THE
FitzPatrick Lectures for 1904.

DELIVERED IN THE ROYAL COLLEGE OF PHYSICIANS,
NOVEMBER 8TH AND 10TH.

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LECTURE II.

RICARDUS ANGLICUS AND THE TEACHING OF
ANATOMY IN THE MIDDLE AGES.

[ABSTRACT.]

We find occurring in the medical history of the thirteenth century, and attached to a good many old manuscripts in our libraries, the name of one Ricardus Anglicus, Richard the Englishman, and are naturally desirous of finding out all that can be known about our countryman, and of displaying his work and personality as clearly as we can.

But here we encounter the same difficulty as in the case of Gilbert, that is, the ambiguity of a Christian name. We read of Magister Ricardus, Ricardus Salernitanus, Ricardus Anglicus and Ricardus Parisiensis, so that evidently some discrimination is necessary. On investigation it appears that the four Richards are reducible to two persons, an earlier and a later. The earlier, called sometimes Salernitanus, was in some way connected with the school of Salerno, the *Ricardus Senior* of Gilles de Corbeil, the honoured magister and probably actual teacher of Gilbert, the writer of numerous medical works (one of them a treatise on Anatomy), some of which have been wrongly attributed to Ricardus Anglicus. He was a Frenchman apparently by nationality, and a teacher at Montpellier, but having had some earlier connexion with Salerno. He must have lived and flourished at the end of the twelfth century though he probably lived on into the thirteenth, but the dates of his birth and death are not known.

The later Richard was our Ricardus Anglicus called also Parisiensis because he at one time lived at Paris. As in the case of Gilbert, the name Anglicus implies not only that he was an Englishman, but that he lived or was well known abroad. The main outlines of his life are clearly marked out on unquestionable evidence. He was born at Wendover, and was known as Richard of Wendover. One would like to adopt and use this name exclusively, were it not that there was another contemporary Richard of Wendover, Bishop of Rochester. It has been suggested that Richard studied at Oxford, but of this there is no evidence. He was a Canon of St. Paul's, and the official records still show the names of the different

prebends that he held successively. His contemporary, Matthew Paris, the Monk of St. Albans, and well-known chronicler, who died only seven years after Richard, gives us further particulars about him. He states that Richard was physician to Pope Gregory IX (though when appointed he does not say), and retained his post till the death of the Pontiff in 1241. The Pope was much attached to his physician, and on his deathbed gave him a much valued possession—an ivory crucifix containing precious relics. This crucifix Richard bequeathed to the Church of St. Alban, so that Matthew Paris must have been well acquainted with the circumstances. Next, Du Boulay or Buleius, the historian of the University of Paris, tells us that Richard of Wendover, Canon of St. Paul's, London, the physician, made himself a great reputation among several of his countrymen who were Professors at that time. Now "Professor" had not then precisely the formal meaning it has now, but at all events it meant teacher. Richard died in 1252, as is confirmed by official records. There is nothing doubtful or uncertain about all this; the only point not quite clear is when Richard taught at Paris.

There ought not to be any confusion between the two Richards, and there is not, except as to their writings. Both wrote books, and each of them, as it happens, wrote a book on anatomy and some kind of book called *Practica*, besides others, which are assigned generally to Ricardus, with or without the suffix Anglicus. But his name is often applied very loosely and inaccurately, scribes and cataloguers having been accustomed to suppose that any medical work by Ricardus must have had the Englishman for its author:

The MSS. of Ricardus at Paris were carefully examined and read by M. Littré more than fifty years ago. He found that some of these works must have been written in the twelfth century, and therefore could not have for their author Richard of Wendover, who died in 1252. About others he was uncertain or gave no opinion. But with our present knowledge of the medical literature of those times there can, I think, be little doubt that most of these books had nothing to do with our Richard of Wendover; certainly seven or eight out of ten would be excluded.

I have examined, by reading as far as possible and by having some copies made, several MSS. in the British Museum and the

Oxford libraries, and have not as yet come upon any MS. which can be certainly referred to Richard of Wendover; all that I have seen are clearly the works of the earlier Richard.

In this difficulty of finding the genuine works of our Richard we receive unexpected aid from Vienna. An able and learned investigator of the history of mediæval anatomy, the Ritter von Töply, lately appointed Professor of the History of Medicine in the University of Vienna, has published in a beautiful form, from a manuscript in the

Fig. 1.—Title-page of the *Anatomy* of Mondino as corrected by Melerstat.
(Printed before 1500.)

Palatine Library, a Latin treatise on anatomy which bears the name of Ricardus Anglicus, and which he regards as the work of our Richard of Wendover.

Now, the mere fact that the name Anglicus is inserted upon the MS. is, of course, not enough to establish the authorship beyond question, since we have seen how loosely names are applied, and that this particular name is often given quite erroneously. But Professor von Töply gives corroborative evidence, derived from the style and contents of the work, which correspond to the time of Richard of Wendover. They will be discussed later, but in anticipation I must say that it appears to be just such anatomical teaching as we should expect to have been given at Paris in the middle of the thirteenth century.

It contrasts strongly with the anatomy of the earlier Richard formerly spoken of. There are several MSS. of this in the British Museum and at Oxford, and one of those in London bears the name of *Magister Ricardus Vetulus*, evidently the same as the Ricardus Senior mentioned in my last lecture as spoken of by Gilles de Corbeil, and probably the teacher of Gilbert. The contrast of these two works, of different schools and different dates, is very instructive, and will be considered in the course of some remarks on the history of anatomical teaching. We now pass on to some notes on the History of Anatomical Teaching in the Middle Ages. Teaching only is regarded, and not the history of anatomy, which would be far too large a subject. It is proposed to illustrate this by quoting several documents relating to anatomical teaching, and then to show the changes which it underwent. In this enumeration reference will be made to the anatomy of the earlier Richard, and to the anatomy of Ricardus Anglicus, as published by Ritter von Töply, and thus the true character of these treatises will be shown by comparison.

Anatomical Teaching among the Greeks.

In early times anatomy was taught in Greece to the children of "Asclepiad" families, the real or supposed descendants of Asclepius, with whom medicine was a hereditary craft. Afterwards strangers, as well as members of the family, were taught the craft; and it was then, according to Galen, that books of anatomy were first composed. At a later time anatomy was very systematically studied in the school of Alexandria, being taught by Herophilus, Erasistratus, and others whose works have perished. At one time living persons (criminals under sentence of death) were subjected to dissection, but this barbarous practice was given up, and dead bodies were dissected. This latter practice also was afterwards forbidden, and in the time of Galen dissection was carried out in Alexandria only on the bodies of brute animals, such as apes and pigs. Galen himself had been taught anatomy when he was young, and kept up the study with enthusiasm in mature life. He dissected chiefly apes, and recorded his results in several books.

These anatomical books were very imperfectly known in the Middle Ages; the only one which was translated into Latin

was the treatise *On the Use of Parts*, which was intended to show the wisdom of the Creator in adapting all parts of the body to their respective uses. It was rather a treatise on natural theology than anatomy, and not intended to teach the science to students. The descriptions of parts are often very vague, or even allusive, taking for granted some knowledge. This was the only direct source of Galenic anatomy in the Middle Ages, though anatomists knew something more of the doctrines of Galen and Aristotle through the Arabian books translated into Latin.

Three periods may be recognized in the anatomical teaching of the Middle Ages:

1. *The Salernitan Period*, when anatomy was taught in the school of Salerno by the dissection of pigs. This period goes up to 1200.
2. *The Arabian Period*, when what was called "human anatomy" was taught solely by books and lectures without dissection. The basis of teaching was the Arabian anatomical books representing the doctrines of Galen and partly of Aristotle. This period includes, broadly, the thirteenth century.
3. *The Period of Human Dissection* introduced by Mondino in 1315, and extending up to the time of Vesalius. Each of these periods may be illustrated by selected documents showing the kind of teaching.

FIRST PERIOD.

The first work on anatomy produced in the school of Salerno was the *Anatomy of the Pig*, by Copho, junior, written probably at the end of the eleventh century, after the introduction of some knowledge of Arabian anatomy by Constantine, in a work called *Pantegni*, a translation of a book by Haly Abbas, an Arabian Physician. This tract is a short description of the dissection of a pig, with directions how to find and display the most important parts. It contains only two Arabic anatomical terms, *Zirbus*, the omentum, and *Siphac*, the peritoneum. It begins thus:

Copho on the Anatomy of the Pig.

Since the composition of the internal members of the human body was entirely unknown, the ancient physicians, and especially Galen, thought that the parts might be made evident by the anatomy of the internal members of brute animals. And while certain brute animals, as the ape, are found to be like us in the external parts, none of the internal parts are found to be so like as those of the pig, and therefore we have decided that anatomy should be studied in them. Now, anatomy is correct division, and is done thus: You must place the

pig on its back, and cut it through the middle of the throat, and then the first thing that comes into view is the tongue, which is attached on the right and on the left to certain nerves which are called those of motion. And these nerves, as they come from the brain to the lung, are turned aside to the tongue, and by them the tongue is moved so as to make sounds, etc.

Another anatomical work of the School of Salerno is the *Demonstratio Anatomica*, contained in a Salernitan manuscript preserved at Breslau: and printed in the *Collectio Salernitana* of de Renzi. After a general introduction the directions for dissection begin as follows:

Let a pig be killed not as some do by piercing the heart with a steel

Figura de situ viscerum.

Fig. 2.—View of the internal organs in man showing the lungs, heart, stomach, liver, spleen, intestines, kidneys and bladder. Magnus Hundt, *Antropologium*, 1501 (from Stockton Hough, *Incunabula Medica*).

instrument, by which much blood is drawn to the organs of breathing, and they cannot be so well seen; but having cut its throat, let it be hung up by its hind feet, with the head hanging down, so that nearly all the blood may flow out. When this is done, it must not be taken down (? left) lest, the body becoming cold, the channels of the nerves, veins, and arteries should contract, and they could not be easily distinguished. Now the opinions of the ancients respecting anatomy, were conflicting and diverse. For some say that anatomy was practised on dead animals; but they used to assert that on more mature consideration living animals were preferred for dissection, and according to Galen, this opinion prevailed, because the movements of particular parts are more clearly seen. But this being done and the pig being placed upon its back, let the lower knee be drawn aside a little from the upper; and then comes into view the tongue, which is the organ of taste and speech, composed of soft flesh and something like a sponge. . . . The tongue in these animals is too long and flabby, and cannot be moved in the upper part for the utterance of vowels, though it can be used below for the utterance of mutes (consonants), and this is one reason why it (the pig) cannot talk, etc. . . .

Then let a small incision be made above the throat, and certain muscles are seen which are the means of voluntary motion; and by a similar incision at the side between the skin and flesh certain other muscles are seen by which voluntary movements are effected.

It is impossible to discuss the rest of the "Demonstration," which gives rough, but generally intelligible directions, for the dissections necessary to exhibit the stomach, intestines, and other abdominal organs, as well as the organs of generation in both sexes, with some account of their structure and remarks upon the uses of each part. The head and the anatomy of the eye are briefly described; it is much more detailed than that of Copho, and was evidently written later. The next document brought forward is a short tract on anatomy called the *Anatomia Magistri Ricardi*. This has already been printed at Berlin, indeed twice. For the reason already given there can be no doubt that, as suggested by Ritter von Töply, it was written by the Magister Ricardus, who was known to Gilbert at Salerno, and whom we place at the end of the twelfth century. Several MSS. of this anatomy contained in the British Museum and the Oxford libraries agree in the main, but differ rather considerably in the first part or introduction, which is the most interesting portion. This introduction is here given from the MS. which has the fullest text:

Anatomia Magistri Ricardi.

As Galen affirms (in the Tegni) whoever wishes to know the arrangement of the internal and external parts of the human body must be well trained in anatomy, wherefore we must consider what anatomy is, and why it is so-called, and in which animals it was the custom to practise it among the ancients, and in which among the moderns, and of their (its) kinds and divisions. The word anatomy, as we know from

Galen, means right or correct division of the parts, and comes from *ana*, meaning correct, and *thomos*, meaning division, hence correct division of the parts, that is done in an orderly way.

Now it was the custom among the ancients to practise anatomy both on the bodies of the living and on the bodies of the dead. They (the anatomists) went to the Prince and begged for those who were condemned to death. First tying their hands and feet, they made their incisions in the organs of the soul (nervous system), as being the most important parts of the body, especially the head, in order to get a complete knowledge of the arrangement of the skull, of the pia mater and the dura mater, and the character of the nerve (nerves?) arising from them. Next they made their incisions into the organs of breathing, in

order to get a complete knowledge of the position of the heart, and the entrance of nerves, veins, and arteries. In the same way they went to the organs of nutrition; after this, finally, they went on to the generative organs, as being less important. This was the way in which it was usual to practise dissection on the bodies of the living.

The account goes on to say that the dead bodies were prepared for dissection by maceration in running water; but at the time of the writer dissection was practised quite adequately on the bodies of pigs.

THE SECOND PERIOD: TEACHING OF HUMAN ANATOMY WITHOUT DISSECTION.

For some reason the dissection of pigs seems to have gone out of fashion, and for about a hundred years anatomy was taught by lectures and books, on the basis of the Arabian anatomical literature derived from the Greek. The anatomy was much more elaborate than that of the earlier period. The best example of this period is found in the work of Ricardus Anglicus, as brought to light and published by Ritter von Töply. Though the name alone would not establish the authenticity of the work, the style and doctrines are just what might be expected from a teacher at Paris in the middle of the thirteenth century. It refers to several Arabian writers—Avicenna, Haly, Averroes—and contains many more Arabic anatomical terms than the older book; also, the style is that of the scholastic or dialectical period. The *Anatomia* begins as follows:

The Anatomy of Ricard the Englishman.

It is necessary for those physicians who are anatomists to know for certain that the human body is constructed to be the support of movements and of diverse operations, and hence is composed of many and diverse instruments (organs). To it is joined a "noble part" pertaining to the soul, by which noble powers and many kinds of faculties exercise influence over it, and by the activities of these it is governed and maintained in being, and is preserved from corruption and from a rapid fall (or decay). But since the activity of no faculty can be fulfilled except by organs fully adapted for the purpose, there is required adaptation and preparation of organs of many shapes to regulate the fabric of the human body, by which the faculties are brought into action, and produce the effects which they intend. Wherefore, any

Fig. 3.—The external anatomy of the muscles, from Berengarius Carpus' commentary on the *Anatomy* of Mondino, 1521.

operation which, has not manifold uses is not long preserved, nor, indeed, does it come into being.

This is only a sample, but gives a fair idea of the book.

After Ricardus Anglicus came Henry de Mondeville, another teacher of the same school in anatomy, though he was also a practical surgeon. He lectured on anatomy at Montpellier about 1304. He did not dissect, but was the first to use pictures or diagrams as an aid in teaching anatomy, and also the model of a skull. Part of his book was translated into English in 1392.

Fig. 4.—Diagram of the heart and great vessels, showing pulmonary artery and vein, aorta (adorti), and vena cava (chilis); also the third or middle ventricle, which was thought to have been described by Aristotle.

THE THIRD PERIOD OF ANATOMICAL TEACHING (1215 TO 1543): REVIVAL OF HUMAN DISSECTIONS.

A few years after de Mondeville's lecture and the composition of his book on surgery the most important advance in the teaching of anatomy was made by the introduction of demonstration from the dissected subject. The credit of this innovation belongs without doubt to the University of Bologna, and the first teacher by actual dissection was Mondino de Luzzi—usually known as Mundinus de Lentilis—who made his first recorded public demonstration of anatomy in the year 1315, and died in 1326.

Fig. 5.—Diagram of the esophagus, stomach, pylorus, and intestines. This and the last figure are from Peyligk, *Compendium Philosophiae Naturalis*, Lipsiae, 1499. (Copied from Stockton Hough, *Incunabula Medica*.)

There is evidence of the human body having been dissected, or at least opened after death—for the distinction between a *post-mortem* examination and an anatomical dissection was not clearly recognized—at Bologna before 1315, but these dissections had nothing to do with the actual teaching of anatomy to students.

Mondino professed to demonstrate from Nature the actual structure of the parts, but seems to have been able to see little or nothing more than what was laid down by the Arabian authors as the anatomy of Galen, and therefore recognizes some features which belong to the anatomy of brutes and are not strictly human. He left no figures, but, when the art of woodcutting was introduced in the fifteenth century, some rude woodcuts appeared which represent Mondino and his teaching. One shows the professor sitting in a chair, while a prosector makes the dissection in which students took no part (Fig. 1). Others represent the ideas entertained at the time respecting the anatomy of internal organs, but are not actual copies from Nature (Figs. 2 and 5).

The most important of the successors of Mondino at Bologna was Jacobus Berengarius Carpus, who brought out a new edition of the *Anatomy of Mondino* with a commentary in 1521, and also a short introduction to anatomy of his own. These works are chiefly remarkable for their illustrations which were the best anatomical figures published up to that time. His representations of the external anatomy of the muscles are accurate and show artistic feeling (see Fig. 3). But when he gives a figure of the heart and the aorta, it departs widely from the human standard and shows how much, even after two hundred years of human dissection, men were influenced by preconceived ideas (see Fig. 4).

SOCIAL EVOLUTION AND PUBLIC HEALTH.—This was the subject selected by Dr. Arthur Newsholme, the Medical Officer of Health of Brighton, for his address at the first meeting of the York Medical Society in October. After pointing out that the public health policy of the last half century had not only neutralized the increase of the death-rate following the "urbanization" of the people, but had actually effected a further reduction of 28 per cent. of the total death-rate, Dr. Newsholme discussed the general physique of the working classes, urging that the food of the people, their education, and the medical attendance available were three of the chief means for their improvement. Though there existed no real evidence of degeneracy, there did exist ample sign that a portion of the community habitually went short of sufficient food, and a still more numerous class lived near the "poverty line," and on slight accident fell below it. Such a condition of things was a source of weakness to the State, and the lecturer emphasized the fact that after all the maintenance and improvement of the public health was a natural and essential part of the evolution of society, and necessary to its preservation and progress. Dr. Newsholme discussed also the question of the relation of the State to its poor. Poverty, he said, was usually not a disease but a symptom of disease, whether physical, intellectual, or moral; and it was unscientific and economically unsound to treat the symptom instead of the disease. Yet that appeared to be not infrequently the line of action adopted. He advocated the reduction of the drink bill as a means of self-help, the better selection of food, and a more systematic effort to prevent the occurrence of extreme poverty and misery, rather than to increase the agencies for treating its symptoms.

TEACHING OF HYGIENE.—At the last meeting of the Society of Medical Officers of Health, a discussion on the expediency of making instruction in the laws of health or hygiene compulsory was opened by Dr. G. A. Heron, who was, as he explained, a member of a Committee appointed by the International Congress on Tuberculosis to press on the Governments and educational authorities of the respective countries the great importance of a popular or elementary knowledge of the laws of health as a means of preventing the loss of life from communicable diseases, including tuberculosis, and of checking the progressive deterioration of the race, which, though not universal, could not be denied in the case of town populations. No subject required more judgement in the teacher or sympathy with his pupils. The difficulty would be to find teachers. None would be so competent as those already trained, certificated, and engaged in educational work; but they would have to be taught by experts, medical men chosen because they had an aptitude for teaching—which was by no means a characteristic of even all lecturers at medical schools. Interesting details were given of the progress already made in America, Germany, and some minor States; there was a striking diversity of opinion as to whether the teaching of young children should be dogmatic or rational, though all agreed that dogma unsupported by example had no influence on character, and that Nature teaching was the best introduction to hygiene.