

## EDITORIAL ARTICLES.

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### GUY DE CHAULIAC AND HENRI DE MONDEVILLE,— A SURGICAL RETROSPECT.

It cannot be otherwise than profitable to turn aside for a moment from the feverish struggle for the new, in which modern surgeons are commonly engaged, and to glance in leisurely fashion at the works of the Old Masters. He who renders the classics more accessible to us, then, is as truly a benefactor as he who adds a new fact to our fund of professional information. In producing his magnificent new editions of the works of Chauliac<sup>1</sup> and Mondeville,<sup>2</sup> M. Nicaise, the distinguished French surgeon, has laid us doubly under obligations. The medical profession is proverbially practical, however, and it is to be feared that too few will appreciate the great value of M. Nicaise's

<sup>1</sup> LA GRANDE CHIRURGIE DE GUY DE CHAULIAC, chirurgien, maître en médecine de l'université de Montpellier; composée en l'an 1363; revue et collationnée sur les manuscrits et imprimés latins et français, ornée de gravures, avec des notes, une introduction sur le moyen âge, sur la vie et les œuvres de Guy de Chauliac, un glossaire et une table alphabétique, par E. NICAISE, professeur agrégé à la Faculté de médecine de Paris, chirurgien de l'hôpital Laënnec, ancien membre du Conseil de surveillance de l'Assistance publique. Paris: Félix Alcan, 1890. Imp. 8vo, pp. 939.

THE GREAT SURGERY OF GUY DE CHAULIAC. Composed in 1363. Edited by E. NICAISE, Adjunct Professor, etc.

<sup>2</sup> CHIRURGIE DE MAITRE HENRI DE MONDEVILLE, chirurgien de Philippe le Bel, roi de France, composée de 1306 à 1320; traduction française avec des notes, une introduction et une biographie, publiée sous les auspices du Ministère de l'Instruction publique, par E. NICAISE, professeur agrégé à la Faculté de médecine de Paris, chirurgien de l'hôpital Laënnec, etc., avec la collaboration du Dr Saint-Lager et de F. Chavannes. Paris: Félix Alcan, 1893. Imp. 8vo, pp. 986.

SURGERY OF MASTER HENRI DE MONDEVILLE, Surgeon to Philip the Fair King of France. Composed between 1306 and 1320. French Translation with Notes. By E. NICAISE, etc.

work. The American profession is particularly devoted to the practical side of its work. Said a prominent medical publisher, "I have sunk thousands of dollars trying to educate the taste of the medical profession, and it don't pay. Hereafter I shall publish only books that teach means of filling the professional pocket, and in that way contribute to my own." And yet while the great mass of the profession is absorbed in the chase after the fascinating Almighty Dollar or the elusive Bubble Reputation, there is a considerable and increasing number of scholarly fellows who are glad to occupy leisure hours in going back to the beginnings of medicine and studying the views of the founders of our art. The writer knows of the existence in private American libraries of manuscript translations of a number of antiquarian medical works of the greatest historical value, none of which have ever before been rendered into English. Prepared simply as a recreation and without thought of publication, they remain buried in their translators' book-shelves, profitable to none but their owners. In older countries there seems to be more demand for the works of the Fathers, although England could not permanently maintain the Sydenham Society. A number of books relating to antiquarian medical literature have appeared of late years in France, while Langenbeck's Archives published the Latin text of one author as a serial, and still others have been published latterly in several of the German-speaking countries.

Neglect of the writings of the Fathers is liable to give rise to singular historical errors, later authors not infrequently claiming credit for the discovery of procedures known long before their day. The grand old Huguenot, Ambroise Paré, had long been acknowledged as the Father of Modern Surgery, and particularly of French surgery, so that it was something of a shock when in 1890 M. Nicaise's fine edition of Guy de Chauliac emphasized the fact that a century and a half before the time of Paré a surgeon of Avignon had anticipated him in much of his best work. And hardly had we resigned ourselves to transfer to Chauliac the title hitherto accorded to Paré, when a royal edition of Mondeville issues forth to show us

that we were still at fault, and that Mondeville reached out and grasped the laurel before Chauliac had begun to teach.

While the exact date of the birth of GUY DE CHAULIAC is wrapped in obscurity, he was probably born in the later years of the thirteenth century. According to the custom of the day he adopted as a surname the name of the village in which he first saw light—the hamlet of Chaulhac, in the diocese of Mende, on the frontiers of Auvergne. Thus he has been called Gui de Chaulien, Guido de Cauliaco, Guido, Chauliac, and more commonly Guy de Chauliac. If the evidence of the documents of the cathedral chapter of Saint Just, of which he was provost, be accepted as authority, however, he should be called Guigo de Chaulhaco. The village still exists on a plateau of Mont Morgerine in Gevandan. The parish of Chaulhac was a dependent of the Barony of Mercœur, an ancient and illustrious house which was overthrown by Charles IX in 1567.

It was doubtless a noble lady of this family who, tradition says, was thrown from her horse, sustaining a painful fracture, while engaged in the chase. The efforts of the healers of the neighborhood were of no avail in her treatment. Finally an old sorceress was consulted, who made response, “She shall be cured by an unlettered rustic.” This was interpreted to refer to a farmer’s boy of Chaulhac, who was bidden to the castle of the patient, and such was the natural skill of the boy that ten days later the châtelaine was able to repair to the church to give thanks to the Holy Virgin for her recovery. The young peasant was called Guy, and his conduct so pleased the seigneur that he was taken under the protection of the family, the legend continues, and given every advantage for the prosecution of the study of healing.

He pursued his studies with energy, entering upon his medical education at Toulouse. Later he resorted to Montpellier to continue his work under Raymond de Molières, who was chancellor of the university in 1334. It is probable that he also sat under the instruction of a surgeon in that city; but as the Faculty of Medicine at that time considered surgery to be a mechanical trade, to engage in which

would be indecorous in a professional man, it was not taught in the university, and he was doubtless driven to prosecute that study in one of the independent extramural schools which flourished many years in Montpellier. Bologna had been rendered famous by the human dissections inaugurated by Mundinus and continued by his successor, Nicholas Bertrucius, and Chauliac journeyed thither to perfect his knowledge of the human structure. Finally he completed his surgical studies at Paris, although he did not arrive there until after the deaths of Lanfranc, Pitart and Henri de Mondeville had weakened the surgical instruction available in that city.

Guy de Chauliac was not a doctor of medicine, for that title did not exist in France in the fourteenth century, neither was he a barber, as were most of the surgeons of the day. He became a Clerk and later a Master in medicine, which was the highest medical degree granted at that time, and conferred only after years of study. It has been stated that he lectured on surgery at Montpellier, but this is an error, for the sentiment of the university would not have permitted what would have been considered such a degradation of the curriculum; what he did was simply to deliver certain lectures on medicine to satisfy a requirement preliminary to the attainment of the master's degree.

It is more than probable that Guy de Chauliac took holy orders, for he refers to himself as "Household Physician and Chaplain of our lord, the Pope." Moreover, in 1344, he was a canon of the cathedral of Saint Just, in Lyons, and in 1353 he was appointed canon of Riems, a post which he held until five years later, when he was reappointed to Saint Just and made provost of the chapter. The archives refer to him as "*Venerabilis et circumspectus vir, dominus Guigo de Cauliaco, canonicus . . . medicusque domini nostri pape.*" He presided over the chapter of Saint Just from this time until his death. And for a part of the time he was also a canon of Mende, the diocese in which he was born, and which was under the protection of the barony of Mercœur.

When he had taken his medical degrees and had broadened his

views by travels into Italy and possibly Germany and England, he settled down to practise surgery at Lyons. According to custom he made his home a centre from which he radiated from time to time on peripatetic tours in search of patients. His merits received early recognition. Between 1346 and 1348 Europe was devastated by that terrible epidemic of plague which ravaged nearly the whole world, and was commemorated by the Decameron of Boccaccio. Avignon, whither the papal court had been removed by Clement V, was almost depopulated. Guy de Chauliac had by this time been appointed one of the pontifical physicians, and with characteristic fearlessness fought the pestilence regardless of self. He was finally taken down with the disease, from which he ultimately recovered after several weeks of fever, the attack terminating in an axillary abscess. It was this epidemic which carried off the lady Laura, immortalized in the sonnets of Petrarch, who was the poet laureate of the papal court, and it is quite probable that Guy de Chauliac was the medical adviser of that lady. Some authors have thought that he was the subject of Petrarch's letter, "Invective against a Physician," but Nicaise thinks otherwise.

Petrarch states in others of his letters that Pope Clement VI had been trephined. And this fact rendered possible the recognition of his remains three and a half centuries later, when his tomb was opened to ascertain whether or not it had been profaned by the Huguenots. Whether this operation was performed by Guy de Chauliac or not, it is a fact that he was one of the physicians to that pope as shown by an official document dated 1348. This office he retained under Innocent VI until Urban V succeeded to the pontificate in 1362, when he was appointed chief physician to the pope. When Urban travelled to Rome, in 1367, Guy de Chauliac did not accompany him. When he returned, in 1370, Guy was no more, his death having taken place in June, 1368, at Lyons.

The *Chirurgia Magna, Grande Chirurgie*, or Great Surgery, was written by Chauliac towards the end of his life, in 1363, as he remarks "as a solace to his old age." He was then about sixty-five

years of age and practically retired from active practice. While he wrote largely from his vast experience, he quoted freely from earlier authors. The teaching of his day was largely oral, the enormous labor of copying manuscripts debarring any but the wealthy from the possession of them. But with the vast revenues of the church and the treasures of the library of the university at Montpellier at his service, he had command probably of a greater number of authorities than any of his predecessors and most of his successors. He was familiar with the works of Galen, Paulus Ægineta, all the Arabians, and the authors of the Middle Ages, although Hippocrates, Celsus, Oribasius, and Aetius seem to have been strangers to him!

The Great Surgery was undoubtedly written in Latin, but it was the Latin of the Middle Ages, a barbarous mixture of the classical tongue with French, Provençal, and Arabic words to which the Latin forms and terminations had been given. Notwithstanding this defect, the style is very clear and concise, and the descriptions are clean-cut and picturesque. He states that surgery comprises three parts :

(1) The topography of the patient,—*i.e.*, Anatomy.

(2) The subject upon which action is required, the condition which demands a cure,—*i.e.*, The Description of Diseases. This part includes five subdivisions, concerned respectively with swellings, wounds, ulcers, fractures and dislocations, and special diseases.

(3) The instruments with which the desired result can be attained, the means to be employed in the cure,—*i.e.*, the Antidotary.

His anatomy is defective and deficient from the stand-point of post-Vesalian students, but it is fully as complete and accurate as that of Mundinus, which remained the recognized anatomical text-book for the next 200 years. It does not appear that he ever practically dissected the human subject himself, but he describes the method in vogue at Bologna. "My master, Bertruccio," he says, "taught in this way: having laid the subject on a table, he made from it four readings; first, he treated of the digestive organs, because they decay the soonest; second, the organs of respiration; third, the circulatory organs; in the fourth he took up the extremities. In every part there

are nine things to see,—*i.e.*, the situation, the substance, the composition, the number, the figure, the relations or connections, the actions, the uses, and the diseases which may affect it. So, from anatomy the physician may gain assistance in learning concerning maladies and their progress and cure. We study anatomy also on bodies dried in the sun, or consumed in the earth, or submerged in running or boiling water: showing the anatomy of the bones, cartilages, joints, large nerves, tendons, and ligaments. In these two ways we must teach anatomy on the bodies of men, apes, swine, and divers other animals, and not from pictures, as did Henrie [de Mondeville], mentioned above, who had thirteen pictures for the demonstration of anatomy.”

He counted 248 bones, besides the hyoid and sesamoids, and 531 muscles. He found three ventricles in the brain, each having two parts, and each part having its own particular “virtue;” in the first part of the anterior ventricle dwelt common sensation, and in the second, the imagination; in the middle ventricle thought and reason were enthroned; and in the posterior, memory and recollection sat. He observed seven cranial, and thirty-seven spinal nerves, but he also considered that the cords or tendons partook of the nature of nerves. The anatomy of the arm taught him that incisions there should be made lengthwise, for so run the muscles. The veins and arteries, he remarked, differ in function and origin; for the veins arise from the liver, and the arteries from the heart; the veins are the home of the nutritive blood, the arteries are the place of the spiritual blood. The liver, he maintained, was the instrument of second digestion, the generator of the blood. M. Nicaise has enriched his edition with a fac-simile of a miniature illustration from one of the fourteenth century manuscript copies of Chauliac, in which a begowned professor is demonstrating the visceral anatomy of the human subject with a knife two feet long, upon a hydrocephalic giant eight feet in height.

The treatment of wounds, he holds, involves two chief factors: First, Nature, as the chief workman, who works by means of her own peculiar “virtue,” and by proper nutrition; and, Second, The physi-

cian who, as an assistant, works by means of five steps, each dependent upon the other,—

*First*, To remove foreign bodies, if there be any between the divided parts.

*Second*, To bring together separated parts.

*Third*, To unite the parts drawn together.

*Fourth*, To conserve and preserve the tissues.

*Fifth*, To correct accidents.

He describes five ways of checking hæmorrhage :

- (1) By suture of the wound.
- (2) By tamponnade.
- (3) By compression of a vein.
- (4) By ligature of an artery.
- (5) By cauterization.

For sutures he used silk thread and a needle similar to the modern glovers' needle.

He considered the ligature better adapted to deep arteries. The vessel was denuded, drawn up with a hook, surrounded with a silk ligature, and strongly tied ; after which a healing medicament was applied, and the wound bandaged. He quoted Galen as authority for the statement that the ligature should be applied to the end of the artery nearest the heart, the lower end, if the head or neck be wounded, and the upper end in all other parts of the body.

He used the trephine in fracture of the cranium, although the trephine of his day was not the crown saw of to-day, but a simple auger with which a hole was bored in the bone, and provided with an encircling pad, or pierced by projecting pins to prevent the instrument entering too deeply into the skull.

He discussed renal and vesical calculus at length. But he said that no one should cut for stone in the kidney, and that in the bladder the incision is likely to produce convulsions, hæmorrhage, and fistula. " And for this reason the prudent leave this operation to the *coureurs*," or strolling lithotomists. But he devoted pages to internal medication looking to the solution of concretions in the urinary or-



gans. While he still insisted that an incision of the bladder would not heal, being dangerous to life, he closed his account of vesical calculus by a brief description of the method of operating ; placing the patient in the conventional lithotomy position, the stone should be drawn up to the neck of the bladder by the fingers in the fundament, and cut down upon a little to the left of the median line ; it was then removed with a hook, and the wound cleansed and dressed, only the neck of the bladder having been divided.

He briefly described the Cæsarean section, in which he held that the child should be withdrawn through an incision on the left flank of the mother. "Thus was born Julius Cæsar, as we read in Roman histories." The operation, he insists, however, should be performed only in cases where the mother has died with a child still undelivered.

The third and concluding part of his work, the *Antidotary*, as he calls it, is a veritable 14th century *materia medica*, replete with obsolete drugs and curious combinations.

The *Great Surgery* of Guy de Chauliac was the acknowledged surgical authority in Europe for two centuries, until it was overshadowed by the more extensive treatise of Paré. For a hundred years it was circulated in manuscript, copies of which remain at the present day. M. Nicaise has been able to locate thirty-four of these, in Latin, French, Provençal, Catalan, English, Dutch, Italian, and Hebrew. Two of them are in the Library of the Surgeon-General's Office, one in Latin, dated 1416, and one in French, dated 1669.

The first printed edition was brought out in 1478, only twenty-four years after the invention of printing. It was the first of seventy editions demanded by the profession during the ensuing centuries. Of these 40 were in French, 15 in Latin, 5 in Italian, 4 in Dutch or Flemish, 3 in Spanish, two in Catalan, and one in English. Of the seventy editions, nine have been lost, not a copy being known to exist. In addition to the complete editions, moreover, there are fragments, commentaries, and epitomes, to the number of sixty more, making a grand total of one hundred and thirty editions.

The first edition, a translation into French from the original Latin, by Nicholas Panis, was printed in 1478, at Lyons, where printing had been introduced five years previously. No copy of this edition is known to be in existence, the earliest extant edition being an Italian translation printed at Venice two years later, and of this the Royal Library at Berlin possesses the only known copy. The earliest existing edition in French is the *Guidon en François*, printed at Lyons in 1485, of which the only known copy is in the Library of the University of Utrecht. Although there seems to be no doubt but that the book was originally written in Latin, it was not until 1490, after an Italian and two French editions had appeared, that Bonetus Locatellus produced the first Latin exemplar; it is lost, however, and the earliest extant Latin edition is contained in a folio bound up with the works of seven other worthies, and issued by the same publisher, at Venice, in 1497.

The last edition, that of M. Nicaise, published in Paris in 1890, contains five interesting introductory chapters on The Relation of the Middle Ages to Science, Medicine and Surgery before the Fourteenth Century, with the authors cited by Guy and their Medical Teachings and Works, Biography of Guy de Chauliac, and a History of Guy de Chauliac from the Fourteenth to the Nineteenth Century, with reference to every edition, and a Historical Résumé for each century. Appended to the work is a valuable glossary, and scattered through it are reproductions, taken from an old manuscript copy of Chauliac, of ancient miniatures illustrative of methods of medical instruction in the fourteenth century.

Among the authorities most frequently quoted by Guy de Chauliac was HENRI DE MONDEVILLE, but writers of later date have almost entirely ignored his work. He was the first French surgeon to write a surgical treatise, but his book was not printed until nearly six hundred years after it was written. His life and his book both passed into oblivion, and now all that is known of the former is contained in the latter. He was born in Normandy, and, according to custom, he added the name of his native village to his Christian name, as did

Guy de Chauliac after him. But the place of his birth is not beyond doubt, and the correct form of his surname is also undetermined. Chereau thought that it was the little village of Mandeville near Caen, but Littré remarks that there is another village in Normandy called Emondéville. Guy de Chauliac refers to Henri as Hermondaville, and other manuscripts speak of him as Mondavilla, Amondavilla, Armandavilla, Amoda villa, and Mundi villa. The author's name appears as Mondeville in the French manuscript of 1314, written in Paris during his own lifetime, and the same spelling is found in the catalogue of the Library of the Louvre of 1373. Hence this form is adopted for the name, although it does not fix the birthplace.

It is not known where he studied medicine, but he probably took his degrees as Clerk and Master in Medicine at Montpellier and at Paris. The degree of doctor had not then been created. He passed over into Italy, where he became a disciple of Theodoric, who then dominated the medical school of the University of Bologna, and taught new practices in the treatment of wounds.

Regardless of the low estimation in which surgery was held, Mondeville studied it with passion. Hitherto no one had done anything for surgery in France, and Mondeville, who seems to have been an independent, enthusiastic, and belligerent character, conceived the notion of elevating its position, as Salicetus, Hugues de Lucques, Theodoric, and Lanfranc had already done in Italy.

The first document referring to Mondeville dates back to 1301, and in it he appears as Surgeon to the King, whom he accompanied, with the queen and the royal family, into Flanders, on a journey lasting from spring to autumn. For the 234 days then passed with the king and the court, and nine days additional, he received forty-one livres, two sols, and four deniers.

Mondeville continued to serve as surgeon to the king up to the death of Philip the Fair, and was retained in the same capacity by his successor, Louis X. These functions were not uninterrupted, but he was called as his services were required by the royal family. He several times accompanied the army, either with the king or the

Count of Valois, and was able to apply Theodoric's method of wound treatment with great success. He complains bitterly that after 1312 he received no pay, and was particularly dissatisfied because of the time lost in accompanying the king to Arras, among the English, and in various parts of the realm with the court or the army.

Mondeville taught medicine at Montpellier, and he is said also to have taught anatomy there in 1304, probably leaving when his duties as surgeon to the king, to which position he was probably appointed on recommendation of Jean Pitart, became too exacting. He continued, however, to maintain friendly relations with Bernard de Gordon who remained in the faculty of Montpellier, and to whose urging, supported by that of Guillaume de Brescia, physician to Popes Boniface VIII, Benoit XI, and Clement V, his book was a response. In 1312 he read the first two parts of the work publicly in the schools, without remuneration and before a great and noble assemblage of students of medicine and other distinguished persons. His *clientele* was numerous as would be expected in one of his high reputation. "Sometimes," says he, "I can hardly write a line a day, having to go to the Schools and to run hither and thither all day long in order to gain my living."

But his health began to decline, as appears in the Introduction to the third part of his book, written when he resumed work upon it, after about four years' intermission. He became a victim of pulmonary tuberculosis, and, during the slow progress of the disease, it became possible for him to complete Part III, all but the third "doctrine" or chapter; and he was too feeble to take up Part IV, which was to have been concerned with fractures and dislocations, but passed on to the Antidotary, Part V, of which, however, he was able to complete only nine of the ten chapters which he had projected. He worked up to the very end, although he had not much confidence in his ability to complete his task, remarking in the introduction to the last part, "I cannot live long, being asthmatic, coughing, phthisical, and in consumption." Thus, with the harness on, in the very act of contributing to the world's progress, died Henri de Mondeville, the veritable Father of French Surgery.

In the fourteenth century, the practice of surgery in Paris was distributed among four classes, the physician-surgeons, the lay-surgeons, the barber-surgeons, and the quacks. Surgery was considered a trade, and to practise it degrading to the Master in medicine. An old miniature reproduced by Nicaise from an ancient manuscript, shows the relative position of the surgeon. It represents a large room with an alcove opening out of it on either side. In the centre stands the physician glorious in robes of state; in the alcove, on his right hand, stands the apothecary, surrounded by his jars and industriously plying his pestle; while in the alcove on the left and a little lower down than the apothecary sits the surgeon in lowly garb, sharpening his knife. In spite of the objectionable position of the surgeon, however, there were some Masters in medicine who had the courage to practise surgery and the ability to command respect, such as Salicetus, Lanfranc, Chauliac, and Mondeville. Lanfranc, indeed, was so highly regarded at the School of Medicine that he was authorized to give instruction in surgery; before that surgery was despised, and in 1350 it again fell into disrepute, and the surgical course was abandoned.

The lay-surgeons were self-admitted mechanics and were formed into a corporation like other tradesmen,—the Brotherhood of Saint Côme and Saint Damien. This was a self-perpetuating body, by which an examining board was selected for the licensing of practitioners of surgery, including barber-surgeons. It is worthy of note that women were admitted to this examination as well as men.

But the lay-surgeons in their turn became consequential and bump-tious, holding certain operations to be beneath their dignity; and so the barber became the authority on bloodletting, cupping, extraction of teeth, treatment of sprains, and the like. Phlebotomy had a most remarkable vogue,—men were bled in that day much as they have their hair cut in this. Every one had his barber to whom he intrusted such bleeding as was thought necessary for his health. And so general and frequent was the operation that it contributed great prominence to the barber, and finally a new corporation came to be formed,

that of barber-surgeons or "surgeons of the short robe," in distinction from the lay-surgeons or surgeons of the long robe.

The surgical quacks were numerous, and their vices and crimes formed the subject of many lamentations upon the part of the reputable practitioners of the Middle Ages. Mondeville pays his respects to them in a scathing section of his earlier chapters.

The surgery of Henri de Mondeville comprised a course of instruction more particularly for the first two classes, but available also to the brethren of the short robe, if they desired. The plan of the book included five parts treating respectively of (1) Anatomy, (2) Wounds, (3) All Surgical Maladies except Wounds, Ulcers, and Affections of Bones, (4) Affections of Bones, and (5) the Antidotary. A part of the third and the whole of the fourth part were left undone at his death, the book thus lacking diseases of the eyes and throat and all bone surgery.

Mondeville taught anatomy at Montpellier eleven years before Mondino da Luzzi made the first public dissection of the human body at Bologna. He used for the demonstration of his topic a series of illustrations, at first twelve in number, which he afterwards increased to nineteen. Chauliac refers to them as thirteen in number in connection with a reference to the superior utility of practical dissection.

He considered that all the white tissues partook of the same character, classifying nerves, tendons, aponeuroses, and ligaments together. In this respect he followed the opinion of Galen and others of the ancients. A relic of this supposed nervous character of the tendons remains to the present day in common parlance, as may be seen in the familiar hymn,—

"Awake, my soul, stretch every nerve,  
And press with vigor on."

Muscular tissue he considered in two forms, the *lacertus* and the *musculus*, confining the latter term to those which are long, thick in the middle, and smaller at the extremities, and which, says he, resembles a "mus" or rat. All others are *lacerti*.

He refers to an alleged cavity in the interventricular wall of the heart as the source of the "*spiritus*," which passes thence into the left ventricle whence it is carried by the blood throughout the body. The arterial blood, then, is the vital blood since it carries life; the venous blood is the nutritive blood since it bears nutrition. The "*spiritus*" changes its name in various organs, being the soul in the brain, the nutritive spirit in the liver, etc.

The circulation of the blood not yet having been discovered, Mondeville naturally failed to understand the lungs, considering that their only function was the refreshment of the heart. But he attributed a most important rôle to the uvula, which he thought prepared and modified the air prior to its entrance into the chest.

In his chapter on amputation of limbs he refers to the ligation of arteries as a recognized procedure, requiring no especial remark, thus giving the last fatal blow to the claim that Paré was the originator of arterial ligation. Mondeville learned of the procedure from the Italians. Celsus refers to it as an ordinary matter; so does Orbasius, who describes the practice of Archigenes, who controlled hæmorrhage by applying a constricting bandage at the root of a limb during amputation and ligaturing the vessels after it.

But the most important feature of the work of Mondeville was the method of treating wounds taught by him, which was revolutionary and progressive beyond his day. For ages, suppuration was regarded as a natural, almost physiological feature of the process of cicatrization. Even at the present day some surgeons maintain that suppuration cannot be avoided in contused wounds.

The ancients believed suppuration to be useful, and, when it did not occur independently, they employed agents to produce it. In treating a wound it was their custom first to cause it to bleed a little, so as to prevent inflammatory complications, then they probed it, enlarged it, and inserted tents or pledgets dipped in white of egg and suppurative agents, covering the whole with bandages. The patient was then subjected to a severe regimen, from which meat and wine were excluded, and a surgical portion called a "*vulnary*" was admin-

istered. Suppuration invariably, and frequently inflammation and phlegmon, followed this treatment.

As early as 1260, Theodoric taught, at Bologna, a modification of this method, replacing suppurative dressings by the application of wine, and establishing certain rules of procedure useful even with the methods of the present day. *Henri de Mondeville went further than his master, and, it is believed, was the first to demonstrate that suppuration was not essential to the healing of wounds.*

Mondeville was accustomed to check hæmorrhage at once; he rarely probed the wound, never enlarged it, nor introduced tents, but, after removing foreign bodies, he closed it by sutures without delay, considering contact with the air to be the chief danger to be avoided. No topical application was employed until after suture, when pledgets moistened with warm wine were applied; he did not wash the recent wound with it. Pledgets well squeezed out in wine were then pressed on the wound so as to take up any moisture that might exude. A bit of cloth spread with an antiseptic plaster (of the juices of plantain, betony, and ache, mixed with clarified resin, wax, and turpentine) was applied over the wound. The pledgets were then opened out, and applied one over the other on each side of the wound, so as to compress its base rather than the line of union. Over these were laid two or three others well moistened with wine, so that the wound was kept continually moist with it. The dressing was concluded by bandaging a large dry compress over the whole. No "vulnary" was given, nor was the diet especially restricted.

Wounds of the intestine he directed to be sutured with silk very closely, as furriers did with skins, fomented with warm wine, dried and sprinkled with a "cicatrizing powder," of equal parts of pomegranate root, pomegranate flowers, and powder of rotted oak wood; then he reduced the gut so that it would lie next to the peritoneum on the other intestines if possible; immediately suturing the external wound lest the cold air should induce suppuration and inflammation in the belly. "I have seen," said he, "wounds of this kind, which had been immediately closed and sutured by modern methods, heal



in a short time, without pain, and with a single dressing, while similar patients dressed after the old methods had a belly full of pus, and died. This fact needs no comment."

But this Lister of the fourteenth century did not achieve the recognition accorded to his successor of the nineteenth century. He remarks anent his difficulties: "It is dangerous for a surgeon to work differently from his compeers. We have tested Theodoric's method of wound-treatment, Master Jean Pitart and I—who were the first to introduce it in France—having applied it first in Paris, and then in several wars, contrary to the desire and advice of all, particularly physicians. We have been the butt of the sneers and contempt of the laity, and even menaces and peril from our fellow-workers,—the surgeons. So much criticism and violence has been poured upon us by physicians and others that we should have discarded the method, had it not been for the support of the most serene Count of Valois, who with some other personages came to our aid, having seen wounds relieved under our treatment in the field. Furthermore, we have been sustained by truth, but if we had not been strong in faith, physicians of the royal household, and somewhat learned, we should have had to abandon it."

After the death of Mondeville, his method fell into disuse, and Guy de Chauliac, writing fifty years later, rejected it, referring with contempt to Mondeville's teachings on suppuration. And so perished the beginnings of antiseptic surgery, nearly six hundred years before its independent discovery in modern times.

The plan of Mondeville's book is broad and scholarly. Had it been completed, it would doubtless have carried authority equal to that of Chauliac or Paré. He was acquainted with the Greek and Arabian authors, and his text is replete with bibliographical allusions. His statements are clear, and he freely enlarges upon details, so that his meaning may not fail to be understood, even by the most ignorant of barbers. His style is simple, animated, original, and succinct, his work even as it stands forming a valuable treatise of the elementary type upon general surgical pathology and medical deontology.

The Surgery of Henri de Mondeville had not the popularity that was achieved by the Great Surgery of Guy de Chauliac. It was never put in type, except as an antiquarian and historical study at the end of the nineteenth century. Only eighteen manuscripts can be found in the various libraries of Europe. Of these only four—all of which are in the Bibliothèque Nationale, at Paris—are complete, and contain the revised second edition, prepared when the later portions of the work were issued; all of them are in Latin. A complete copy of the Surgery without the anatomy also belongs to the Paris library. The Royal Library at Berlin contains an incomplete copy of this edition of the Surgery. There are three complete copies of the first edition, one each in Latin and French, in the Bibliothèque Nationale, and one in Latin at Erfurt, where a Latin fragment, can also be found. Complete copies of the anatomy are found in Paris, Vienna, and Berne in Latin, and in the British Museum in Dutch. There are two abridged Latin copies of the anatomy in Berlin and Erfurt respectively, and two fragments respectively in Paris and Erfurt.

The printed editions are three in number: (1) A reprint of the anatomy alone, by Dr. Pagel, published in Berlin in 1889. (2) A reprint of the surgery alone, by the same editor, published also in Berlin in 1892. (3) The French translation of M. Nicaise, already mentioned, published at Paris in 1893, which is the only complete edition. The value of the latter is vastly increased by an Introduction, in which M. Nicaise sketches Parisian surgery in the fourteenth century, reviews the Surgery of Mondeville, and presents an outline of his biography.

Though Mondeville's work had not the vogue that greeted the treatise of Chauliac, it is no less epochal in character. These two 14th century practitioners equally stand out against the dark background of mediævalism like surgical Titans battling for progress. There is much in common between them. Both of poor and unknown parentage, each achieved fame by his own intrinsic merit. Both completed studies begun in France by work under the greatest

masters of Italy. If Mondeville was surgeon to the kings of France, Chauillac was surgeon to the popes of Rome. Both advocated advances in professional methods derived from their Italian experiences. Mondeville fought for modern methods of wound treatment, and Chauillac advised modern methods of anatomical study. Each was the dominant surgical authority of his day. Chauillac wrote as an occupation for his old age, but Mondeville wrote in spite of an enfeebling disease. Neither knew the joys of paternity, Mondeville was a misogynist, and Chauillac a celibate. His book was the only offspring of each, and to each the world is indebted for a precious legacy of learning and experience that has withstood the wear of centuries in order to come down to us as an inspiration to faithful labor, fearless investigation, original thought, and careful observation.

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