of a case of phthisis reveals little of the various morbid processes which have brought about death. In the mere shell of a lung that remains, we see that not only have normal structure and function been obliterated, but that the diseased products, the very destroyers themselves, have undergone disintegration and removal. From such specimens, we learn little or nothing; but, in those less advanced, we are able to recognise the principal actors in the tragedy, and to assign to each its proper part. The pathological appearances are briefly as follows.

1. The various kinds of pneumonia: croupous, catarrhal, and interstitial.
2. Tubercle: grey and white, discrete and aggregated.
3. Necrobiotic changes, *i.e.*, caseation, ulceration, and cretification.
4. Fibrosis.
5. Lung-pigmentation.
6. Various morbid changes in the bronchi, bronchial glands, and pleuræ.

Let us now briefly consider these processes in their relation to phthisis, beginning with the pneumonias.

1. *Croupous* pneumonia is the form of pulmonary inflammation where lobes, and not lobules, are primarily affected, and is characterised by its three well known stages:—1. Engorgement; 2. Red hepatisation, marked by exudation of fibrin and red corpuscles, and leucocytes, with occasional rupture of capillaries; 3. Grey hepatisation, where further emigration of leucocytes is accompanied by epithelial proliferation and followed by retrogressive changes in the exuded products. This form of pneumonia most commonly results in (1) resolution, through liquefaction of fibrin, fatty disintegration of epithelium, and subsequent absorption or expectoration of exuded materials. It may also end (2) in abscess, (3) in gangrene, and (4) in chronic pneumonia. We need not concern ourselves with any but the first and last forms of termination, as the others are not common in phthisis. It is as well to note that croupous pneumonia is to be found in phthisical lungs, as I have heard it stoutly maintained that such a product cannot exist under the circumstances, as consumptive patients do not possess that standard of health which would enable them to produce anything but catarrhal or caseous pneumonia.

You can easily convince yourselves of the accuracy of my statement by a visit to the *post mortem* room, where you will find plenty of examples of all the stages of croupous pneumonia, especially of red hepatisation in connection with cases of recently formed tubercle. Whole lobes are seen consolidated and impervious to air, and, on section, show aggregations of miliary tubercle, either grey or commencing