

# THE EVOLUTION OF ANATOMY AND SURGERY UNDER THE TUDORS

Thomas Vicary Lecture delivered at the Royal College of Surgeons of England  
on

25th October 1962

by

W. S. C. Copeman, O.B.E., M.D., F.R.C.P.

Middlesex Hospital. Chairman of Faculty of History of Medicine and Pharmacy,  
Worshipful Society of Apothecaries

AFTER THE FALL of Rome, Greek medical science became submerged in the lower medical culture of the Arabs. For them the emphasis was chiefly on the identification of disease entities and with the compounding of drugs—an unscientific empirical outlook which still tends to linger in parts of Europe. Thus, in spite of the previous magnificent anatomical and surgical work of Galen, in ancient Greece, medical interest in these fields had until the 16th century largely been lost.

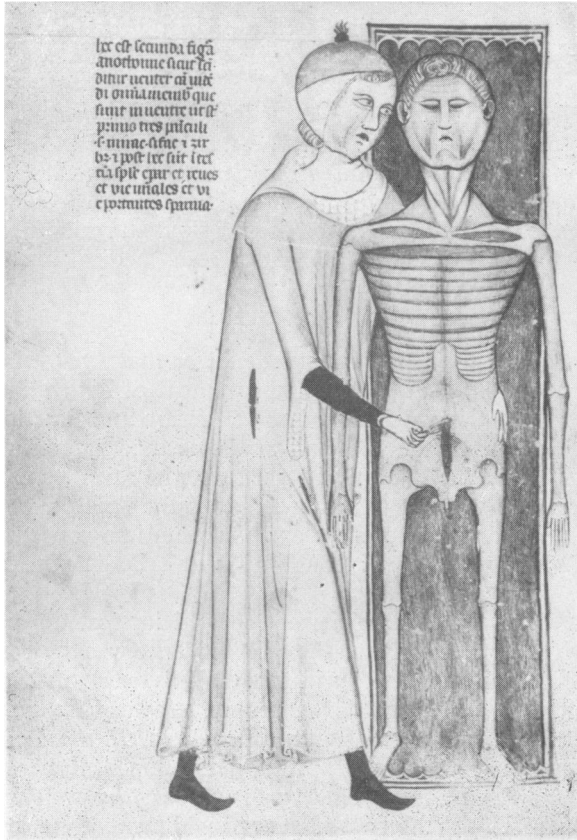
## ANATOMY

It was the Paduan, Vesalius, who first showed that a revival of anatomy was a necessary preliminary to the improvement of both the science and art of Medicine. His own work on the structure and function of man's body is the chief landmark in that revival and ensured that in future disease should be envisaged in anatomical terms. As he said: "No manne can worke so perfectly without the knowledge of the Anatomie, for it is as possible for a blinde man to carve and make an image perfecte as for a chirurgion to worke without error in a man's bodie not knowing the Anatomie".

There had been periodical signs of renewed interest during the 12th, 13th and 14th centuries, of which the chief evidence was the appearance of Mondino of Bologna's *Anatomy* in 1316. This work provided for the first time a simple guide to practical anatomy. It was based upon the only available, although faulty, translation of Galen's *On the Function of the Members*; and once the art of printing developed it became readily available in many editions. This work was eagerly welcomed by the Universities, which soon afterwards were providing anatomical dissections both for their students and for the more instructed strata of the public. It remained the basis of all European anatomy manuals for the next two centuries (Fig. 1).

Mondino gave a brief and crude description of the body's parts in the order in which they were to be dissected, beginning with the abdominal cavity, as there putrefaction would set in first. In the later words of Vicary: "The partes contained in the bellie can in no wyse longe continue or endure when ye lyfe is once disseveryd from the bodie withoute stynke or noysome savours . . . that none may approche thereunto to make demonstracion thereof . . ."; then the thorax, the head and neck, and lastly the extremities.

The anatomical dissections, which for this reason only took place during the winter, were performed by a demonstrator, often a surgeon, with one or two stewards or assistants, whilst the professor sat on his raised chair reading aloud the relevant text from Mondino or, after its translation late in the 15th century, Galen's *On the Use of the Parts*.



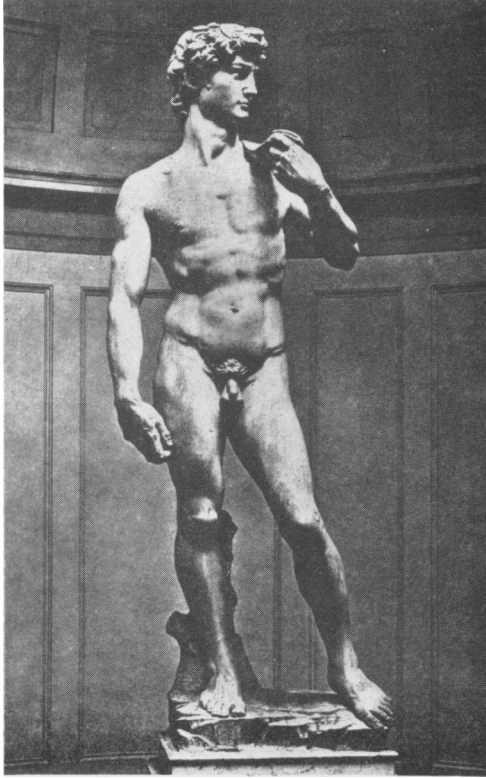
*Reproduced by courtesy of the Wellcome Historical Medical Library.*

Fig. 1. Skeleton from *Mondino* (14th century). Note the lack of interest and knowledge of bone anatomy prior to Vesalius.

This and other good translations of Galen's works, including those of the Englishman Thomas Linacre, had raised the status of anatomy greatly by the beginning of the 16th century; whilst his interest in the bones of the skeleton, which had been largely ignored by Mondino and his followers, led to further development. Physicians also now found that Galen had emphasized the importance of anatomical knowledge to the man of science: "Who can provide himself from it with data for investigating any function,

## THE EVOLUTION OF ANATOMY AND SURGERY UNDER THE TUDORS

physical or mental”; whilst its importance to the surgeon, whom it had previously been considered had little need for knowledge of more than surface anatomy and the articulation of the limbs, now became obvious. This previously limited view of the scope of practical anatomy had possibly been reinforced by the influential group of artists, led by Michelangelo, who joined with the surgeons in such dissection as was done in order to

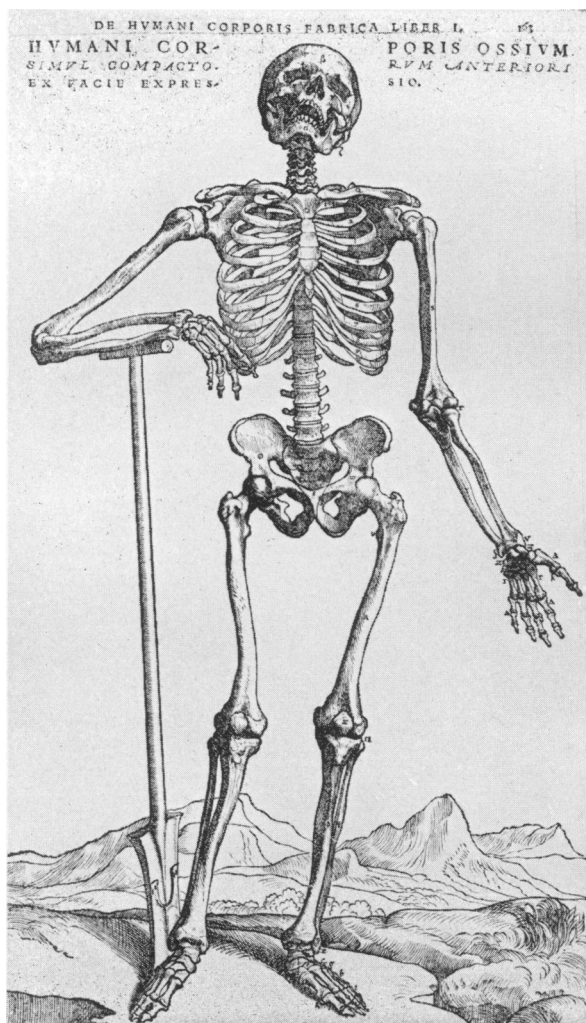


*Reproduced by courtesy of the Wellcome Historical Medical Library.*

Fig. 2. David by Michelangelo. A masterpiece of artistic surface anatomy.

improve their own knowledge and understanding of the human form and its movements (Fig. 2).

As the result of these translations the immense superiority of Galen's work, both in anatomy and medicine, to all that had been taught in the intervening period, soon became so obvious that the initial feelings of universal admiration gradually crystallized into the unfortunate academic conviction that he could do no wrong, a view which lingered until well into the 18th century and discouraged further scientific advance.

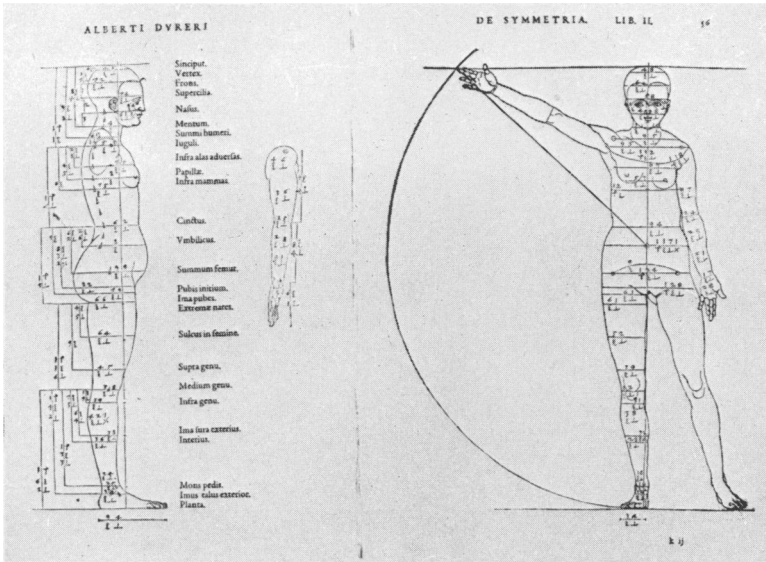


*Reproduced by courtesy of the Wellcome Historical Medical Library.*

**Fig. 3.** Skeleton from *Vesalius*, 1543. Note the artistic and scientific progress made since Figure 1.

THE EVOLUTION OF ANATOMY AND SURGERY UNDER THE TUDORS

Again, arising largely from the interest of the artistic fraternity, anatomical illustration developed during the 16th century from the crude woodcuts of Mondino's work to the magnificent illustrations of Vesalius' *De Fabrica* (Fig. 3), executed by Titian's pupil John of Calcar. The first to take advantage of the new possibilities of anatomical illustrations was Berangario da Carpi of Bologna (1460–1530); whilst Dürer for the first time applied the measurements of the human body to aesthetics by the publication of his profusely illustrated *De Symmetria* in Nuremburg in 1532 (Fig. 4). It is unfortunate, both from the artistic and the scientific aspects, that Leonardo da Vinci's brilliant studies remained unknown during his lifetime.



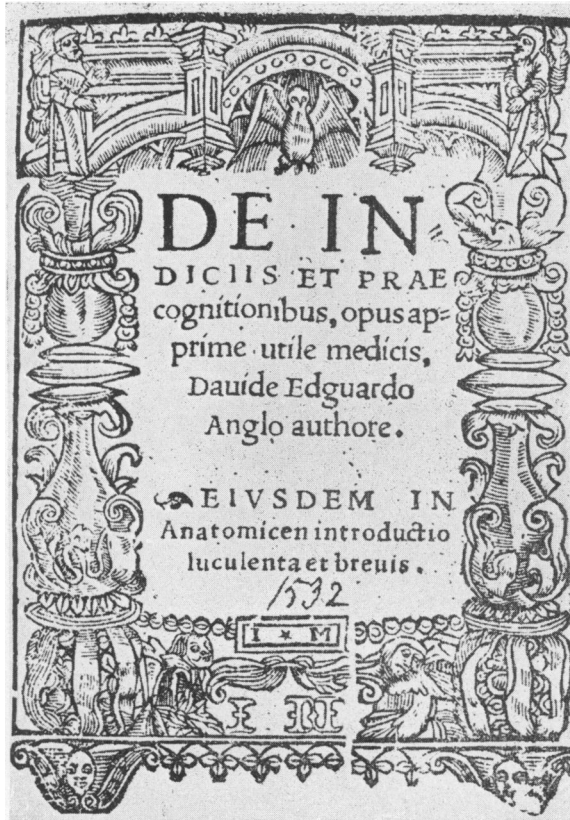
Reproduced by courtesy of the Wellcome Historical Medical Library.

Fig. 4. Illustration from Dürer's *De Symmetria* (1532). The application of anatomical measurements to aesthetics.

It was Vesalius' masterpiece *De Fabrica Corporis Humani* (1543) that first assailed the legend of Galenic infallibility. In this work he also relates structure closely to function for the first time, in correct modern terms, so in addition to advancing pure anatomical knowledge he made the way clear for Harvey and for modern physiology and, later, modern medicine.

*Andreas Vesalius* (1514–1564) had studied anatomy in Paris under the great Sylvius, a fanatical Galenist, who bitterly attacked his brilliant pupil's work in later life. After appointment to the Chair of Anatomy at Padua Vesalius became convinced from observation that the views of "Pope Galen" were not infallible; and three years later he published his famous volume.

He became so dispirited, however, by the attacks of his reactionary colleagues that he resigned his Chair and entered the service of the Emperor Charles V, as his physician; and Anatomy was permanently the poorer.



Reproduced by courtesy of the Trustees of the British Museum.  
Fig. 5. David Edwardes. Title page of his *Introduction to anatomy*, 1532.  
The first English book on this subject.

### ANATOMY IN ENGLAND

In Tudor England the new light of Renaissance thought was beginning to dawn. Anatomy was not yet taught separately as such, but the craft of surgery was becoming organized and so was beginning consciously to have need of it.

It has been discovered quite recently that the first Englishman to perform a full dissection in this country was *David Edwardes* (1502–?1542), who wrote a small *Introduction to Anatomy* (1532) (Fig. 5), of which the only

## THE EVOLUTION OF ANATOMY AND SURGERY UNDER THE TUDORS

extant copy, which was found last year in the British Museum, has been translated by O'Malley and Russell (1961). He was a member of Linacre's humanist Oxford group, but later moved to Cambridge, where he took his M.D. His text is Galenist; but he describes some variations from the master's descriptions he had personally observed.

The first official dissections and teaching, however, had to await the incorporation of the Barber-Surgeons' Company, and the grant to them of the bodies of executed felons annually for this purpose.

*The Barber Surgeons.* In 1540, King Henry VIII, almost certainly at the instigation of Thomas Vicary, granted a Charter of Incorporation joining the Barbers' Company, which had 185 members, with the small but élite Fraternity or Guild of Surgeons, which had 10 or 12. The result of this was to provide for the first time some theoretical and technical education in anatomy for surgical apprentices. To this end a Readership was established, which was supplied with raw material in the form of the right to four bodies of executed criminals each year for purposes of dissection in their Hall in Monkwell Street.

At least one of these occasions was a "Public Anatomy", to which reputable citizens were admitted on payment, and regaled at the end of the three days of demonstration with a banquet in the Company's Hall. The object of this was to raise the general level of medical knowledge amongst the laity, as it was thought that such ignorance constituted the basis of the public support for the numerous charlatans, which was seriously menacing the very existence of academic medical studies. It is interesting, however, to note that quacks who cared to apply for the Company's licence in surgery, and who showed any crude knowledge of their subject, were often granted this upon a temporary basis. A little later we read that a court of 13 examiners was appointed annually, of whom four were, with the Master and Wardens, to conduct a quarterly examination for the three alternative diplomas awarded in surgery by the Company.

The first person to be appointed as Reader was the instigator of the union, *Thomas Vicary* (1490-1562), "Serjeant of the Surgeons to the King", who was also the first Master to preside over the amalgamated body. Thus his lectures were the first public scientific lectures ever given in England.

In 1546 *Dr. John Caius* (1510-1573) succeeded him as Reader "at the Kinges own wishe", establishing the subsequent practice of appointing well educated University graduates to this post. He is generally considered to be the true founder of anatomical studies in England. Caius, altogether the most distinguished physician of his time, was, however, also a bigoted Galenist, and indeed spent much of his life translating and editing editions of his works. He regarded all dissent from these views as indi-

cating academic flightiness, as he personally found Galen an adequate guide. In earlier life Caius, whilst a student in Padua, had shared a lodging with Vesalius, and it was on this unfortunate issue of Galenism that they had parted and remained subsequently bitter enemies.

It was, therefore, probably not "the new anatomy" as expounded by Vesalius which Caius so brilliantly taught for twenty years at the Surgeons' Hall. Indeed, Bullein describes in his *Little Dialogue* (1579) these lectures where "... the learned Dr. M. John Kaius revealing unto this (surgical) fraternity the hidden jewels and precious treasures of Claudius Galenus, showed himself to be the second Linacre". It is known also that about 1565 Caius prepared an edition of Galen's anatomical works which he never published. This may have been the basis of his lecture notes; although several translated Continental texts, mostly based upon Mondinus, were at this time also available in this country, the first having been that of Hieronymus Brunschwig (1525).

About this time Thomas Geminus, an Huguenot printer and unqualified surgeon, evidently recognized the need for an authoritative text, both for the use of the Reader and for the academic world, when he issued his pirated edition of Vesalius' *Epitome* in 1545 (and again in 1557 and 1559). This was illustrated with the first important copper-plate engravings to appear in England, which were copied from Calcar's original woodcuts illustrating the *Fabrica*. In 1553 he also published an English edition for the use of students, with a new and surprisingly inferior text which was written for him by his influential friend Nicholas Udall, the headmaster of Eton, who confessed to having no knowledge of anatomy. He probably based it upon the poor Galenic work *A Profitable Treatise of the Anatomie of Mans Bodie* (1548), which Thomas Vicary, when Reader, is believed to have published, but of which no copy survives. This reactionary work evidently made no mention of the work of Vesalius, being actually based upon a mediaeval manuscript of 1392 which still survives in the Wellcome library. It was probably intended merely as a species of simple dissecting manual for the use of the un-Latined Barber-Surgeons' apprentices: "A little treatise for all suche young Brethren of our fellowship practising chirurgery. Not for theme that be experte in the Anatomy." It was republished in 1577, 15 years after his death, by the five surgeons of St. Bartholomew's, in respectful tribute to his memory. They say: "Here is to be remembred *Master Vicary*, Esquire, Serjiant Chirurgen to Kinges and Queenes of famous memorie . . . the studious Reader shal reape singular commoditie and fruite by reading this little Treatise, the whiche is onely grounded upon reason and experience, which are the two principal rootes of Phisicke and Surgerie".

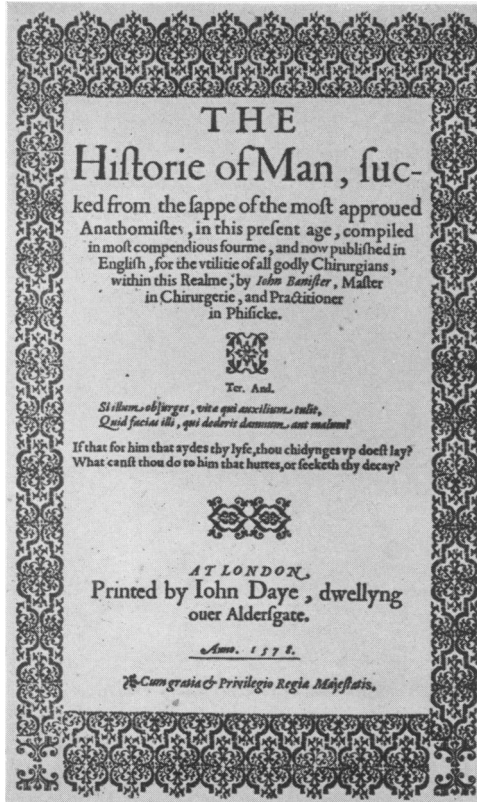
It is the surgeon *John Banester* who is generally credited as the author of the first up-to-date English anatomical text: *The historie of Man Sucked from the Sappe of the most Approved Anathomistes* 1578 (Fig. 6). In this



## THE EVOLUTION OF ANATOMY AND SURGERY UNDER THE TUDORS

he draws largely from the texts of leading contemporary anatomists, contributing his personal comments.

In 1557 Caius' Cambridge College had also obtained by Statute the right to four bodies annually for dissection, and eight years later the same privilege was accorded to the Royal College of Physicians, when in 1582



Reproduced by courtesy of the Wellcome Historical Medical Library.

Fig. 6. The first English anatomical textbook. John Banester's *The historie of man*, 1578.

Lord Lumley and Dr. Caldwell instituted the Lumlean anatomical lectures there. It was as a simple textbook for these lectures on surgical anatomy that Caldwell translated Morus' *Tables of Surgerie brieflie comprehending the whole arte and Practise thereof* in 1585. This foundation later contributed to Harvey's researches, as is well known; and it was probably in the Lumlean lecture theatre that he made his famous demonstration of the circulation of the blood.

It was in this way, to use the words of Sigerst, that surgery evolved as anatomical therapy during the Tudor period.

W. S. C. COPEMAN

## THE BARBERS

Not all members of the combined Barber-Surgeons' Company wished to become surgeons, however; indeed more than half of them continued to pursue the ancient craft of barbering, which had always been predominant. Chaucer mentions his barber, telling us that:

“ A merry chylde he was, so God me save  
Wel coulde he let blood, clyppe and shave.”

In the early days the priestly physicians each had their barber lay-brother appointed to keep their tonsure shaved and it was the successors of certain of these men who developed in the course of time from barbers



Fig. 7. Holbein's commemoration of the Act of Union between the Barbers' Company and the Guild of Surgeons, 1540.

into surgeons. It may have been an echo of their religious origins that led the Barber's Company to ordain that “ no member shal washe a bearde or trymme any manne with any instrument, as to make clene teethe, upon the Sondag, in forfeit of 40/-”.

The Monarch also had his barber, and amongst the Orders made for the regulation of the Royal Household we find that an additional duty of the King's barber was to attend his weekly bath, *if this took place*, and “ this barber shall have every Satterday night if it please the Kinge to cleanse his head, legges and feete, and for his shaving, two loaves and one pitcher of wine ”. This position became officially more important after 1543, when King Henry started to wear his hair shorter and to discourage long beards, particularly as the City magnates shortly followed suit in flattery. This put the final seal upon the division of the two interests within the Barber-Surgeons' Company.

**SURGERY**

Until the 12th century, priests had been privileged with the monopoly of the cure of bodies as well as souls. In 1163 Pope Alexander III, however, forbade them to shed blood, so the surgical portion of their practice was generally handed over under their supervision to their personal attendant, the barber who shaved their tonsures. These men, therefore, by force of circumstance, became the original barber-surgeons. In London, in 1308, they organized themselves into a trade guild and elected a Master (Richard le barber), one of whose duties it was to report monthly to the Lord Mayor that the practice of some of his members of keeping brothels and “ acting unseemly in any other ways to the scandal of the Trade ” was under control, and on other important matters.



*Reproduced by permission of Punch.*

Fig. 8. Cartoon from *Punch* (after Holbein's). The Queen inaugurating “ the Savoy Sawbones Hall ” (Conjoint Examination Hall, Queen Square).

During the next century the small fraternity or Guild of Surgeons which constituted the élite of those trained in the armies warring in France and Italy, amalgamated with the Barbers largely for matters of administrative convenience. There was, however, no real fusion. The surgeons were men of superior professional attainments and social status to the Barbers and their colleagues the Barber-Surgeons who were permitted to practise some simple parts of surgery. No real improvement in the normal standard of surgery, therefore, resulted from this.

At the outset of the Tudor period, therefore, the average surgeon ranked only as a minor practical craftsman, whose skill was empirical and had not changed throughout the Middle Ages. Such men were supposed to deal only with external medicine—wounds, fractures and dislocations. They would amputate, trephine and cut for the stone, and at the physician's

order let blood. The only condition for which it was agreed they could prescribe was the new disease, the *lues*, as its chief manifestation was an external rash and later a swelling. Most articulate surgeons, therefore, took the opportunity to write on this subject.

The formal incorporation of the Barbers and Surgeons as the Barber-Surgeons' Company, by Act of Parliament, took place in the 32nd year of the King's reign, and was a direct result of the King's personal desire to see the standard of anatomy and surgery in England raised. Its practitioners now achieved for the first time a degree of corporate recognition as a profession rather than as a purely trade guild, by obtaining the chance of some regular academic and technical instruction. They also built a small museum, a library, and a theatre for scientific studies in their Hall. As they were mostly un-Latined, however, their reading and writings had to be in English; and their practical training throughout the century was still best achieved on the battlefield.

Holbein's picture of Henry VIII handing the Charter of Incorporation to his Sergeant-Surgeon, Thomas Vicary, is well known (Fig. 7) and shows the two wardens of the new Company, Ayleff and Simpson, kneeling behind Vicary, who was to be the first Master, and who is shown receiving the Charter from the left hand of his somewhat bored looking Monarch.

*Thomas Vicary* (1490–1562). It is not my intention to recapitulate the well known facts of Vicary's life. These have been given in previous lectures, notable amongst these being that of Sir Clement Price-Thomas last year (1961). In this he expressed surprise that in spite of Vicary's contemporary distinction his name should still live, 400 years later, amongst those of his colleagues which are almost household words to this day. It is true that so far as we know he contributed nothing to progress the art of surgery. It is my belief, however, that his memory has remained green principally owing to his outstanding qualities as an administrator, at a time when such men were scarce in the country, and almost non-existent in Medicine, which was during this period beginning to shape its basic essential institutions prior to establishing itself as a profession. The first milestone in 1518 had been Linacre's College of Physicians; the second was Vicary's establishment of the Barber-Surgeons' Company, whose members expressed their appreciation by appointing him as their Master on four occasions—an honour which remains unique.

His interest in the public health was also unusual, if we except his great senior contemporaries Linacre and Sir Thomas More. Although no doubt his private practice was lucrative he allowed himself to be appointed as the first resident Governor of St. Bartholomew's Hospital, after its refounding in 1547, "for the terme of his lyffe". He thus became the first lay hospital administrator in this country, and acted in a practically honorary capacity for nearly 20 years. In 1551 he drew up the famous

## THE EVOLUTION OF ANATOMY AND SURGERY UNDER THE TUDORS

“ Ordre of the Hospitall of St. Bartholomewes in West Smithfield in London ”, which served as a model for the Statutes of the later public hospitals. Price-Thomas points out that all staff continued to be elected to the hospital under these rules until the introduction of the National Health Service in 1948.

We also owe him a great debt as the instigator of anatomical and surgical teaching in this country. Before him there had been no way in which a young surgeon could become educated in the principles and technique of his profession.

When death came to Vicary it was found that he had not forgotten his surgical colleagues and the Company he had founded. In his will he left his “ soul to God, and my body to be buried ”. At this occasion all the members were to attend and a sermon was to be preached declaring his Protestant faith. After this all the officers of the Company were to receive his various gowns, and 40s. for a dinner; whilst some arms were to go to the Hall, as was his copy of Guido’s *Workes of Chirurgery*, translated by Bartholomew Treherne (1543), possibly the one which had been left to him by his friend Ayleff; and after his brother’s death also “ my greate ringe of golde ”. His five surgical colleagues on the staff of St. Bartholomew’s Hospital each received the sum of 50s., and the poor within the hospital and parish were to share £12. His “ bookes and surgical stuffe ” were to be divided between his two pupils or assistants, Picton and Vener. The residue of his estate went to his family.

This year, 1962, is the four-hundredth anniversary of the death of Thomas Vicary, and it seems, therefore, more than usually a suitable occasion for us once again publicly to acknowledge our debt to this great and good man. I have heard it said that Vicary was essentially a man of his times—why then should we still pay him honour in our times? I think that the short answer would be, because they were great times, they appear at their best in Vicary, and wise foundations were being laid for the future.

*Sir John Ayleff*. Next to Vicary, in Holbein’s picture, is Ayleff, an almost exact contemporary (?1490–1556), who profited from the enhanced social status which surgery was now to enjoy as the result of the incorporation by being the first surgeon ever to be knighted. This occurred soon after he had cured his Monarch’s fistula, and had been appointed a surgeon to the Household. He became very friendly with the King, who left him a legacy of 100 marks in his will. His rather attractive epitaph was in Bassilaw church:

“ In chirurgury brought up in Youth,  
A Knight here lyeth dead.  
A Knight, and eke a surgeon such  
As England seld hath had.

W. S. C. COPEMAN

For which so sovereign gift of God  
Wherein he did excell  
King Henry VIII called him to Court  
Who loved him dearly well.  
God gave the gift, the Kinge gave goods  
The gift of God t'enhance;  
Where God and such a Prince do joyne  
Such man hath happy chance."

He served as Master of the Barber-Surgeons' Company in 1538.

Of his fellow Warden, Nicholas Simpson, or Symson, the King's barber, little appears to be known, although he also became Master of the Company and was considered quite influential in circles on the fringe of the Court. He may have been one of the attesting witnesses of the King's will.

THE NEW SURGERY

After the introduction of gunpowder military surgery had changed, and one of the earliest to write on the new surgery was John Vigo (1460–1525), who was Papal Surgeon to Julius II, and who also introduced the use of ligatures and designed some useful instruments. It was he who initiated the long controversy as to whether gunshot wounds inevitably became poisoned. He believed that this was so, and advocated cauterization of these wounds with boiling oil in his popular *Practicia* (1514), which went into 52 editions within a few years. His views were denounced by *Ambrose Paré* (1510–1590), who reintroduced mild emollient dressings. *The Most Excellent Workes of Chirurgery of Master John of Vigo* were published in England in 1543 and enjoyed great popularity, although the works of Paré were not translated until after his death, in the next century.

Earlier Continental practice was also reflected in the translation by *Richard Banckes*, three times Master of the Barber-Surgeons' Company, in *The Practyce of Cyrurgyens of Mountpyller* (1540), which was a work largely still being used in the University of Paris. The first English surgeon to support Paré's views on gunshot wounds was Thomas Gale.

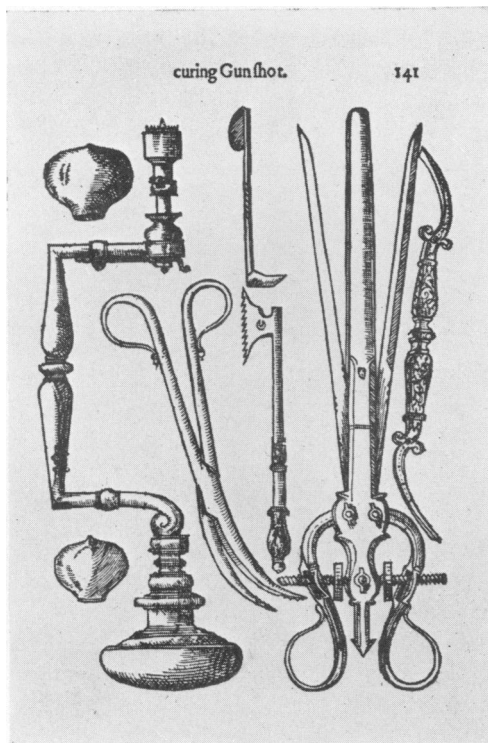
*Thomas Gale* (1507–1587). Like most surgeons of his time he served an apprenticeship in the army of Henry VIII, and also that of Philip II. He served as Junior Warden of the Barber-Surgeons' Company during Vicary's second period of Mastership in 1546, and himself became Master in 1561; and during his term of office obtained a grant of arms for the Company. His obituary notice was written in verse, probably by William Clowes. He served as a lecturer in anatomy at the Barber-Surgeons' Hall during the Readership of John Caius, and it is possible that the Arris and Gale lectureship which is still given annually at the Royal College of Surgeons owes the latter half of its title to him.

His treatise *Of Wounds made with Gunshot* was published in London in 1563. He demonstrated from his personal experience that they were not

## THE EVOLUTION OF ANATOMY AND SURGERY UNDER THE TUDORS

poisoned by the lead, and should be treated with soothing lotions. His *Institution of a Chirurgical* (1563) was the first book on surgery published in the English tongue. It also contains the first English mention of syphilis.

He early saw the need for collaboration between surgeons and physicians and pleaded for more liberty of prescription for surgeons, “of diet, purgation and other inward medicines at all times when need doth require”. His description of his fellow surgeons does not suggest,



Reproduced by courtesy of the Wellcome Historical Medical Library.

Fig. 9. Surgical instruments used and illustrated by William Clowes in his *Booke of Observations* (1596).

however, that they had yet acquired much science. He writes in the preface to his *Institution*: “The greatest number of chirurgens are so rude and unskilfull in their arte because they have no methode, no exacte waie, or yet order in learnyng the grounds and principles of chirurgery . . . so that they are confused in their studies and make rather a rude chaos than a perfecte arte of chirurgery”. There is also a modern sound to his suggestion that “few that have well brought up their sonne will put hym to the arte, because it is accounted so beggerly and vile”.

It was not until the latter half of the century that English surgeons began to write much (Fig. 9). O'Malley grades their contributions in ascending order of merit, starting with John Hall (1565), John Read (1588), John Banester (1575) who annotated his text from personal experience, Thomas Gale (1563) whose originality was, as already mentioned, greater; until we reach the works of William Clowes, the greatest and most original of these English surgical writers.

*William Clowes* (1540–1604). As Norman Moore says, his style is easy and forceful, sometimes a little prolix, but never obscure. He published a case-book called *A Proved Practice for all young Chirurgen* (1591), which



*Reproduced by courtesy of the University of Glasgow.*

Fig. 10. John Banester delivering the Visceral Lecture at the Barber Surgeons' Hall in 1581.

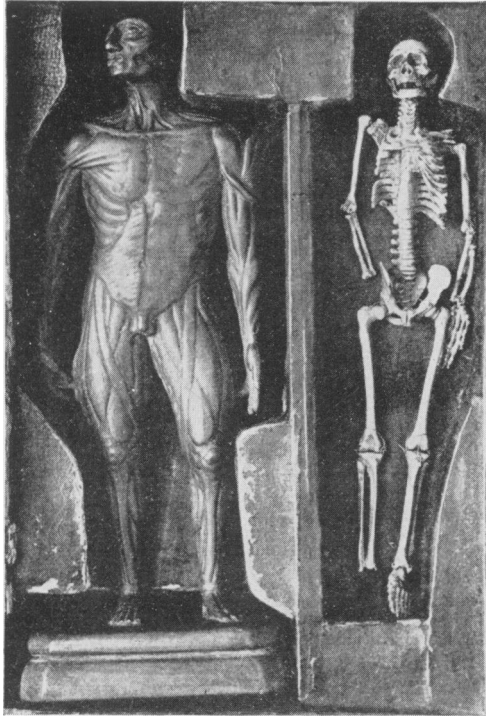
he revised and issued five years later as his major work *A Profitable and Necessary Book of Observations*, which summarizes current views on gunpowder burns and many other matters of contemporary importance. His book on the lues was entitled *Cure of the Disease called Morbus Gallicus* (1576). In his works we can read something of the difficulties and achievements of a successful Tudor surgeon. He evidently possessed an independent and enquiring mind and was much less in bondage to Continental authorities than his contemporaries.

Clowes as a young man saw considerable army service in the Low Countries under the Earls of Warwick and Leicester, and in his reports he



## THE EVOLUTION OF ANATOMY AND SURGERY UNDER THE TUDORS

does not underestimate his own merits. On one occasion, for instance, speaking of a long siege, he says that, although he did not himself lose a case, "my fellow surgeons were very unskilled, and slew more than the enemy did". He later settled in London and accumulated a large practice, and was soon elected surgeon to St. Bartholomew's Hospital. Later he was appointed surgeon to the great fleet which defeated the Spanish Armada in 1588. It was after this that he was given his Court appointment as surgeon to Queen Elizabeth I, and later to James I.



*Reproduced by courtesy of the Cambridge University Library and of the Clarendon Press.*

Fig. 11. The contents of John Banester's casket, which he used for anatomical teaching.

He never became Sergeant-Surgeon, although his son—a lesser man—did so. Some clue as to the reason for this may be provided by the extract from the minutes of the Court of the Barber-Surgeons' Company dated March 1577. It would appear from these that the high-spirited Clowes referred to the then holder of that august office, George Baker (Master of the Company in 1597), as "a great bugbear, a stinging gnat, a venomous wasp and a counterfeit crocodile" . . . "Here at this Court was a great contention and strife . . . for that they both, contrary to order and the good

and wholesome rules of this house, misused each other and fought in the fields together." There are other complaints of a similar character recorded; notably (1576) that he had misused "most of the Masters of the Company with scoffing words and jestes". But "they all forgave him openlye in Court . . . upon condition that he sholde never so misuse himselfe agayne". In spite of all this, McGarrison rates Clowes as probably the greatest of the Elizabethan surgeons. He was Warden of the Barber-Surgeons' Company in 1594, but was never elected Master; retiring to his estate at Plaistow in Essex soon afterwards.

Clowes's lifelong friend, *John Banester* (1533-1610), who alone had escaped his criticism during the Dutch campaigns, succeeded Dr. Caius as Reader in Anatomy at the Barber-Surgeons' Hall in about 1566. The famous picture in the Hunterian collection in Glasgow shows him delivering the visceral lecture at the Hall in 1581 (Fig. 10). The handsome open book before him is the posthumously published *De Re Anatomica* of Realdus Columbus (1516-1559), although it would seem probable that he must have used the English Geminus translation of Vesalius on more ordinary occasions as it was the only good anatomy manual in the vernacular at this time.

His *Works* were published in 1585. They consisted largely of translations from the writings of Wecker, a rather dull contemporary Continental surgeon, with amendments and additions from his own experience at the end of each chapter. The preface, however, is unusual and seems worthy of quotation:

*"The Booke to the Reader*  
I swellings waste, I wounds do joyne,  
I ulcers do make sound;  
I do the broken bones restore  
—What further can be found?

*To the Printer*  
Haste to the Press, fear not the sale  
—Good wine do need no sign;  
The surgeons crave this worke to have  
The gain it will be thine!"

The status of surgery was raised considerably by Banester, who was an influential and popular man and a great teacher. His influence seems to be reflected in another of his prefaces where he says: "This little volume shall honour this profession in the eyes of all such as heretofore have accounted it base and vile. For they shall plainly see that it requireth not only a lion's heart, a ladie's hand, a Hawk's eye (as the common proverbe is), but more especially good reading, sound judgement, diligent observation and wise experience".

He was considered remarkable in this "tough" era for his notable kindness to the poor, particularly old soldiers.

## THE EVOLUTION OF ANATOMY AND SURGERY UNDER THE TUDORS

### SUMMARY

It was the Act of 1540 which founded the united Barber-Surgeons' Company which marks the real beginning of surgery as a profession in this country. The need was, in the words of the Charter, "to provide skilful and expert surgeons for sick mens' relief". It forbade the new surgeons



*Reproduced by courtesy of the Wellcome Historical Medical Library.*

Fig. 12. The prototype of the "brass plate". A Medical Practitioner's signboard of the period.

to dabble in the craft of barbering, with the exception of tooth-drawing, which was to be common ground for the two branches of the Company; and at the same time it provided the authority to exercise some degree of disciplinary control over the Company's own student-apprentices as well as over the dangerous quacks, both native and alien, who abounded in 16th century London. It also instituted a course of technical education in both anatomy and surgery for the first time, so that "knowledge of the

said science and faculty shall be rendered more perfect, as well in speculation as in practice ". Licences to practise were also granted under the Act, after examination, at the discretion of the Master, Wardens and examiners. All these matters had also been incorporated in the University curricula by the end of the century.

The average surgeon evidently remained a quarrelsome individualist as before, but he would now rally to the defence of the corporate dignity of qualified status, and in their writings the leaders started to pay tribute to each other. In order that the public should be able easily to discern the qualified from the quack the Act further decrees that " Persons using surgery . . . shall have an open sign on the street side where they shall fortune to dwell, that all the King's liege people there passing by may know at all times whither to resort for remedies in time of their necessitie " (Fig. 12). So it seems that we are also indebted to Vicary for the prototype of the modern medical brass plate.

Evidently more was going to be expected of a surgeon from now onwards. As an enlightened example of this the physician William Bullein's ideas regarding the eight qualities now to be looked for in a good surgeon may be quoted from his *Little Discourse* (1562). He says: " He must begin in youth with good learning and exercise in thys noble arte. He must also be clenely apparaed, nimble handed, sharp sighted, pregnant witted and bold spirited. Pitiful hearted but not womanly affectioned to wepe or tremble when he seeth broken bones or bloodie woundes, neither must he give way to the cry of his sore patient, for soft chirurgens maketh fowle sores. Of the other syde he may not plaie the butcher to cut, rende or teare the bodie of mankynde. For although it be fraile and weak, yet it is the pleasure of God to cal it his Temple."

Their practice consisted in the treatment of " all outward hurts and tokens of disease ", and they were prohibited by their social superiors, the physicians, from administering medicines for inward complaints. Nonetheless, the Barber-Surgeons fulfilled largely the function of general practitioners at this time, thus establishing at an early period the public image of the surgeon as the prototype of the healing art in this country.

With the translation of the *Epitome* of Vesalius in 1553, and the publication of the works of Thomas Gale and William Clowes in which the teaching of Paré and other Continental pioneers was incorporated, the stage is set for the English advances of the next century. During the Tudor period itself, however, no scientific contribution was made to either anatomy or surgery.

The general rules for the practice of surgery during the 16th century were similar throughout this country and Ireland, and probably Scotland. There were Barbers' Guilds in most of the large towns and the surgeons

## THE EVOLUTION OF ANATOMY AND SURGERY UNDER THE TUDORS

were generally allied with these, as in York and Exeter. These bodies were active in managing the affairs of their craft; and the regulations under which they worked, and even their armorial bearings, were practically identical with those of the London Company.

Towards the end of the Tudor period, as the surgeons became more skilled and influential and their technique more scientific, this union with the Barbers, nominal as it was in fact, became increasingly distasteful to them, until finally they separated early in the 18th century into a Company of their own; and 75 years after that were incorporated into the Royal College of Surgeons of England.

## ACKNOWLEDGMENTS

I have to thank many good friends for their help during the preparation of this paper. Chief amongst these was Professor C. D. O'Malley of the Department of Medical History in the University of California, who put the very considerable resources of his Rare Book Room at my disposal and who also introduced me to the collection of Tudor medical books at the Huntington Library; also to Dr. F. N. L. Poynter of the Wellcome Historical Medical Library, who helped me to select and loaned me most of the illustrations used; to the Harveian Librarian, Sir Charles Dodds, and the Librarian, Mr. L. M. Payne, of the Royal College of Physicians for a number of very helpful suggestions; and not least to the President of your College, Sir Arthur Porritt, for the honour of nomination of this lectureship, which I have so much enjoyed preparing.

## REFERENCES

In addition to those mentioned in the text, the following works, amongst others, have been consulted:

- AIKIN, J. (1780) *Biographical Memoirs of Medicine in Great Britain*. London, J. Johnson.
- BOORDE, A. (1870) *The Fyrst Boke of Introduction of Knowledge, and A Dyetary of Helthe*. Ed. F. J. Furnivall. E.E.T.S. London.
- COPEMAN, W. S. C. (1960) *Doctors and Disease in Tudor Times*. London, Dawson.
- CLOWES, W. (1948) *Selected writings, 1544-1604*. London, Harvey and Blythe.
- LEONARDO, R. A. (1943) *History of Surgery*. New York, Froben Press.
- LETT, Sir Hugh (1943) *Anatomy at the Barber-Surgeons' Hall*.
- MACNALT, Sir Arthur (1945) *The Renaissance and its Influence* (Vicary Lecture), *Brit. med. J.*, **2**, 755.
- O'MALLEY, C. D. (1959) *The First English edition of Vesalius, a facsimile, with introduction by*. London, Dawson.
- POWER, Sir D'Arcy (1931) *Selected Writings*. Oxford, Clarendon Press.
- MOORE, Sir Norman (1918) *The History of St. Bartholomew's Hospital*. London, Dent.
- SMITH, J. Flint, and POWER, D'Arcy (1886) *Memorials of the Craft of Surgery*. London.
- VICARY, T. (1888) *The Anatomie of the Bodie of Man*. Ed. F. J. and P. Furnivall. E.E.T.S., London.
- YOUNG, S. T. (1890) *Annals of the Barber-Surgeons of London*. London, Blades, East and Blades.