The subject is interesting and we are unwilling to do more at this time than to call attention to the inaccuracy of the present information on the subject very largely based and colored by the history of Charles Gayarré, who, in his earnest desire to tell the story, used doubtful references, themselves evidently based in large part upon tradition.

When the investigation justifies, the writer proposes elaborating the story of leprosy in Louisiana either confirming or refuting the hitherto by no means clear Acadian origin, endeavoring to trace the disease to the fountain head. The knowledge that leprosy prevailed in Continental Europe, and to some extent in France as late as the sixteenth century, makes it more than likely that the Colonies were peopled with leprous subjects, and it is more than probable that Louisiana gathered its disease from various quarters, especially as New Orleans was then one of the seaports of the New World.

THE POPES AND THE HISTORY OF ANATOMY.*

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It is asserted in practically all encyclopedia articles on the history of anatomy, that as a consequence of a Papal Bull issued about 1300 forbidding the mutilation of the human body, all direct dissection and, consequently, all opportunity for true progress in anatomy was hampered during several important centuries in the history of modern science. This presumed Papal prohibition is claimed to have precluded all possibility of the proper acquisition of anatomical knowledge until the beginning of the sixteenth century, when the golden age of modern anatomy set in.

It may be stated at once that notwithstanding almost universal concordance on the part of writers of the history of anatomy in English, there are no good grounds for saying that the bull issued by Pope Boniface VIII was directed against the practice of human dissection. More than this it is very clear from the

history of anatomy itself that this Papal document was not by any misunderstanding assumed by ecclesiastical authorities to forbid dissection. In fact the practice of dissection can be traced at all the Italian universities during the two centuries in which the bull was supposed to have its deterrent effect; and these universities it must be noted were everywhere directly under the control of churchmen. During the fourteenth century the Popes took up their residence in Avignon. This brought them into intimate relations with the university of Montpellier, and yet during their stay here the practice of dissection was not only not forbidden, but actually became one of the standard features of the university teaching, and special arrangements were made with the permission of ecclesiastical authorities by which the bodies of criminals were handed over to the medical department of the university to be treated as anatomical material.

The story of the misunderstanding (to call it by no harsher name) by which the tradition that dissection was forbidden by a Papal bull, became one of the stock fundamental principles of the history of anatomy, is not without interest as a sidelight on history. As a matter of fact, so far as I know, there is not a single history of medicine published in English which does not give at least some credence to the supposed Papal prohibition. This is not the first time, in history, of course, that by cumulative cross references without any attempt to verify the original authority, a groundless presumption has been bolstered up so as to look like an inexpugnable historical detail. The present case is a flagrant example of quotation without scrutinizing confirmation of the original authority quoted, such as will be quite familiar to those who have had much to do with modern history as it relates to the Church.

Careful search of medical historical literature seems to show that the basis of the whole misapprehension is to be found in what would usually be considered an absolutely unexceptionable authority, since it is a history presumably written by Church men. It is no wonder under the circumstances that the significance falsely attributed to the bull has been accepted without much question by subsequent writers.

In the *Histoire Littéraire de la France,*[7] that precious work which we owe to the historical foresight and faithful labors of the Benedictines of the Congregation of Saint-Maur, and which contains so much that is of interest for the original materials of French history, there is a very definite assertion that the bull

of Boniface VIII was accepted by the generations immediately following its issue as forbidding dissection.

The passage is as follows: "But what was to retard still more (than the prohibition of surgery to the clergy mentioned in the preceding paragraph) was the very ancient prejudice which opposed anatomical dissection as sacrilegious. By a decree inserted in Le Sexte, Boniface VIII forbade the boiling of bodies in order to obtain skeletons. Anatomists were obliged then to go back to Galen for information and could not study the human body directly, and consequently could not advance the science of bodily health nor of therapeutics."

It is evidently from these declarations that all of the errors and misconceptions as to Papal prohibition of dissection have arisen. While the *Histoire Littéraire de la France* was commenced by the Benedictines of Saint-Maur, many of the volumes were completed after the revolution by members of the Institute of France. The sixteenth volume (from which our quotation comes) was mainly written by Daunou, the distinguished French historian, and it is to him that we owe this passage. While Daunou was an authority in the literary history of the thirteenth and fourteenth centuries as well as in the political details of the time, he was not so situated as to be familiar with the medical history. He seems to have found this bull of Boniface VIII, which does not occur in Le Sexte itself, as he says, but in an appendix to this compilation of Boniface's bulls, and he concluded after reading it that this must have had an influence in preventing the preparation of skeletons and other procedures that would be of use in the study of anatomy.

Through the kindness of Rev. D. A. Corbett, of the Seminary of St. Charles Borromeo, Overbrook, Philadelphia, I have been able to secure the original bull and determine against what its prohibitory propositions were directed. Father Corbett writes:

"The 'Bull De Sepulturis of Boniface VIII' is not found in the *Collectio Bullarum* of Coquelines, nor is it incorporated in the *Liber Sextus Decretalium Divi Bonifacii Papæ VIII,* though it is from here that it is quoted in the *Histoire Littéraire de la France.* It appears in an appendix to this sixth book among the *Extravagantes,* a term which is used to signify that the documents contained under it were issued at a time somewhat apart from the period which the special book of decretals was supposed to cover. The *Liber Sextus* was published in 1298. This 'Bull De Sepul-

turis' was not issued until 1300. It is to be found in the third book of the *Extravagantes,* Chapter 1."

The title of the bull, which like the title of any law, shows what is contained therein makes it clear at once that it has no reference to dissection. It runs thus:

"Persons cutting up the bodies of the dead, barbarously cooking them in order that the bones being separated from the flesh may be carried for burial into their own countries, are by the very fact excommunicated."* (The entire bull will be found in the foot-note.)

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*De Sepulturis, Bonifacius VIII. Corpora defunctorum exenternantes, et ea immaniter decoquentes, ut ossa a carnibus separata ferant sepelienda in terram suam, ipso facto sunt excommunicati.

CAP. I. Detestandae feritatis abusum, quem ex quodam more† horribili nonnulli fideles improvide prosequuntur, nos piae intentionis ducti proposito, ne abusus praedicti saevitia ulterius corpora humana dilaceret, mentesque fidelium horrore commoveat, et perturbet auditum, digne decrevimus abolendum. Praefati namque fideles hujus suae improbandae utique consuetudinis vitio intendentes, si quisquam ex eis genere nobilis, vel dignitatis titulo insignitus, praesertim extra suarum partium limites debitum naturæ persolvat, in suis, vel alienis remotis partibus sepultura electa; defuncti corpus ex quodam impiae pietatis affectu truculenter exenterant, ac illud membratim, vel in frusta immaniter concidentes, ea subsequenter aquis immersa exponunt ignibus decoquenda. Et tandem (ab ossibus tegumento carnis excusso) eadem ad partes praedictas mittunt, seu deferunt tumulanda. Quod non solum Divinae majestatis conspectui abominabile plurimum redditur, sed etiam humanae considerationis obtutibus occursit vehementius abhorrendum. Volentes igitur (prout officii nostri debitum exigit), illud in hac parte remedium adhibere, per quod tantae abominationis, tantaeque immanitatis, et impietatis abusus penitus deleatur, nec extendatur ad alios; Apostolica auctoritate statuimus, et ordinamus, ut cum quis cujuscumque status, aut generis, seu dignitatis exstitent: in civitatibus, terris, seu locis, in quibus catholicae fidei cultus viget, diem de caetero claudet extremum circa corpora defunctorum hujusmodi abusus, vel similis nullatenus observetur, nec fidelium manus tanta immanitate foedentur. Sed ut defunctorum corpora sic impie, ac crudeliter non tractentur, et deferantur ad loca in quibus viventes eligerint sepeliri, aut in civitate, castro, vel loco ubi decesserint, vel loco vicino ecclesiasticae sepulturae tradantur ad tempus, ita, quod demum incineratis corporibus, aut alias ad loca ubi sepulturam eligerint, deportentur, et sepeliantur in eis. Nos enim si praedicti defuncti executor, vel executores, aut familiares ejus, seu quivis alii cujuscumque ordinis, conditionis, status aut gradus fuerint etiam si pontificali dignitate praefulgeant, aliquid contra hujusmodi nostri statuti, et ordinationis tenorem praesumpserint attentare defunctorum corpora sic inhumaniter et crudeliter pertractando, vel faciendo pertractari excomunicationis sententiam (quam exnunc in ipsos plurimus) ipso facto se moverint incur-

†Alias, *modo.*

The reason for the bull is very well known. During the crusades, numbers of the nobility who died at a distance from their homes in infidel countries were preserved for burial in their own lands by dismemberment and boiling. The body of Frederick Barbarossa, who was drowned in the river Saleph, near Jerusalem, was one of the first to be treated thus. Afterwards, the remains of Louis IX of France, and a number of his relatives who perished on the ill-fated crusade in Egypt, were brought back to France in this fashion.

It was this custom, rightly looked upon as an abuse, that the Pope wished absolutely to prohibit. There is no hint anywhere in the bull that it was directed against any practice necessary for the preparation of bodies for purposes of anatomical study. The bull very explicitly defines that only those are excommunicated who dismember and boil bodies for the purpose of burying them in distant countries. There was no shadow of a prohibition of the employment of boiling, for instance, in the preparation of human skeletons to be used as anatomical specimens for teaching and demonstrations.

Is it possible, however, that this bull was interpreted to forbid dissection, or at least certain forms of anatomical preparation? Holfinx[8] expressly says that, while this prohibition was only designed to abolish the absurd custom introduced by the crusaders of cutting up and boiling the bodies of their relatives deceased in infidel countries, so as to send them to their families to give them a burial in holy ground, yet adds: "But it is certain that the same bull was interpreted, whether right or wrong, as prohibiting anatomical dissection, for in 1482 the University of Tübingen had recourse to the authority of Pope Sixtus IV to obtain permission for dissection."

We shall, I think, be able to see very clearly from the history of dissection during the nearly two centuries that intervened between the supposed prohibition and the demanded permission at Tübingen that dissection was not at all discouraged. In the meantime, we may quote Haeser,[6] a later and better authority than Holfinx, who says: "It is an error to think that Boniface's Bull De Sepulturis forbade dissection, since the practice was carried on without let or hindrance under ecclesiastical authori-

suros, a qua non nisi per Apostolicam sedem (praeterquam in mortis articulo) possint absolutionis beneficium obtinere. Et nihilominus ille, cujus corpus sic inhumane tractatum fuerit, ecclesiastica careat sepultura. Nulli ergo, etc. Datum Latera. XII. Calen. Martii, Pontificatus nostri anno VI.

ties, who universally presided over the universities of that day."

Haeser quotes Corradi,[2] who in his sketch of the teaching of anatomy in Italy during the Middle Ages, expressly denies that the bull of Boniface VIII hampered the progress of anatomical study or teaching in any way.

DISSECTION BEFORE THE BULL.

The bull was not interpreted then by the immediate contemporaries of Boniface, nor by succeeding generations as prohibiting anatomical work. This is an idea which has been injected into the Papal bull by historians many centuries afterwards and has no justification either in the bull itself or in the history of anatomy at the beginning of the fourteenth century. Dissection had been carried on before that time and continued to be carried on afterwards. As a matter of fact it is very clear that dissections became much more frequent during the first twenty-five years of the fourteenth century, that is, in the years immediately succeeding the promulgation of Boniface VIII's bull, than it had been at any time before. Dissection such as it was, too, was carried on mainly at the universities, which, as is well known, were at this time directly under ecclesiastical authority and usually looked to the Popes for the redress of grievances they might have, or relief from abuses that might have crept in.

Before the beginning of the fourteenth century and very probably for at least a half century before Boniface's bull in 1300, dissection seems to have been carried on in many places. Baas,[1] says that it seems not improbable that regular dissections were made at Salernum at the middle of the thirteenth century, in accordance with the decrees of Frederick II regulating medical studies and determining the requirements necessary for a diploma to practice medicine.

Dupouy,[4] says that Lanfranc attracted large numbers of students to the College of St. Come and exhibited his skill as an anatomist. The College of St. Come was the first body of surgeons who attempted to lift the practice of surgery out of the realm of the empire into that of the practical sciences.

It is not usually realized, but this latter half of the thirteenth century, especially at Paris, was a time of luxuriant development for the physical sciences. The period is thought of commonly as devoted to scholasticism, to metaphysics and to theology.

There were at one time in Paris, however, in this century, such brilliant thinkers and discoverers in physical science as Albertus Magnus, Roger Bacon, Arnold, of Villanova, the famous discoverer of nitric and hydrochloric acid, Vincent, of Beauvais, the encyclopedist, not to mention lesser lights, and this period must be considered by anyone who knows the history of the time as one of the most important of all history in the evolution of the so-called natural sciences.

Scientific medicine took its rise at Bologna about the middle of the thirteenth century. The first important name in the medical history of the university is Thaddeo, of Florence, whose professorship attaracted many students to the university about the year 1260. Rashdall[12] says that he was the first to do dissections regularly in connection with his university teaching. The tradition in this matter seems to show that dissections had been done before, and that the prejudice against the mutilation of the human body which existed in all minds from the pagan times, succumbed to the advancing spirit of scientific medicine some considerable time before the middle of the thirteenth century.

According to Rashdall, by the statutes of the university of Bologna, every medical student had to attend an anatomy or dissection each year. In order that proper opportunity might be allowed for personal study in this matter twenty students were detailed for the dissection of each male subject and thirty for each female subject. The bodies employed as anatomical material were usually those of malefactors who had suffered death for felonies or of tramps and wanderers without friends. It is easy to understand that the obtaining of female bodies for dissection was a more difficult matter, hence the increased number of students detailed for the study and inspection of such subjects.

According to statutes of certain of the Italian universities, a special fund was provided for the provision of food and wine for students and professors to keep up their spirits during the unwonted ordeal. This indicates a sympathetic fellow-feeling on the part of university authorities that may very well have been needed in the unsavory conditions likely to obtain in dissecting rooms before the invention of modern methods of preservation, but is very clear evidence that though the work might be difficult of accomplishment and repugnant to the student, still it was considered a duty that had to be accomplished.

Very shortly after the supposed bull of Pope Boniface VIII, the Venetian senate passed a decree, dated May 7, 1308, ordain-

ing that the dissection of a human body should be made every year in the city of Venice.[8]

Baas[1] says that this decree of the Venetian senate shows that dissection was by no means uncommon, in fact, had often been done before in Italian universities and probably in Venice itself, and this decree was only meant to secure for the physicians of Venice certain practical advantages in the renewal of their familiarity with the anatomy of the human body, which the senate of Venice considered necessary in order to enable them to keep up properly in a practical way with all advances in anatomical knowledge.

At this time Venice had no medical school of its own and this care on the part of the authorities to secure practical knowledge for the city's physicians is a very admirable example of the lofty municipal spirit of the time. A few years later Mondino was called to Venice from Bologna at the expense of the State in order to give a practical demonstration in dissection for the benefit of the medical practitioners of Venice.

It was not long after the beginning of the fourteenth century before the interest in anatomical studies became so great that the stealing of bodies from graveyards in order to supply material became so common as to require the enaction and enforcement of special regulations. De Renzi[3] gives an interesting account of the methods by which material was obtained for dissection purposes before governments made any special provision for this purpose. Naturally the rifling of graves was resorted to by students intensely interested in the subject of anatomy. The first criminal prosecution for body-snatching on record is in 1319, when some students brought a body to one master Albert, a lecturer in medicine at the university at Bologna and he dissected it for them. At this time, according to the statutes of the university, teachers of anatomy were bound to make a dissection if the students supplied the body. The whole party were brought to trial for this offence though they do not seem to have suffered any very severe penalty for their violation of the laws. At this time, according to De Renzi, there was a rage for dissection and many bodies were yearly obtained surreptitiously for the purpose.

With regard to the bodies of condemned criminals, people began to countenance the procedure, and while unwilling as yet to give them freely, allowed the bodies to be taken. Corradi,[2] quoted by Puschmann,[11] says: "The laws against the desecration of graves without being abolished became a dead letter. The

authorities interfered only if decided violence had been used or a great scandal raised." Such consequences were likely to follow only if in the ardor of their enthusiasm for anatomical knowledge students rifled the graves of well known persons or took the bodies of those whose relatives discovered the desecration and proceeded against the marauders by legal measures.*

DISSECTION AFTER THE BULL.

The bull certainly brought no change as regards the making of autopsies, for in 1301, according to Puschmann,[11] a medico-legal dissection was performed at Bologna under the direction of the legal authorities. Suspicion had arisen in a certain case that a man had been poisoned. A medico-legal examining board, consisting of two physicians and three surgeons, was appointed to make the medico-legal investigation. As Puschmann remarks, from the description of this event it can not be inferred that this was the first case of the kind in the city. On the contrary it is evident that the legal authorities considered that those appointed to make the examination possessed sufficient experience of anatomical details, normal and abnormal, as to justify the hope that the conclusions drawn from their examination could be depended on as the basis for legal decision in the matter. There is a tradition that William of Salicetum dissected at Bologna the body of a nephew of the Marchesi Pallavicini for the purpose of determining whether his death was due to poisoning

*After all, it must not be forgotten that practically the same difficult state of affairs with regard to the securing of anatomical material obtained in America well on into the nineteenth century. There is scarcely a single one of the early presidents of the New York Academy of Medicine, which was founded only a little over half a century ago, who did not, in his medical student or early medical teaching days, take part in some expedition that had body-snatching for its purpose. Anatomical material could practically be secured in no other way. Men who afterwards were the very model of dignity, were known to go out on Long Island on the bitter cold nights of winter and at the risk of their lives almost (for often cemeteries were watched by armed men), bring home dissecting material. At times, in order to get safely across the ferries, the bodies had to be supported in a sitting posture beside the driver of the vehicle, who, of course, had to be a student since no other could be trusted. The famous Doctors' Mob in New York, in which the lives of a number of medical men were threatened, had its origin in an outburst of public sentiment against the practice of dissection, and it was not until well on towards the middle of the nineteenth century that any proper legal regulations were made for the provision of anatomical material.

or not. This autopsy was made about the year 1300 and was considered to be the usual procedure in such cases.

The story of dissection for teaching purposes at the Italian universities during the first half of the fourteenth century can be traced very clearly. Many medical historians say that Mondino was the first to perform public dissections. It is sometimes stated that he dissected only one or two bodies altogether. Medici[9] impugns the notion that Mondino's dissections were limted to a few bodies. The internal evidences from his text-book of anatomy, which was for several centuries the accepted guide in anatomy at the Italian universities, rather countenances the idea of his having made a large number of dissections. Medici quotes the *Chirurgie Guidonis de Cauliaco,* Venice, 1498 ("Guy de Chauliac's Surgery"), in which the Frenchman who is known to have been at Bologna and witnessed dissections done by Mondino and also by his successor Bertucci, states that Mondino did many dissections, his exact word being that he dissected "multoties."

Julius Pagel,[10] in his sketch of the history of medicine at the end of the Middle Ages, says that Bertucci, who died of the Black Death in 1347, and Pietro di Argelata, who died towards the end of the fourteenth century, both of them, thanks to Mondino's enterprise in making public demonstrations in dissection, were in a position to perform regular and systematic investigations into anatomy by actual dissection of human cadavers.

Guy de Chauliac, who is often spoken of as the father of modern French surgery, attended the dissections at Bologna in the early part of the fourteenth century, and later continued to practice dissections for the sake of the knowledge necessary for surgical procedures after his return to France. He was the surgeon to three Popes, when the Popes were at Avignon, and in a book written in 1363, at a time when he was a member of the Papal household, he insisted on the necessity for dissection and proposed to make use of the corpses of executed criminals for this purpose. Acording to Medici, Guy de Chauliac says that anatomy was taught by dissection at Montpellier in his time. He also mentions the fact that Henri de Mondeville, a famous surgeon and anatomist in Paris, was an imitator of Mondino in the making of human dissections and the use of this material for demonstrations to students.

Baas[1] gives a number of details that show that dissections were freely made at other universities besides those of Italy during the

fourteenth century. Regular dissections, for instance, were made at the first of the German universities, that of Prag, about the middle of the fourteenth century. The bodies of criminals after execution were used for this purpose. After 1376 the same practice obtained at Montpellier, executed criminals being also employed there. As the death penalty was the sentence for most of the crimes that are now felonies, the material thus afforded would seem to have been quite abundant.

THE UNIVERSITIES AND THE CHURCH AUTHORITIES.

How intimately the government of the university of Bologna was associated with Papal influence at this time and how much it was under the jurisdiction of successive Popes, can be very well appreciated from historical records of the university during the thirteenth century. In 1292 a bull of Pope Nicholas II conferred on all doctors licensed by the archdeacon of Bologna the right to teach not only in the city and in connection with the university of Bologna, but in any university throughout the world. This is the first record that we have of any effort to make the degrees of a university respected even beyond the limits of the university itself.

At this time the rector of the university of Bologna was always a cleric, and the educational institution itself was in very intimate relations with the ecclesiastical authorities. As yet there were no university buildings proper, and all of the great university assemblies were held in the cathedral. Lectures were often given in the sacristy of the cathedral, while the important courses of studies were given in large rooms in the great convent of St. Dominic. Notwithsanding this intimate association with the Church, which practically placed the university directly under the control of the Popes, it is at Bologna, within the twenty-five years after the supposed prohibitory bull of Boniface VIII, that the science of practical anatomy, as it began to develop in modern times from the actual practice of dissection, took its rise. It is very evident, then, that the bull did not, nor was it supposed to prohibit the cutting up of human bodies for scientific purposes.

The earlier history of dissection at Montpellier is not without interest especially because of the close connection of the Popes with the university. Henri de Mondeville, already mentioned, was towards the end of the thirteenth century a professor of anatomy, surgery and medicine at Montpellier and then, just be-

fore the close of the century, physician in ordinary to Philip le Bel of France. While holding this position he seems to have taught at the university of Paris and to have made dissections some of which had surely also been done in his earlier career. As Guy de Chauliac notes he added thirteen anatomical illustrations to a text-book on medicine that he published evidently as the result of his own experience.

The statutes of the university of Montpellier for the year 1340 provide for at least one "anatomy," the old name for a dissection, every five years. This seems very little according to our modern ideas, but subjects for dissection were extremely difficult to obtain. At this time the course in medicine was supposed to take five years unless the candidate had previously passed his baccalaureate in arts, when only four years was required, and the idea was that every medical student should have the opportunity to see and study one completely dissected body.

At this period the university was very closely in touch with the Papal court, which, it will be remembered, was at Avignon from 1309 to 1376. Not infrequently the professors at Montpellier were medical attendants of the Popes or honorary members of their household. Guy de Chauliac, the most distinguished member of the medical faculty at Montpellier, and often spoken of as the father of surgery, was for many years chief consultant physician and surgeon to the Popes. It is very evident, then, that there was at this time no ecclesiastical condemnation on the subject of dissection. Shortly after the middle of the century Urban V, who was an alumnus of Montpellier, was appealed to because the university was losing in numbers. Urban endowed several chairs of philosophy and languages, and in 1365, on the special appeal of the medical faculty, he endowed the College of Twelve Physicians (Collège de douze Medecins). This college was to furnish forever free scholarships for twelve medical students, who were to pursue their studies at the university of Montpellier. There was, therefore, not only no ecclesiastical opposition to the methods of teaching at the university, but on the contrary, actual encouragement and the desire to perpetuate its advantages and make them available to an increased number of students.*

*During the thirteenth century the Cardinal legate Conrad at Montpellier, took special care of the interests of the university. The bishops of Maguelone, of D'Agde, Lodeve and Avignon, after the departure of the Popes, agreed to enforce the decree that no one should be allowed to practice without a license from the university authorities. This was an

There came a great reawakening in all departments of medical science towards the end of the fifteenth and the beginning of the sixteenth century. Humanism, or the introduction of Greek literature and art to the modern world, the New Learning, as it was called, had its influence also on the minds of men in the matter of scientific investigation.

Original observation became the aim of all medical men. This was especially noticeable in anatomical science. As Puschmann says: "Men ceased to rely upon the infallibility of Galen and began to make independent investigations on the dead body for themselves." Gabriele Zerbi, in his anatomical description of the human body towards the end of the fifteenth century, treated separately bones, muscles and blood vessels. He made mention of the oblique and circular muscle fibers of the stomach, showing that his dissections were not only careful, but even minute. He also described the puncta lachrymalia and suggested their function. He realized, too, the purpose of various ligaments in maintaining internal organs in position, and he gave special names to many of these ligaments. At Bologna, about this same time, Achillini, whose appellation, "the second Aristotle," shows the appreciation in which he was held by his generation, described the common bile duct opening into the duodenum, and also the ileocæcal valves. It is very evident that these descriptions could not have been made by anyone who was not thoroughly familiar by actual inspection with these structures.

There were other very manifest signs of the advance in original investigation in anatomy. Mondino's book on anatomy was no longer accepted as the absolute authority on anatomical subjects. Berengar, of Carpi, corrected a number of mistakes in Mondino's treatise and besides discovering the foramina of the sphenoid bone in the skull is considered to be the first who recognized the constant occurrence and gave an exact description of what has since proved to be such a very important organ for the human race—the vermiform appendix. He seems to have been the first also, to call particular attention to the fact that there are certain important differences in the bony skeletons of men and

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important legal regulation for medicine in those days, quite as important as are the many laws which in modern times we have only succeeded in obtaining in our generation for the proper safeguard of the practice of medicine in the various States. The Church authorities represented the only governing body that could enforce such regulations, and their action shows their interest in applied science.

women, due to the different functions which by nature they are expected to perform. About this time too, Canani furnished an excellent description of the muscles, their origin and insertions, with some definite ideas as to their various functions and was besides the first to observe the valves that exist in veins. This shows a very special attention to anatomical details in dissection, especially when it is recalled that the first valves described were those found in the vena azygos—a vessel that can only be reached after extensive dissection of the thorax.

Most of these discoveries in anatomy were made in Bologna and it is to this city and university that the beginning of the great modern movement in anatomical discovery must be credited. This movement had begun before the opening of the sixteenth century. In 1512, Bologna, which formerly had been a free city, came under the dominion of the Popes. Pope Julius II was organizing the states of the Church, and after this time until the French revolution, Bologna continued to be a Papal city. Before this the university had been largely under ecclesiastical influence and the Popes had always been considered as patrons and the ultimate authority to whom matters in dispute at the university had been referred. After this time these relations to the city and university on the part of the Popes became even more intimate than before. We have no account of the formal withdrawal of any supposed Papal ordination forbidding dissection. History shows that there was no need of any such document. In Bologna, as a Papal university, however, anatomy far from declining became even more flourishing than ever. During the first half of the century Vesalius was invited to Bologna and the city came to be acknowledged as the greatest centre for the teaching of anatomy in the world. Scholars flocked to the Papal university from all over Europe. Harvey came from England to Padua and Bologna to make many of the dissections out of which was to spring his important discovery of the circulation of the blood at a time when for more than a century these cities had been famous for original anatomical investigation of the highest merit.

This golden age of anatomical study at the beginning of the sixteenth century continues even down to our own day to enjoy the reputation of an unequaled epoch in scientific advance. Not only were a number of careful dissections made and the material used for the purposes of anatomical demonstrations to students, but text-books were written on the subject, many of them reaching the dignity of print, for the end of the fifteenth century repre-

sents a very important movement in the printing of medical books and, besides, many of these books were illustrated by plates made by the greatest of artists. Marco Antonio della Torre, who lived from 1473 to 1506, made a series of dissections which were illustrated by plates designed by Leonardo da Vinci. These illustrations are some of the best of their kind that have ever been made. Michael Angelo also spent considerable time in anatomical studies and employed his pencil in making designs that were used for anatomical illustrations. Raphael is also said to have done similar work.

When he came to Italy, Vesalius, far from finding anatomy a neglected science, proved only a greater link than usual in the chain of distinguished original workers. He was brought intimately into contact with Eustachius, the Papal physician of the time, to whom we owe many important discoveries, especially in the anatomy of the head, while one of his pupils was Fallopius whose name in only less illustrious than that of his master.

The plates for Vesalius' great work, *De Humani Corporis Fabrica,* are probably the best anatomical illustrations that have ever been made. A reasonably well-founded tradition extending back almost to contemporary times exists to the effect that their designer was no less a person than the famous Venetian artist Titian. All this accomplished for anatomy in a city and university directly under Papal authority would seem to be enough to silence all those who would still claim the hampering influence of the old Papal Bull, but it has not. Here is a very recent example:

In a series of lectures delivered as the Lane Lectures at the Cooper Medical College in San Francisco in the fall of 1900, Sir Michael Foster, who is the Professor of Physiology in the University of Cambridge in England and one of the most distinguished of living physiologists, goes rather out of his way it would seem in order to make an opportunity to repeat the old slander against the Popes and this supposed prohibition of dissection. The subject of his lectures was the history of physiology during the sixteenth, seventeenth and eighteenth centuries and it is only in tracing the original work in anatomy that Prof. Foster finds occasion to mention the supposed Papal prohibition of dissection.

He says[5]: "Vesalius, like other great men, had his forerunners. Long before him at the close of the thirteenth and the beginning of the fourteenth century, Mundinus, or Mondino (Raimondo de' Luzzi), one of the teachers of the early days at

the then great university of Bologna, had dared to turn his eyes from the pages of Galen to that of Nature and to learn for himself by actual dissection how the body of man was built up. He learned enough to write a book of his own, the 'Anatomia Mundini,' which after him became a text-book in the schools, though used perhaps more as an introduction or help to Galen than in any other way. But Mundinus did not go far. He, like other anatomists, like indeed Vesalius himself, had to struggle against not only the authority, but the direct hand of the Church. She taught the sacredness of the human corpse and was ready to punish as a sacrilege the use of the anatomist's scalpel; and what Mundinus did was done in the face of her powerful opposition. For this reason, apparently, Mundinus had no disciples carrying on his work; all that remained of him was his book, and he became little more than a smaller and a later Galen."

Considering the number of followers in the study of anatomy that Mundinus had, only a few of whom we have mentioned, this last declaration of Prof. Foster is very surprising. If we remember how much Mundinus' demonstrations at Bologna influenced Guy de Chauliac, who was to be the father of modern surgery and the moving spirit in the development of anatomical knowledge in the West, the whole passage is a perversion of easily obtainable historical details. As a matter of fact there was scarcely a generation during the two centuries that separate Mundinus from Vesalius in which really great work in anatomy was not accomplished. Great discoveries were not made, but then great discoveries apparently wait for genius to make them, and there are centuries of anatomical development in much more modern times, that in spite of devoted study on the part of many enthusiastic anatomists will, to subsequent generations, appear quite as barren of important advances in anatomy as the fourteenth and fifteenth centuries. It is not too much to say that our vaunted second half of the nineteenth century (the first half is great because of the discovery of the cell doctrine) will be one of these areas of apparent eclipse in anatomy, though it has been so full of investigations.*

*In Prof. Foster's "Lectures" there is a very curious passage with regard to certain supposed relations of Vesalius and Ignatius Loyola, which since it has been given special publicity here in America, because of the delivery of these lectures originally to an American audience, seems worth while recalling if for no other purpose than to show how readily prejudice may even in a great mind lead to statements that lack historical substantiation. The passage is all the more interesting since it is not very clear any-

Surely the reading of even this incomplete account of dissection and the cultivation of anatomical science during the two centuries and a half after the bull of Boniface VIII was supposed to put a stop to it, will show very clearly not only that the ecclesi-

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how, why, even if it did represent the truth, it should have found a place in the introductory lecture to a history of physiology. Professor Foster said to the students of Cooper Medical College in San Francisco:

"It may be worth while to note as an instance how in the web of man's history threads of unlike kind are made to cross that among the monks (sic) who had charge of the hospital at Venice, at which Vesalius pursued his medical studies, was one who bore the name of Ignatius Loyola. We may well imagine that these two young men crossed each other's path in the hospital wards or grounds, perhaps even conversed with one another. One was gathering in a rich harvest of exact knowledge, which six years later he was to embody and give to the world in a great book, the beginning of modern biologic science. The other was busy with a scheme for the spiritual welfare of mankind which six years later took shape as the order of the day. The one with his eyes fixed on man's body brought forth a work, the fruits of which profoundly influenced and are still profoundly influencing men's minds. The other with his eyes fixed only on truth and goodness began that which after him became the incarnation of authority, an engine powerful it is true for good, but often used for the support of lies and for the maintenance of evil. No two things have fought and are fighting each other more bitterly than the things which have sprung from the two works of the two young men who crossed each other's path at Venice in the year of our Lord, 1537."

This is, of course, only a rhetorical restatement of some of the old vague slanders against the Jesuits; and, like the usual run of such statements, ignores any facts that might be presumed to give substantiation to the assertion. One is fain to wonder if Prof. Foster knows that there are thousands of medical students throughout the world at the present time who are not only not sorry, but intensely proud of the fact (as he can readily find out for himself by a little investigation) that they obtained their preliminary education from these Jesuits, who are supposed to instil a spirit so opposed to modern scientific progress. He will not find them the least successful students of science either. One is also fain to ask if Sir Michael knows anything of the real relation of the Jesuits as a body to the science of the last four centuries? If he knows anything of how much they have done for astronomy, or for geography, or for ethnology? Does he perhaps realize that the greatest successor of Vesalius, Morgagni, who so fruitfully applied Vesalius' method to the investigation of diseased organs, was a great personal friend of the Jesuits and was proud to have a son among them? Does he know, for instance, that Theodor Schwann, to whom modern science owes the pregnant cell doctrine, was a student of the Jesuits and glad to acknowledge his indebtedness to them all his life? And Lamarck and Claude Bernard are further examples of the same thing among our greatest modern scientists. Even Johann Mueller owed his early training to Jesuits, and in the midst of the materialistic advance of medicine in Germany remained faithful to the religious teachings he

astical authorities did not prohibit dissection, but that they actually encouraged it. It was after the University of Bologna had come under the temporal as well as ecclesiastical jurisdiction of the Pope, that is, after the city itself had become a Papal city, that the golden age of anatomical evolution set in. Before this period, the most important epoch in the history of dissection is the first half of the fourteenth century, immediately after the promulgation of Pope Boniface's bull. During this period the modern science of anatomy took its rise at the University of Bologna, while the modern science of surgery, founded on careful anatomical studies, had its beginning at the University of Montpellier. The Popes were so close to Montpellier during this time as to be surely well informed of all that was going on there.

The assertion, then, that the "Bull De Sepulturis" hindered in any way the development of anatomical science, is one of the lies of history so commonly to be found, in historical treatises since the Reformation, in matters which concern the old Church and the Popes. This history lie has been told so often and believed so confidently that it will be extremely difficult to remove it from the files of historical medical tradition. It has been repeated by most of the authorities on the subject, and only occasionally with a remark that shows they did not entirely give credence to it. Even so distinguished an authority as Rashdall,[12] in his "History of the Mediæval Universities," though there is an abundance of material in his own pages to show that dissection was constantly being carried on at all of the universities, still gives some weight to the old tradition with regard to Boniface's bull. There is not the slightest evidence, however, that the bull was ever intended or was ever interpreted, by contemporary or succeeding generations, to mean anything that could hamper the true progress of science. The Church was deeply interested in medicine at the time, and to her we owe the universities in which scientific development came, as well as whatever encouragement there was for the organization of medical schools and the legal regulation of the practice of medicine, so as to give the profession that dignity which would ensure continued progress.

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had received from members of the Order—no longer Jesuits, it is true, because as a teaching body they had been suppressed through political machinations. This whole passage in Sir Michael's lecture is in extremely bad taste, and it seems unfortunate that so distinguished a scholar should have permitted himself to indulge in such random innuendoes with regard to an absolutely foreign subject on which he was so ill informed.

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FOUNDERS OF MODERN MEDICINE.—III.

JAMES BENIGNUS WINSLOW.

(A.D. 1669-1760.)

WITH A NOTE ON

THEOPHILUS BONETUS AND THE "SEPULCHRETUM."

By EDWARD W. ADAMS, M.D.,
Sheffield, England.

James Benignus Winslow, the famous anatomist and author of the *Exposition Anatomique,* was born at Odense in Denmark, in 1669, but most of his life was lived in France. He was the son of a minister who intended his son for his own profession, but Winslow's tastes and inclinations led him to embrace medicine instead of theology. He spent his pupilage after the usual fashion of the students of those days, travelling from university to university, and eventually came to Paris where he was a pupil of Duverney. He settled in Paris after his arrival there in 1698.