Section of the History of Medicine

President Lord Cohen of Birkenhead MD

Meeting October 4 1967

Paper

George Stubbs (1724-1806) as an Anatomist

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Stubbs (Fig 1) is at present a popular artist known almost exclusively as a horse painter. This label was one he regretted in his lifetime and one which has subsequently resulted in his paintings being undervalued. In the nineteenth century his eclipse was nearly complete. He is mentioned neither in Cunningham's 'Lives of British Painters' published in 1821 nor in the 'Handbook to the Department of Prints and Drawing in the British Museum' of 1876 (Sparrow 1922). His re-establishment was started by Joseph Meyer and Sir Walter Gilbey (1900) in the early part of this century and has steadily gained momentum. Significant milestones were reached in 1957 and 1958 with two exhibitions of his works in London, the first since 1885 (George Stubbs: Whitechapel Art Gallery; Georges Stubbs, Rediscovered Anatomical Drawings: Arts Council of Great Britain). In the last decade David Piper (1965), has referred to him as being 'of the level of the greatest painters of his time' and Gabriel White (1958) thinks that 'his paintings are among the greatest paintings that this country has produced'. More surprising are assessments in another vein such as those by Waterhouse (1953) that 'he is amongst the greatest natural scientists that England has produced', and of Grigson (1947) and Taylor (1957), comparing him as a painter scientist to Leonardo da Vinci. It is this latter aspect of his work with which this paper is concerned.

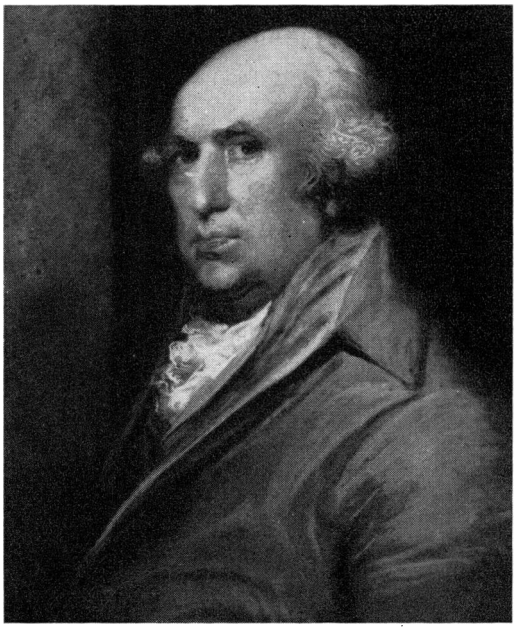

Fig 1 *George Stubbs by Ozias Humphrey. (Reproduced by permission of the Walker Art Gallery, Liverpool)*

Early Life

The chief source of information on Stubbs's life is a manuscript memoir written by his friend Ozias Humphrey. He was born in Liverpool in 1724, the son of a prosperous leather dresser and one of seven children. Although his parents at first discouraged his painting it cannot have been very serious disapproval for at the age of 8 he was making sketches of 'bones of prepared subjects dissected and lent to him by a benevolent neighbour, Dr Holt'. In his teens he was making

use of his father's tannery to dissect horses and dogs. With his father's death his mother gave full support to his wish to become an artist. It was a fortunate time for painters; England was increasingly prosperous and although it was still believed by some that English artists were only fit for painting portraits, others believed that after apprenticeship and a period on the Continent copying the old masters, one could return and become respected by producing some history paintings. Stubbs, trying the 'correct way', was at 15 apprenticed to Hamlet Winstanley who was copying the Earl of Derby's pictures. He quarrelled with his master and left him after two weeks determined that henceforth he 'would look into nature for himself and consult and study her only' (Humphrey).

Burton and Stubbs

After five years of touring northern towns painting portraits he settled in York in 1745. There a surgeon, Charles Atkinson, recognized Stubbs's talent and, besides procuring him cadavers to dissect, asked him to lecture on anatomy, privately, to the students of the hospital. Life in York at that time was much disturbed by political events. Charles Stewart was making his progress south after his victory at Preston Pans and as an example of the unrest the *Saturday Evening Post* of that time records: 'Rebels were taken from York Castle to be hanged, the first to have his heart cut out etc. . . . fifty-two were to be executed next Saturday'. The hospital staff were not immune from the upheavals; two of the staff, Dr Drake and Dr Burton, both of whom were to be patrons of Stubbs, were arrested. Because of Dr Burton's later relations with Stubbs it is worth examining his problems in more detail (Doran 1913). The doctor had in the 1734 election for the County of York campaigned successfully and vigorously for the Tory candidate whilst the defeated Whigs had as their propagandist a Dr Jacques Sterne. After a period of studying under Boerhaave in Leyden, Burton returned to York in 1740 as physician and man midwife. Sterne had also been promoted and was there as precentor of the cathedral. He lost no time in restarting their old enmity with an extreme bitterness. This culminated in 1745 when, at Sterne's instigation, Burton was arrested and charged with meeting up with the Jacobite army. It seemed unlikely that this charge would have stuck but, whilst under arrest, Burton was accused by a fellow prisoner of drinking a disloyal toast. The result was that the charge was changed to high treason, carrying the death penalty, and Burton was lucky to have been released after a year of legal wranglings.

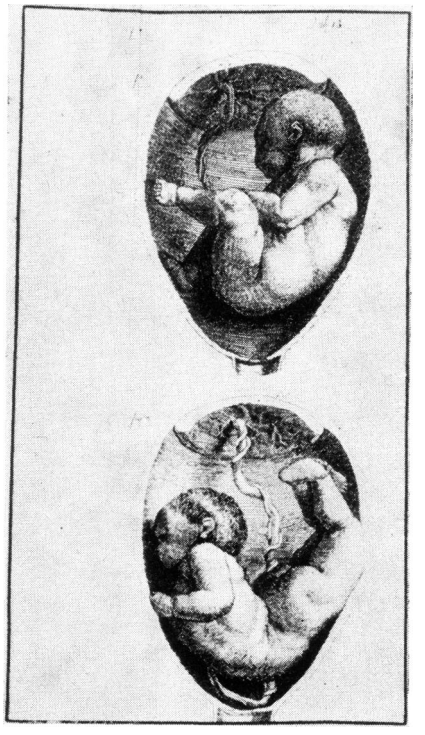

Fig 2 *An illustration by Stubbs from 'An Essay towards a Complete New System of Midwifery' by J Burton*

Soon after his release Burton asked Stubbs to illustrate a treatise on midwifery that he was writing. During the preparation of this students snatched the body of a patient who had died in labour and Stubbs, working in a garret, dissected it and drew it.

Of this time the *Sporting Magazine* (Sparrow 1922) wrote 'He [Stubbs] took risks a hundred times when he looked for a corpse, running into adventures such as might subject anyone with less honourable motives to the greatest severity of the Law' and a correspondent of Joseph Banks wrote 'he was held in vile renown', but this might equally well have been a political judgment. Dr Burton's 'Essay towards a complete New System of Midwifery' was published in 1751. In it, he particularly describes his proper forceps, later to be described by Lowder as a whimsical contrivance and soon abandoned by Burton himself. He advocates podalic version for delay in the first stage, refers to amputation of a presenting arm as 'the inconvenience of reckless fœticide' and he dwells on the terrible dangers of Cæsarean section. The copper plates are produced anonymously and I feel sure that this is by Stubbs's wish as not only is the standard of engraving in this

his first self-taught attempt poor, but also because I believe that he certainly copied one, and possibly two, of the plates from the 1749 edition of Albinus's 'Anatomy Tables' that he is known to have had. The illustrations pursue the theme of the book (Fig 2). The last engraving, Fig 3, shows the deformed fœtus believed to be from the luckless woman whom Stubbs dissected, and a uterine polyp that Burton wrote up in the *Philosophical Transactions* (1750). The work was remembered by obstetricians not only for its contents but also because of Burton's feud with Smellie (Burton 1753). Amongst collectors the book was sought because of Stubbs's plates (Wilbur Cross 1909). The public are also unlikely to forget it, as it provided the material for the last act in Jacques Sterne's quarrel with Burton when his nephew, Lawrence Sterne, published 'Tristram Shandy' in 1780. In this novel Burton and his works are systematically and mercilessly ridiculed.

While in York his surgical friends promised Stubbs financial and practical help with some anatomical dissections of the horse. But first Stubbs decided on one more attempt at the conventional artist's way to fame – he went to Italy. His return was almost immediate, having confirmed his belief that 'Nature is greater than all art whether Greek or Roman, Renaissance or contemporary'. This is a noticeably independent attitude as the opinion of most artists in Rome was characterized by Reynolds, who wrote in a letter to Lord Edgcumbe: 'I am now at the height of my wishes, in the midst of the greatest works of art the world has produced' (Taylor 1955).

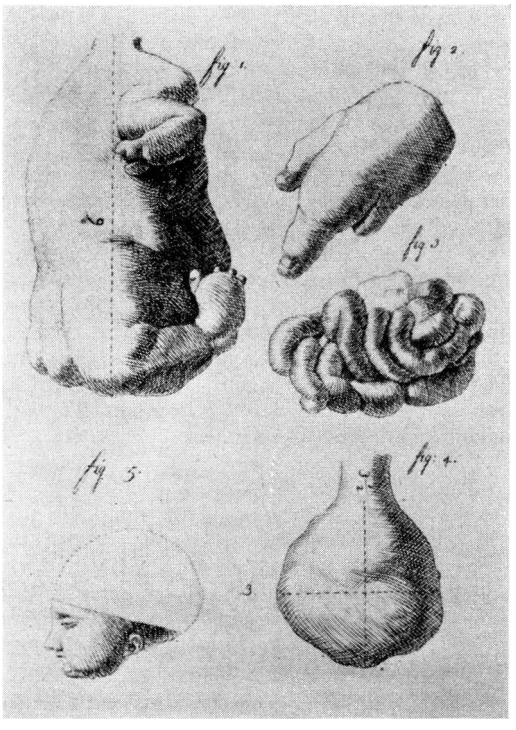

Fig 3 *A fœtus from 'An Essay towards a Complete New System of Midwifery', dissected and drawn by Stubbs*

Anatomy of the Horse

When Stubbs returned his York friends let him down in his projected dissection of the horse. Undeterred, with almost unbelievable dedication, he set about the task aided only by a woman friend, Mary Spencer. For this purpose he hired an isolated farm-house at Horkstow in Lincolnshire. The horses were bled to death by cutting the jugular vein and the blood vessels were injected with tallow. He lifted the carcase with a tackle of hooks and bars attached to the ceiling: the beast's feet were arranged in suitable positions on a wooden plank beneath. He would then cut his way towards the skeleton, preparing the muscles layer by layer and drawing them as he went. If the vessels had been well injected, one horse lasted him six or seven weeks, at the end of which time the stench had become overpowering. After eighteen months of dissection he had got through a great number of horses and had finished enough drawings and tables for the engraving to start. In London he could find no professional engraver who would do the work so he did it himself, working for eight years early in the morning or late into the night whilst painting very productively for a number of important patrons in the daytime. The 'Anatomy of the Horse' was published in 1766.

There were ostensibly three treatises on equine anatomy with which it had to be compared. The first by Carlo Ruini, 'Dell' Anatomia et dell' Infirmità del Cavallo' had been published in 1598. (Ruini was a Senator of Bologna and died one month before the book was issued.) This notable volume was a complete analysis and, save for a few mistakes, was outstandingly good. This book was followed ninety years later by 'Anatomy of an Horse' published by Snape, farrier to Charles II. In his own words he 'broke the ice,' 'none having gone before me or shown me the way'. He apologizes that the book was imperfect but 'if he had drawn every part the book would have become too large.' On examination the book proves to be a vulgarized copy of Ruini's work with the central nervous system improved by resort to Dr Willis, as by fortunate coincidence the nervous system of the horse and man were similar! The third work, 'La Parfaite Connoissance des Chevaux' (Saunier & Saunier 1734) claims to be 'copied

Fig 4 *A dissection from 'The Anatomy of the Horse' by Stubbs*

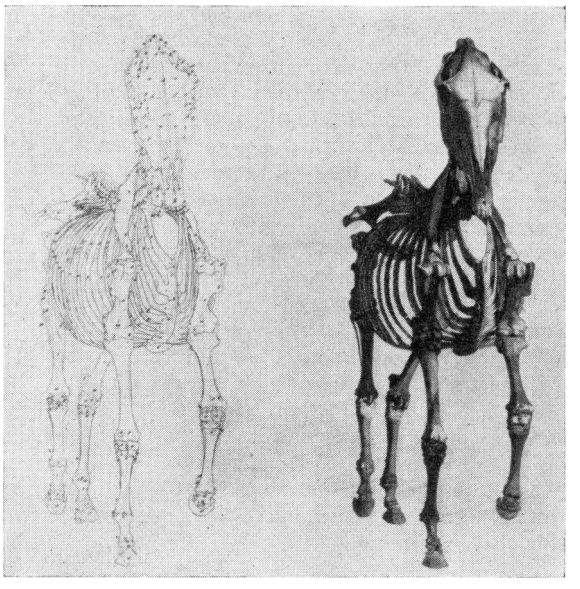

Fig 5 *Skeleton with reference plate from 'The Anatomy of the Horse'*

from nature and prepared at the cost of incessant study and great expense' but proves to be another straightforward plagiarism of Ruini's work.

Stubbs's 'Anatomy' consists of 24 plates with an explanatory text. The horse is shown from various aspects and finally as the skeleton (Figs 4 and 5). The style of presentation of the plates with a numbered key is that used by Albinus (1749), but it is noticeable that Stubbs dispenses with ornate backgrounds and noble poses.

That some measure of approval was present before publication is evident from the imposing list of subscribers. After, not even Stubbs's detractors could find any ill to say of it. Admiration was not confined to this country: amongst his most enthusiastic admirers on the Continent was Petrus Camper, Professor of Medicine, Anatomy and Surgery at Groningen, FRS, &c. He wrote: 'The myo-neurology and angiology of men have not been carried to such perfection in two ages as these horses by you. How is it possible a single man can execute such a plan with so much accuracy and industry?' In a book published some years later he concluded 'that Stubbs deserves a statue for such fine work'. (Cogan 1794). In this country the *Medical Review* of 1767 reported: 'This work not only reflects great honour on the author but on the country . . . what praise is not due to a private person, who at his own expense and with incredible application . . . ' (Sparrow 1922).

In the world of artists from Landseer to Munnings his reputation has remained high. Veterinarians, however, whilst admiring the excellence of his illustrations, conclude from the text that the functions of the muscles are imperfectly understood. The last edition of the 'Anatomy' appeared in 1966 with a veterinary paraphrase by Professor J C McCunn and Professor C W Ottaway. The former concluded that Stubbs was a searcher after truth who depicted the horse in its true shape and form although part of the text is now somewhat out of date. It seems to me that Stubbs's prime interest was in form, and it was the anatomy that gave that form which he studied. Within those limitations his observations are accurate, detailed and, being both drawn and engraved by him, have suffered no distortion by a second hand. His only competitor was Ruini, whose anatomy was diagrammatic and less detailed.

Stubbs, the Hunter Brothers and Joseph Banks

The 'Anatomy' finally served to establish his reputation with natural scientists such as John and William Hunter and Sir Joseph Banks. For John Hunter's collection, now in the possession of the Royal College of Surgeons, he painted a baboon and albino macaque monkey, the generative organs and scrofulous glands of which were also exhibited, a rhinoceros, and a yak which Warren Hastings had brought home from India. For William Hunter he painted a cavy, a moose,

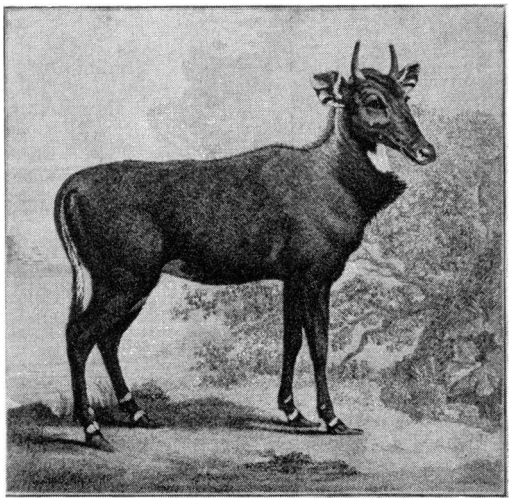

Fig 6 *Engraving of a blue bull painted by Stubbs for William Hunter and reproduced in the* Philosophical Transactions *of the Royal Society*

a pygmy antelope and a blue bull (Fig 6). Of the latter Hunter (1771) says: 'Good paintings of animals give much clearer ideas than descriptions. Whoever looks at the picture, which was done under my eye, by Mr Stubbs, that excellent painter of animals, can never be at a loss to know the Nyl-ghau, wherever he may happen to meet with it.' For Sir Joseph Banks he drew some lemurs and painted a dingo and a kangaroo. The story of the kangaroo and rhinoceros paintings will serve to emphasize the contemporary importance of these and similar pictures.

In 1768 the young Joseph Banks sailed with Captain Cook on his first voyage of discovery with the objective, amongst others, of investigating the flora and fauna of the Great South Land. The importance of accurate recording of specimens was obvious and with the scientific party were two artists, Sydney Parkinson and a young Scotsman, Buchan. It was no great surprise in those days that both died on voyage, the former from malaria and the latter after an epileptic fit. On Cook's return Hawkesworth rushed out his mediocre official account; included in it was an illustration of a kangaroo, the strange hopping quadruped of New Holland. This was assumed to be the work of Sydney Parkinson. Subsequent representations of the animal followed in 1783 in Buffon's 'Natural History', in 1789 with Stockdale's account of Captain Phillip's voyage to Botany Bay, in Bewick's 'History of Quadrupeds' (1790) and by T Edwards in 1759 (Poignant 1962). Plainly these illustrations followed the Hawkesworth pattern with supplementary distortions according to the whim of the artist. It was only when the Stubbs painting of a kangaroo was exhibited in 1957 that Dr Lysaght realized that the prototype for the Hawkesworth engraving was Stubbs painting and not Parkinson's sketches. True to his principles Stubbs had not relied on his imagination or second-hand sketches, but had inflated the preserved skin of a kangaroo that Banks had brought back with him to obtain the illustration. As Stubbs started a train of kangaroo engravings by his accurate representation, so did he correct a parade of incorrect ones in his painting of the one-horned, armour-plated, Indian rhinoceros.

In 1515 an Indian rhinoceros reached Lisbon and was sketched by a Portuguese artist before being dispatched to Rome as a present for the Pope. On the voyage the ship foundered and all were lost, but the carcase of the rhinoceros was swept ashore where it was stuffed and continued on its journey to the Pope. The sketches were sent to Dürer who in his woodcut elaborated the plica of the skin into an elaborate armour and, in an effort to compromise with the classical descriptions by Martial of a two-horned rhinoceros, added a horn on the withers (Fig 7). As Parsons

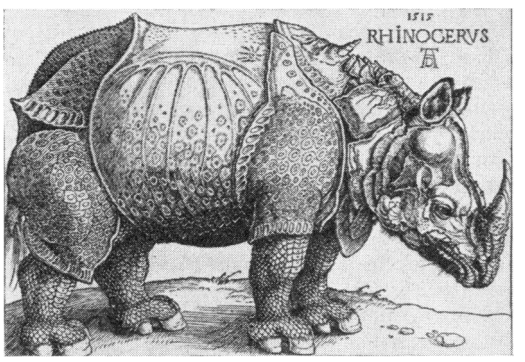

Fig 7 *Dürer's woodcut of a rhinoceros, 1515*

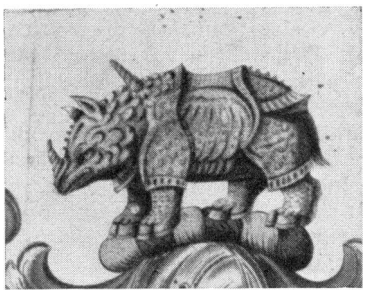

Fig 8 *Arms of the Worshipful Society of Apothecaries of 1621, showing Dürer's rhinoceros. (By courtesy of the Master of the Society of Apothecaries)*

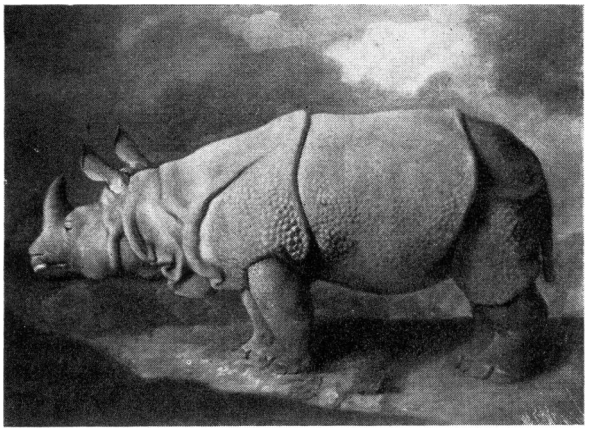

Fig 9 *Stubbs's rhinoceros. The first accurate representation of an adult. (By courtesy of the Royal College of Surgeons of England)*

(1743) and Cole (1954) have pointed out, this was copied with progressive distortion and confusion, a three-horned variety being described in Ethiopia and others finding that the extra horn was confined to the male species. Dürer's rhinoceros even found its way on to the armorial bearings of the Society of Apothecaries in 1621 (Fig 8). Stubbs was the first with an accurate representation of an adult specimen and the painting now hangs in the Royal College of Surgeons (Fig 9). Recently discovered drawings of the animal are said to be comparable with his anatomical drawings in detailed description. An anonymous pamphlet of 1766 expresses the situation well (Walker Art Gallery 1951):

The wide creation waits upon his call,
He paints each species and excels in all,
Whilst wondering Nature asks with jealous tone,
Which Stubbs's labours and which her own?

The importance attached to art in the development of natural science is demonstrated in a letter written by Banks about his proposed second voyage: . . . 'and to take with me on the voyage as many artists as my fortune will allow, by whose means the learned world in general might reap as much benefit as possible from these discoveries. With these ends in view I have engaged Mr Zoffany at £1,000 per year and three draftsmen' (Beaglehole 1962).

Aside also from his main artistic pursuits Stubbs had time to design a particular kind of articulated skeleton of the horse which could be fixed in different natural positions. He also produced after much experimentation a new range of nineteen colours to use on enamel.

His interest in anatomy never waned. We hear of him being told one evening that a dead tiger lay at Mr Pidcock's in the Strand. He immediately went there, paid three guineas for it and had it taken home where he spent the night dissecting it. There is a similar story of John Hunter trying to borrow £5 to buy a dying tiger (LeFanu 1958). Stubbs missed no opportunity of painting any new animal even if he did not dispose of the picture. At his death, drawings of Tibetan bulls, buffaloes and cattle were sold. It must be more than a coincidence that John Hunter had, in the grounds of his villa at Earls Court, savage bulls from the lofty and barbarous mountains of Tibet, buffaloes which he had harnessed and driven around London, and cattle that he was using in his experiments on reproduction (Merriman 1885).

Comparative Anatomy

At the age of 75 Stubbs started on his last work, the 'Comparative Anatomical Exposition of the Structure of the Human Body with that of a Tiger and Common Fowls'. This occupied him for the next seven years until his death in 1806. It sounds as if he died from a coronary lesion and an hour before his death he said: 'I fear not death, I have no particular wish to live. I had indeed hoped to have finished my comparative anatomy ere I went, for other things I have no anxiety.'

Considerable interest has been focused on this work recently with the finding of four volumes of manuscript and two folios of 124 drawings related to it. These were found in 1957 during a programme of recataloguing at the Free Public Library in Worcester, Massachusetts, USA. The study was designed in six parts and it is now evident that drawings for the work and the text were nearly complete although he had only engraved the first three issues. These were published with the text posthumously in 1817. The first part details the skeleton of man, tiger and fowl from various aspects. The second part, the human body, the tiger without skin and the bird without feathers.

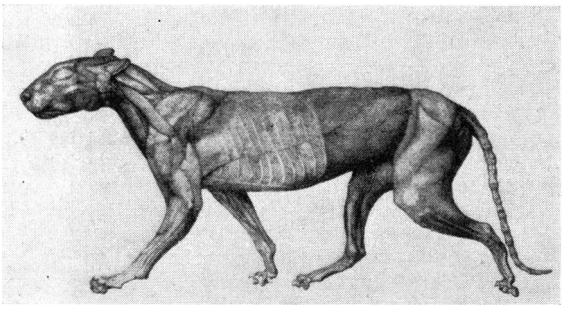

Fig 10 *Dissection of a tiger from 'Comparative Anatomical Exposition' by Stubbs*

The third part shows the superficial fascia in all three (Fig 10). The unpublished volumes were to show progressively deeper dissections.

The relevant manuscript and drawing passed into the hands of Mary Spencer, his mistress, who had been with him since his days at Horkstow dissecting the horse. After her death they were sold by Phillips the auctioneers. Their travels until they were found in the library in Worcester are uncertain but the books were bequeathed to the town in 1863 by Dr John Green an eminent general practitioner who had never left the United States. The manuscripts contain the book plate of Thomas Bell who lectured in comparative anatomy at Guy's Hospital.

Basil Taylor (1958) has made a preliminary study of these documents and a number of interesting points have come to light. The text dealing with the skeletons is written in French. The published edition is in English. Secondly, the manuscript is significantly longer and a comparison of the two would seem to indicate that the manuscript had not reached the final state for publication. As a result the printed text is incomplete and at times a little confused.

Osman Hill (1958), Prosector of the Zoological Society of London, has examined the drawings and finds that they are excellently observed. As an example, several of the fowl show hyperdactyly, a now well-known condition to which the Dorking breed is especially susceptible. His originality is displayed when he shows the skeleton of man in quadrupedal position when comparing it with corresponding parts of a tiger. He is sometimes at a loss to homologize corresponding muscles and here he clearly recognizes his own limitations by not giving specific labels. As in the studies of the anatomy of the horse, his drawings of the superficial fascia, muscles and veins are superb. Each plate is based on fixed proportions measured from centre to centre of motion in each joint.

No extensive record of comparative anatomy is known before Stubbs. Claude Perrault published a number of plates of assorted animals with 'odds and ends' of their insides and bones. LeFanu (1958) has pointed out that Belon had matched the skeleton of a man and a bird in 1555 and Fabricius of Aquapendente had directed a number of dissections of animals and birds in 1600 but they were not systematically arranged. Professor Blumenbach had published a work of comparative anatomy in 1779 but it was not translated into English until 1807. So Stubbs's work, if not unique in conception, is certainly so in the depth in which he has covered his chosen field.

Conclusion

Stubbs was single minded and thorough in all he did. He believed without compromise that nature was what had to be copied and not the art of the great masters; that design was scientific and based on the laws of perspective and the ratios of the golden section. His approach to art was rational and similar to that of Charles Darwin or Linnaeus to biology. Because of this by the end of his life he was very much out of step with other artists and critics of the picturesque, anthropomorphic, nineteenth century. His achievements in anatomy were gained through intensely hard work and were a model of detached observation. They were limited to the skeleton and tissues which gave the animal's form, a limitation conditioned by his other dominant interest of painting. Reynolds slept through his anatomy classes and a knowledge of anatomy did very little to improve the art of the nineteenth century, but the knowledge acquired by Stubbs in his anatomical studies and the attitude of mind that produced them helped to make his paintings, personality and achievements unique in English art.

A quotation from Bacon (Grigson 1947) seems particularly apt for Stubbs:

'Those who determine not to conjecture and guess, but to find out and know; not to invent fables and romances of worlds, but to look into, and dissect the nature of the real world, must consult only things themselves.'

Acknowledgment: I am grateful to Mr W R LeFanu for his help in the preparation of this paper.

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DISCUSSION

Mr W R LeFanu (*Royal College of Surgeons of England, London*) said that when Stubbs's comparative anatomy drawings from America were exhibited in London in 1958 he had been asked to explore his connexion with contemporary anatomists. He had acquired some knowledge and a great admiration of Stubbs, so that he was deeply impressed by Dr Fountain's masterly survey and appreciation of his work. The majority of Stubbs's portraits of exotic animals had been specially commissioned by William and John Hunter, and were still in their museums. Stubbs's choice of a tiger for his comparative drawings was almost certainly influenced by John Hunter, the only other man known to have studied this animal at that time. Miss Jessie Dobson, Curator of the Hunterian Museum, had found that Hunter dissected no fewer than nine tigers. The Royal College of Surgeons possessed a film of all the 'man, fowl and tiger' drawings now in America.

Sir Eric Riches (*London*) said that John Hunter had been a patron of Stubbs. He bought paintings for Jenner and in 1778 he wrote to him: 'I have a picture by Stubbs, a horse frightened at the first seeing of a lion. I got it for five guineas. Will you have it? I have a dearer one and no use for two of the same master's; but don't have it excepting you would like it, for I can get my money for it.'

This was a favourite subject of Stubbs; slides of two versions of it were shown from the Royal College of Surgeons' collection.

Meeting November 1 1967

The following paper was read:

The Health and Personality of Jonathan Swift
Mr T G Wilson (*Dublin*)