THE ART OF OSTEOGRAPHY

WILLIAM BROCKBANK and D. LL. GRIFFITHS, MANCHESTER, ENGLAND

From the Medical Library of the University of Manchester

The early development of orthopaedic surgery and of the science of human anatomy ran hand-in-hand. Anatomists were surgeons. The surgery of the body-cavities was impossible; so that one may claim fairly that anatomists founded their science as part of the development of limb surgery and the surgery of the body wall, though, naturally, their attention was also focused at an early stage on the anatomy of the viscera.

In days when dissections were rare, illustrations of anatomical detail were peculiarly important. Skeletons could be acquired only with much difficulty and with no little risk. Vesalius acquired one skeleton by removing a body from the gallows. The work of the artist was an important medium in the spread of anatomical knowledge. These early illustrations are of interest to-day. Many are of great artistic value, and it is interesting to note how many artists saw the skeleton as a living structure, to be depicted in attitudes of action. Certainly they did not regard the skeleton as a series of "dry bones" as have many of their successors.

Anatomical illustration came into its own in 1543 with the publication of De Humani Corporis Fabrica by Andreas Vesalius (1514–1564), a surgeon who at the age of twenty-three years became Professor of Surgery and of Anatomy at the University of Padua. The Fabrica, which first discarded the Galenical tradition by describing human and not animal anatomy, is one of the most important works in the history of medicine. It was illustrated by Titian's pupil, Jan Stephen Kalkar, the first artist to produce anatomical pictures which combined beauty with reasonable accuracy. Vesalius supervised his illustrator's work with great care and sometimes complained of the time and trouble which had been consumed. The pictures were made chiefly from dissections of strong and youthful bodies; they were printed from clear wood engravings (Fig. 5).

In 1685 Godfried Bidloo (1649–1713) of Amsterdam published his great Anatomica Corporis Humani with engravings from drawings made by Gerard de Lairesse. These are adorned with many accessories in design in the well-known style of Lairesse, but the figures show that the artist lacked expert guidance. This can be seen clearly in the skeleton shown in Fig. 6, which does not show natural proportions and is heavy and lacking in beauty. It is not known who made the engravings but they are most elegantly done. Bidloo worked on his book for nine years and on the strength of it was appointed to the Chair of Anatomy at Leyden in 1694. Later he became Court Physician to William III, and he accompanied that monarch to England.

These plates had an interesting history. In 1688 William Cowper (1666–1709) published in Oxford his Anatomy of Human Bodies, including in it one hundred and five of Bidloo's plates, so that his work was original only in the text which was admirable, and in nine other plates supplied by Cowper himself. Cowper's publishers had apparently bought three hundred copies of each plate from Bidloo's publishers without Bidloo's knowledge or consent. Although Cowper praised the artist in his introduction, his only reference to the man who made the dissections was to say that the plates "were sometime published by Dr Bidloo." Bidloo was annoyed and upbraided him in a publication Guilelmus Cowper criminus literaris citatus (1700). Nevertheless it cannot be denied that Cowper's was much the better book.

William Cheselden (1688–1752) was the outstanding surgeon of the first half of the eighteenth century. He was a popular figure, with a wide circle of distinguished friends. He enjoyed life. He was a keen follower of prize-fighting. He was a racy and a witty talker. But above all he was an amazingly skilful surgeon. He was one of the earliest surgeons to dissect publicly at his own house the bodies of criminals, and in so doing to earn the displeasure of the Barber Surgeons' Company, for his lectures coincided with theirs and were more popular. He became remarkably adept at the operation of lateral lithotomy, frequently performing it in one minute—his record being fifty-four seconds—a feat which was of great importance in days when there was no anaesthesia. His mortality of 17 per cent. was not unduly high.
Andreas Vesalius (Brussels, 1514–1564) from a painting by Tintoretto—from Wegner.

Godfried Bidloo (Amsterdam, 1649–1713) from his Anatomica Corporis Humani.
William Cheselden (London, 1688-1752) from Wegner.

Bernard Siegfried Albinus (Leyden, 1697-1770) from Pettigrew.
Fig. 5

From Vesalius: *De Humani Corporis Fabrica.*
FIG. 6

From Bidloo: Anatomica Corporis Humani.
FIG. 7
From Cheselden: *Osteographia.*
FIG. 8
From Albinus: Tabulae Skeleti et Musculorum Corporis Humani.
FIG. 9

From Albinus: Tabulae Skeleti et Musculorum Corporis Humani.
He wrote several books, the most interesting of which was his Osteographia published in 1733. It was dedicated to Queen Caroline and included full and accurate descriptions of human osteology with a fine series of fifty-six engravings, mostly of individual bones (Fig. 7). These were probably drawn with the camera obscura and the title page shows Cheselden making a drawing by this method. Not only does this book reveal the normal anatomy of bones; it shows something of bone disease, and is one of the finest of English works with anatomic illustrations. It also includes an engaging series of illustrations of the skeletons of animals, birds and fishes.

Bernard Siegfried Albinus (1697–1770) was the son of an eminent physician and professor of anatomy at the University of Leyden. He studied in that University and on the death of his father, in 1721, he was chosen to succeed him in the professorial chair, a post which he held for nearly fifty years. He was an incomparable lecturer but his claim to everlasting fame is that he published a number of anatomical atlases, some of which have never been surpassed in the beauty and accuracy of their illustration and the elegant style of the accompanying text. The most outstanding deals with the bones and muscles; it was published in 1747 with the title Tabulae Skeleti et Musculorum Corporis Humani. The drawings and engravings were made by Jan Wandelaar. In order to gain exact proportions, many anatomical drawings were made from actual bodies; they were measured carefully and were then averaged in order to gain the final result. For the drawing of skeletons ingenious contrivances were suggested by a professor of physics. Two nets, as large as the skeleton itself, were divided into squares. They were placed in front of the skeleton, one very close, and the other, with squares ten times as small, about four Rhenish feet away. The artist stood forty feet distant from the object, and by means of the two nets gained proper perspective. In order to depict more accurately such parts as could not be distinguished from a distance he could approach the first net closely and, by relating his drawing to the larger squares, could still record detail accurately in proportion to the whole. An account of the method may be read in the preface to the book. Curious and interesting are the accessories to the figures which were chosen, by which to give an impression of proportion (Figs. 8 and 9). They are thus in contrast to the figures in other anatomical works where accessories are quite unrelated to the subject in hand.

These anatomical atlases were vital necessities to students of anatomy and surgery whose chances of learning anatomy by dissection were few. Hoffman at Halle secured no more than twenty bodies for dissection in twenty-four years. In Prague there were only three dissections in the twenty years after 1692, and Albinus himself obtained only one body each year. Yet, after two hundred years the Albinus Atlas remains unsurpassed. Even to-day its pictures convey something of the enthusiasm of pioneer anatomist-surgeons who never lost sight of their interest in the anatomy of the living. Their successors, whose work has been so much concentrated on the formalin-hardened dead, have in this respect much to learn.

REFERENCES