GEORGE STUBBS
THE ANATOMY OF THE HORSE
THE

ANATOMY

OF THE

HORSE.

INCLUDING A PARTICULAR DESCRIPTION OF THE

BONES, CARTILAGES, MUSCLES, FASCIAS, LIGAMENTS, NERVES,

ARTERIES, VEINS, AND GLANDS.

ILLUSTRATED BY TWENTY-FOUR PLATES.

BY GEORGE STUBBS,

PAINTER.
INTRODUCTION

BY

CONSTANCE-ANNE

PARKER

It seems as though Stubbs always had to have a project on hand. Some subject that was quite outside, though related to, the work that he was doing as a successful painter. A project to work at, to inquire into and to experiment with. He seemed compelled to have a scientific investigation as an occupation for the restless energy of his mind. As a child he was absorbed by the mystery of unknown natural forms, and as a youth he explored the world of living structure.

By 1745, at the age of 21 and living in York, where he was earning a living as a portrait painter, Stubbs was already giving lectures on anatomy to pupils at the local infirmary. One of his contacts prevailed on him to illustrate a new book on midwifery in 1751, and for this it seems Stubbs taught himself the rudiments of etching and engraving. He was not satisfied by following the methods taught him, but immediately experimented to improve all the technical processes. A brief visit to Rome only encouraged him to turn to nature, rather than to art, for his inspiration; and some time in 1756 or 1757 he started to make his preparations for a really tremendous project, that of producing a book on the anatomy of the horse.

This was to take him the better part of ten years to finish, and was the result of many more years of study and observation. It was 'upon the advice of his young Chirurgical friends with whom he had been previously connected at York' that he decided to 'complete and publish The Anatomy of the Horse'. This last quotation from Humphry gives the impression that the project had been in Stubbs' mind for a number of years, and that he had done a good deal of preliminary work on the subject with the book in mind. In the preface to the book, he says that he consulted most of the treatises upon the subject, and when the book was advertised it said that it was the result of many years of actual dissection. Of the treatises upon the horse, the most important, anatomically speaking, was Carlo Ruini's Dell' Anatomia e dell' Infirmità del Cavallo. This was published as early as 1598 and little that was published subsequently improved upon it, either illustratively or scientifically. Petrus Camper, the distinguished anatomist, wrote of the illustrations: 'They convey a general idea of the anatomy of the parts; but they cannot serve the painter.' What then is to be expected from the works of Sannier and Snape, and others which are merely bad copies from the imperfect engravings of Ruini! There was not much inspiration to be gained from these later works. Stubbs's own creative observation produced a completely fresh approach to the subject. The horse appears to be a living animal instead of a dead and stylized figure.

To complete the final studies for this immense work Stubbs needed a period of peace and quiet, far away in the depth of the country, where he could dissect without offending anyone. He went to Lincolnshire, to the small village of Horkstow, about six miles from Barton, where he had stayed when he was working for the Nelthorpe. There he engaged a farmhouse that he might without inconvenience to others have dead horses, and subjects adapted to his purpose.

The exact location of this farmhouse is not certain, but presumably it would have been some distance from the village and isolated from neighbours. The 'inconvenience' would have been considerable had other farms been within receiving distance of the nauseating and penetrating smell of decaying horseflesh. Landseer said of the lion which the Zoo had provided for him to use as a model for his bronze lions in Trafalgar Square, and which had died whilst he was out of town: 'Anything as fearful as the gases from the royal remains it is difficult to conceive . . . We shut our eyes to nasty inconvenience and open them to the importance of the opportunity of handling the dangerous subject whilst in a state of safety.'

Stubbs must often have 'shut his eyes to nasty inconvenience' during the next year and a half. He tackled the whole project by himself, with no outside help, and with no other companion or assistant than Mary Spencer, his common-law wife. It must have been rather hard on her, for unlike him she had not been brought up in the house of a tanner, and her nose was probably less accustomed to unpleasant odours.
The medical students and surgeons from York failed to come to Stubbs's assistance with either money or practical help, as they had originally promised. So, single-handed, he began what to most men would be a life-work, and one requiring a good deal of careful organization. There were three main operations to be conducted. First, after the awkward and heavy job of rigging up the dead horse in the dissecting-room-studio, there was the dirty work of stripping and cleaning, and the injection of the animal's veins, preparatory to beginning the dissection proper. Second, having dissected and laid bare the part to be illustrated, there was the completely different task of making working drawings, which was clean, precise work, far away from the butcher's shop atmosphere of bleeding the horse to death, and then skinning and disembowelling it. Finally, there was the writing up of the descriptions for the book's text.

Humphry gives this detailed account of the way Stubbs attacked the project:

As these studies and operations were singular and very important, the manner in which they were conducted may not be uninteresting to relate. The first subject which was prepared was a horse which was bled to death by the jugular vein, — after which the arteries and veins were injected. Then a bar of iron was suspended from the ceiling of the room, by a Teagle of Iron to which Iron Hooks were fixed. — Under this bar a plank was swung about eighteen inches wide, for the Horse's feet to rest upon, and the Horse was suspended to the Bar of Iron by the above mentioned Hooks which were fastened into the opposite side of the Horse to that which was intended to be designed; by passing the Hooks through the ribs and fastening them under the Backbone and by these means the Horse was fixed in the attitude which these prints represent and continued hanging in this posture six or seven weeks, or as long as they were fit for use.

His drawings of a skeleton were previously made — and then the operations upon this fix'd subject were thus begun. He first began by dissecting and designing the muscles of the abdomen — proceeding through five different layers of muscles till he came to the peritoneum and the pleura through which appeared the lungs and the Intestines — after which the Bowels were taken out and Cast away — Then he proceeded to dissect the Head, by first stripping off the Skin and after having cleaned and prepared the muscles &c. for the drawing, he made careful designs of them and with the explanation which usually employed him a whole day. Then he took off another layer of Muscles, which he prepared, designed and described, in the same manner as in the Book — and so he proceeded till he came to the Skeleton — It must be noted that by means of the Injections the muscles, the Blood-vessels and the Nerves retained their form to the last without undergoing any change of position — In this manner he advanced his work by stripping off the skin and cleaning and preparing as much of the subject as he concluded would employ a whole day to prepare design and describe, as above related till the whole subject was completed.

The drawings for The Anatomy of the Horse, or at any rate, some of the drawings made at Horkstow, can be seen and studied in the Royal Academy Library. If looked at very closely, it is possible to see beneath the drawing of the muscles a faint trace of the skeleton, drawn in pale ink. Also the outline or silhouette of the horse was generally laid in, in the same manner. Stubbs prepared a master drawing of the silhouette of the horse in the required pose, and the skeleton in the same position. These would have been traced on to a number of sheets of paper, the master drawing having been pricked all along the outline with tiny holes and placed over a blank sheet of paper, after which powdered charcoal or chalk would have been tapped, or pounced, through the holes on to the blank sheet, leaving a series of faintly dusted-in dots. These little dots were then carefully joined up to reform the exact outline of the master drawing. It is fairly easy to see these joined dots on one or two of the drawings, as it gives a slightly jerky look to the line. He also squared up some of the drawings and reproduced them by this method. These tracings were executed in pale ink leaving a permanent, but unobtrusive drawing, as a basis on which to place the muscular layers as the dissections progressed deeper and deeper — thus giving a continuity of size and pose over a number of different horses; Stubbs said that he 'dissected a great number of horses'.

One must bear in mind that many of these drawings were working studies through which Stubbs was gaining the knowledge and information needed to produce the final set of finished drawings from which the plates were to be engraved. Quite a number of these drawings are almost notes, rather than finished studies; they are rapidly and roughly scribbled in, in black chalk, and bear little visual resemblance to the plates. It is interesting to note that while the side-view studies
are all in the same pose, though varying somewhat in size and proportion—there are two sets that correspond to two different master drawings—the front and back views have two poses each, with the horse in movement, in an almost trotting action. One pose which corresponds more or less exactly with the pose in the engravings, and a second set, in which the perspective is particularly steep and gives a curious impression of a very long hind leg in the back view, and of a badly taken photograph in the front view, with an exaggeratedly large head. This is more likely to have been caused by working in a restricted space without room to get away from such a very large subject, and not by inaccurate drawing or observation. Presumably these were the earlier drawings in the series, as they are also less highly finished and more roughly executed. These rapid notes tend to be considerably larger in scale than the careful studies.

Stubbs used quite a wide variety of media in the drawings. In the delicate and beautifully precise work which was to be used for the engravings, he uses pencil. These are meticulous in detail and wonderfully controlled. They have an expressiveness combined with an absolute authority which lifts them far above the normal study, and makes them a visual delight. Their clarity is amazing and the way he constructs a leg-bone, muscle, tendon, and vein are expressed so clearly and concisely, with subtle differentiation of texture, and all within so tiny an area. In some of the larger drawings he has used black chalk, and the smaller details are noted in sanguine.

The layout of the book, in eighteen 'plates' or 'tables', shows first the front, side, and back views of the skeleton, followed by five plates of the muscular layers progressing from the subcutaneous, deeper and deeper towards the skeleton. The fully modelled engravings are paired with the line engravings, or diagrams, of the same view and anatomical layer, lettered and numbered, to form a key to the text, and to clarify the position of the veins and nerves. This preserves the unity of the engravings, which are unspoilt by any type of key spotted over their surface. Camper points out the similarity in arrangement to Albinus's famous Tabulae Sceleti et Muscularum Corporis Humani illustrated by Jan Wandelaar. Stubbs would have undoubtedly studied this book, published some ten years before, in 1747.

To return to the drawings, there are studies for the diagrams as well as for the engravings. These are mostly drawn in a golden yellow ink and with the horse's outline in sanguine chalk. The arteries or nerves are put in in pencil and the letters and figures in brown ink. However, he uses a number of variations of this arrangement. One of the drawings of the skeletons is boldly drawn in dense black ink, and there is a set of three very fine measured drawings in sepia ink. Each bone is related by measurement to the whole, and by related angles and fixed points, the position and proportion is worked out. At the top of the side-view drawing, in Stubbs's own writing, it is possible to make out the words 'Proportions taken from an old mare about 13 hands high'.

Camper, in his book, says: 'You will naturally suppose that the skeleton of the horse which is the most beautiful and useful of animals, must have been delineated with peculiar care and exactness. But alas, exclusive of those painted by the great master in this department, Stubbs, and engraved after his paintings, I know not of any that deserve commendation...'

He also said, of The Anatomy of the Horse: 'that of Stubbs is masterly and accurate; all the parts are properly placed, are in just proportions, and are well delineated. In his finished pieces the muscles are represented with an accuracy that cannot be exceeded. In a word, his skeleton of the horse, and his arrangement of the muscles, exhibit such a masterpiece, that the author deserves the highest honours that were ever bestowed upon an artist.'

It seems probable from the following extracts by Janinus in 'Conversations on the Arts' in Ackerman's Repository that Stubbs had articulated a skeleton so that it could only be moved into poses that a live horse could take, and that it could only make the same actions as a real horse. 'I refer to a skeleton which I have, invented by Mr Stubbs, the horse painter. It is so prepared that in whatever attitude it is put, it continues in that position. By this contrivance a painter can always have before him the osteology exactly in the position of the figure which he is painting.' And also: 'I will place this skeleton upright. It has in it a great number of copper and annealed wires. It is never prepared in this way by the common mounters of skeletons. This not only retains the position it is placed in, but it cannot be put in an unnatural position.'

The drawings were completed at the end of about eighteen months of hard labour—and it must have been very hard and dirty work for Stubbs to cope with, and with Mary Spencer as his only help and assistant. Luckily for him, he was young, tough, and extremely strong—not only physically but mentally and morally, with an immense will-power and determination. It became a kind of legend that he could carry a dead horse up the stairs to his dissecting room without help. The strain of rigging up the dead weight of a carcass
to draw from would have taxed most men’s strength, and he did this to a ‘great number of horses’ – not just one. He was subject to considerable dangers from infection from the putrefying remains. Without antiseptics, many anatomists died. Jesse Foot recalled five lecturers who died of a ‘putrid myasma’. Stubbs was said to have worked on one horse for eleven weeks. The state and the smell of it must have been indescribably horrible, yet the drawings have a calm, unemotional quality, completely unaffected by any of the drama of the situation.

Stubbs’s command of the technical side of dissection was surprising. A great deal of highly specialized knowledge was required to prepare the horse for dissecting; the arteries and veins had to be injected with wax and other substances to keep their shape and position, so that they could be recorded. He had to be able to dissect extremely quickly, for without any form of preservatives, decomposition would set in very rapidly, particularly in small, stuffy and poorly ventilated surroundings such as a farmhouse. No other anatomy of the horse was anything like as advanced scientifically or as accurate. Even now, two hundred years later, it remains a monumental work that would be hard to fault.

Stubbs left Horkstow sometime in the summer of 1759, and probably returned to Liverpool for a short while, for the register of St Peter’s Church records that Mary, daughter of George Stubbs, limner, was buried there on 18th September. He proceeded to London in the autumn, with the drawings complete and ready for the engravers to make a start on the plates. However, this was not as easy to arrange as he had hoped. He approached ‘Mr Grinio and Mr Pond’ and made inquiries to many other engravers of professional standing, but when his drawings were shown to them, they all declined to undertake the commission, even Mr Grinio, who had engraved some of the plates for Albinus’s Anatomy. The reason given being that though many of the drawings were of entire horses, others were of parts only, such as ears, noses, and limbs. The engravers had not worked on such a project before and didn’t understand it at all. They laughed at the studies and were unwilling to have anything to do with the book in case they should be ridiculed, and, anyway, the subject was not one which appealed, having a slightly disreputable flavour. It is interesting to speculate on what happened to the drawings of ‘ears, nose, and limbs’, as there are none in the collection in the Royal Academy Library. In fact, Stubbs presumably did a great number of drawings and studies at Horkstow, of which perhaps only a fraction remain.

Some may yet turn up, but at the present time there are forty-two at the Royal Academy and one at the British Museum, plus a couple of others in private collections. It was as late as 1969 that the number of known drawings for The Anatomy of the Horse at the Royal Academy changed from eighteen to forty-two. The eighteen were well known and loved by many R.A. students and lovers of horses, as well as by scholars of Stubbs. They had been housed in the R.A. Library in a solander case for many years. They were left to Mary Spencer, with many other works, in 1806, when Stubbs died. She kept them till her death in 1817, when they were bought by Colnaghi. At the time when Joseph Mayer was collecting material for his essay on Stubbs he wrote to the animal painter, Abraham Cooper, R.A., and received the following reply: ‘... Perhaps you are aware that my friend Edwin Landseer R.A. possesses Stubbs’s original drawings for The Anatomy of the Horse. Old Colnaghi bought them at a sale some years back when a sale of Stubbs’s things took place and Landseer painted him – Colnaghi – a picture for them.’ Landseer thought a lot of them, and though he had offers to sell the drawings, he never parted with them. They were left by him in 1873 to his brother Charles, who was Keeper of the Royal Academy Schools for over twenty years. When Charles Landseer died, six years later, he bequeathed to the Royal Academy a large sum of money – over £10,000 – to found scholarships and prizes for art students, and the Stubbs Drawings. The bequest of the drawings is not mentioned in the Royal Academy’s Annual Report for 1879, though the money is recorded. However, in the Report of the Inspectors of Property of the following year, it is stated: ‘That the anatomical drawings of the Horse by George Stubbs A.R.A. be removed from their present position on the staircase leading to the Diploma Galleries, and placed with his other works in the Library for the more convenient reference of the students.’ These ‘other works’ must refer to the two books by Stubbs, The Comparative Anatomy and The Anatomy of the Horse, which were already in the Library.

For many years the eighteen drawings were thought to be the entire collection, but in 1963 the Royal Academy put on an exhibition of ‘Treasures of the Royal Academy’. It was while searching for interesting relics that a rather battered portfolio came to light, and while going through some distinctly uninteresting architectural drawings a grubby paper parcel emerged from the bottom. Inside were twenty-four more drawings. It seems likely that at the time when they were bequeathed the most suitable were mounted and
framed, and hung on the Diploma Gallery staircase. These were the more highly finished and delicate of the forty-two. Also they were the ones most directly related to the plates. The few of the same type that were in the parcel of unmounted studies were all quite large and would hardly have hung conveniently with the others. The eighteen would also have been considered the most useful and helpful for the R.A. students to study from. There is no mention in the Academy’s records as to the number of drawings originally in the Landseer Bequest.

Of the eighteen engravings and eighteen diagrammatic line engravings in the book, twenty of them have drawings in the collection that directly relate to the plates. Of these, fifteen are from the old set of eighteen, and five belong to the newly discovered twenty-four. All the five relate to the diagrams and the others are drawings from which most of the plates were actually engraved.

Because no engraver would take on the job of translating the drawings into engravings – and not just into artistic renderings, but super-accurate illustrations to a scientific work – Stubbs was obliged to undertake the work himself. It is obvious from the finished plates that he set himself an exceedingly high standard of execution. There is a tremendous advance on the mid-wifery plates, both technically and aesthetically. In the ten years since then he had developed and matured, and the period of tremendous study at Horkstow was a very great influence on his powers of observation and analysis of form. His draughtsmanship was by this time masterly and sensitive. The preparation and engraving of the thirty-six plates, and the finishing of the text, took Stubbs six years, for he never used daylight hours for anything but painting, so the plates were worked on during the evenings and in the early mornings.

Stubbs considered that the best way to get the book published and sold was by subscription, so it was advertised in the papers, and a form or leaflet was printed, also giving the same information:

PROPOSALS for Publishing by Subscription,

CONDITIONS.
The Tables engraved on Plates 19 inches by 15.

The Explanation of the Tables will be printed on a Royal Paper answerable to the Plates, each of which will be printed upon an half Sheet of Double Elephant. The Price of the Book to Subscribers will be £4. 4s. one Half to be paid at the Time of Subscribing, the other Half when the Book is delivered. The Price to Non-subscribers will be £5. 5s. The Names of the Subscribers will be printed at the Beginning of the Work.

N.B. The Plates being all finished and the whole Work in the Press, it will be published as soon as 150 Subscribers have in their Names; which will, together with their subscriptions, be received by the following Booksellers, viz. Mr Dodley, in Pall Mall; Mr Nourse, in the Strand; Mr Owen, at Temple Bar; Mr Newberry, in St Paul’s Churchyard; and by all other Booksellers in Great Britain and Ireland. Subscriptions are likewise received by Mr Stubbs at his House in Somerset Street, opposite North Audley Street, Oxford Road.

This Work being the Result of many Years actual Dissections, in which the utmost accuracy has been observed, the Author hopes, that the more expert Anatomists will find it a useful Book as a Guide in comparative Anatomy; and all Gentlemen who keep Horses, will by it, be enabled not only to judge of the Structure of the Horse more scientifically, but also to point out the Seat of Diseases, or Blemishes, in that noble Animal, so as frequently to facilitate their Removal, by giving proper Instructions to the more illiterate Practitioners of the Veterinary art into whose Hands they may accidentally fall.

RECeived the .... Day of..............1765
Of................
£2. 2s. being Half the Subscription Money for one BOOK of the Anatomy of the Horse.
Geo. Stubbs.

The date of publication was to be Saturday, 1st March 1766, and the book was printed by J. Purser for the Author. In it Stubbs refers to himself as ‘George Stubbs, Painter’, which he also did in the advertisements. This was extremely useful publicity for him as a painter, but it did tend to make people think of him as primarily a painter of horses. The commissions that followed the fame that the book brought him, were mainly for horses, portraits of horses, compositions of horses, and scenes where horses feature largely. These must have given him considerable satisfaction at the time, when his name was not so widely known, but
later on this limiting of his subject matter became a very sore point, as society placed the animal-painter at the very bottom of the scale and far below the ‘face-painter’ and history-painter. Certainly by the 1780s he was anxious to make a name for himself in this type of work.

In the event the Anatomy was an immediate success. It was a work of great interest to the scientifically minded and a pioneer work in its own field. The advance on its predecessors was so enormous that it aroused genuine appreciation from the greatest scientists and anatomists in Europe as well as in England. The ‘Gentlemen who keep horses’ mentioned in Stubbs’ introduction were such a very inclusive category in the eighteenth century, when the horse was train, plane, and car to all, and both privately and commercially the prime means of transport on the roads. For this reason the book had a very wide appeal.

Ruini’s work had remained the basic authority on equine anatomy for the better part of two hundred years, but the Anatomy of the Horse was to take over from it – and has yet to be surpassed, artistically, at any rate.

The engravings have a life-like, yet sculptural quality, without following the direct footsteps of Vesalius and Albinus, who show the figure in dramatic attitudes, as actors on a stage. Even to the point of trailing their dissected muscles like discarded clothes that have become too warm, as in Vesalius. The anatomized figures were set in exotic backgrounds of ruins and tropical forests containing strange beasts, such as rhinoceroses. Stubbs’ simplicity of design is striking and powerful in contrast to these grandiose compositions. The design of the horse on the page is beautifully arranged and considered in relation to the available space. It has a monumental quality, and a solidity of form which is aesthetically satisfying, and has an authoritative accuracy. It also represents an enlargement of knowledge that was outstanding.

This letter from Camper makes it quite clear just how outstanding this anatomical research was:

Sir — If ever I was surprised to see a performance, I was it surely, when I saw yours on the Anatomy of the Horse! The myology, neurology and angiology of men have not been carried to such perfection in two great ages, as these horses by you. How is it possible a single man can execute such a plan with so much accuracy and industry? You have certainly had before you the scheme of the great Albinus, but even his plates have not that delicacy and fulness, nor the expression of yours.

Give me leave to ask you, was you the engraver? for you do not mention the engraver’s name. I once had a plan to offer to the public, a subscription for the like; but I am sure I could not have obtained the elegance and exactness of yours. I dissected many horses; but I especially examined the head, and all the different sections of the inside, the bowels and so on. I made figures as large as life. I dare venture to say they are beautiful, mostly done by different means upon life itself. My intention was to reduce them to one-eighth, and to have them engraved, but after having seen and admired yours, I dropped all hopes of succeeding. This favour I hope you’ll grant me, to tell me whether or not you still go on to finish this beautiful undertaking, and whether or not we may flatter ourselves to see the internal parts of this useful creature, and something about the disorders, and internal diseases of the horse.

You will be curious to be acquainted with a Dutchman who admires with so much ecstasy your Tables. I am public professor of Medicine, Anat. and Surgery at Groningen; and I have published some figures of the human arm, pelvis, etc. I am actually publishing the Brain and the Organs of Hearing, Smelling, etc. in different animals. I dissect, but I do not love horses, though I keep them for proper use and for my family. I am sure my acquaintance can be of little use to you, but yours to me of great consequence. I desire to have two copies of your performance, one for me, and one for a gentleman who admires as well as I do your book. I do not know whether your bookseller has any correspondence with us, if so he may send them to any in Holland, and they will be sent to me, and which was perhaps more easy. Direct them to Mr Fagel jurm. Greffier de leurs H(autes) Puissances les Etats généraux, à la Haye; and our ambassador will send them to the Hague. I’ll get you payed by my banker in London, Mr Andrew Grote & Co. Nothing shall be easier than to establish a correspondence with little or no expense on both sides between us.

I am, with the greatest veneration, Sir,

Your most obedient and most humble servant,

Petrus Camper, F.R.S.

Member of the R. Acad. of Surgery of Paris, of Edinburgh, and of the Societies of Haarlem and Rotterdam.

At Groningen, 28th July, 1771.

This letter, from such an extremely eminent man in
the field of anatomical research, must have given Stubbs a great deal of satisfaction. A year later Camper wrote to him again:

The Duke of Wolfenbottle, the Baron du Sour, and I are the only owners of your elegant performance in these provinces, though it is much wondered at by others. I am amazed to meet in the same person so great an anatomist, so accurate a painter and so excellent an engraver. It is a pity you do not like to pursue the viscera of this useful animal . . . 27th July 1772.

These letters came some time after the publication date; earlier the Medical Review of 1767 said of The Anatomy of the Horse:

This work not only reflects great honour on the author, but on the country in which it was produced. France may reap great credit from the veterinary school lately established in that country; but what praise is not due to a private person, who, at his own expense, and with the incredible labour and application of years, began, continued, and completed the admirable work before us? But it is impossible to give our readers an adequate idea of Mr Stubbs' performance without placing the book itself before their eyes. All we can therefore add concerning it is, that the author himself dissected a great number of horses for the sake of attaining that certainty and accuracy for which his engravings will ever (if we are not greatly mistaken) be highly valued by the curious in comparative anatomy. His original drawings were all his own, and the plates were likewise engraved by his own hand. In short, we are at a loss whether most to admire the artist as a disector or as a painter of animals. Of his excellence in the last-mentioned capacity, few of our readers who have any pretensions to connoisseurship can be supposed ignorant; especially as some of his admirable pieces have appeared at the public exhibitions. His picture of the Lion and Horse and Lion and Stag in particular, were deservedly applauded by the best judges; nor were his Brood Mares less excellent, though in a very different style of painting yet we think we have seen some of his animal portraits, both of wild and tame subjects, that are, if possible, superior to those above mentioned.

The effect of this large folio of engravings on painters cannot be underestimated. It changed the outlook of British sporting art as regards horses, Sawrey Gilpin, Ben Marshall, and James Ward all owed a great debt to Stubbs. Sir Thomas Lawrence owned two copies of the book, and Gainsborough certainly had a copy, as they appear in the sales of their effects. Painters and sculptors have blessed the distilled knowledge that is so easily obtained by flipping through the pages or by making slow and serious notes and studies. Sir Alfred Munnings, who was a great admirer of Stubbs, always maintained that the finding of a copy of The Anatomy of the Horse was a landmark in his career. It was while he was still a student in Norwich that a second-hand book-seller managed to get hold of an original folio edition for him. It cost him 50s. and he described it as

The most unique thing of its kind ever compiled. This heroic effort, an epic of the eighteenth century, is as great and unselfish a work as anything could be.
TO THE READER.

When first I resolved to apply myself to the present work, I was flattered with the idea, that it might prove particularly useful to those of my own profession; and those to whose care and skill the horse is usually entrusted, whenever medicine or surgery becomes necessary to him; I thought it might be a desirable addition to what is usually collected for the study of comparative anatomy, and by no means unacceptable to those gentlemen who delight in horses, and who either breed or keep any considerable number of them.

The Painter, Sculptor, and Designer know what assistance is to be gained from the books hitherto published on this subject; and as they must be supposed best able to judge, how fitly the present work is accommodated to their purpose, any address to them is superfluous.

As for Farriers and Horse-Doctors, the Veterinarian School lately established in France shews of what importance their profession is held in this country; amongst us they have frequent opportunities of dissecting, and many of them have considerable skill in anatomy: but it were to be wished that this, as well as other parts of medical science, were as generally attended to by them, as by those gentlemen who treat the diseases and wounds of the human body. If what I have done may in any sort facilitate or promote so necessary a study amongst them, I shall think my labour well bestowed.

I will add, that I make no doubt, but Gentlemen who breed horses will find advantage, as well as amusement, by acquiring an accurate knowledge of the structure of this beautiful and useful animal.

But what I should principally observe to the Reader concerning this my performance, is, that all the figures in it are drawn from nature, for which purpose I dissected a great number of horses; and that, at the same time, I have consulted most of the treatises of reputation on the general subject of anatomy.

It is likewise necessary to acquaint him, that the proportions which I have mentioned in several places of the book, are estimated from the length of the head, as is usually done by those who have treated on the proportion of human figures; this length is taken from the top of the head to the ends of the cutting teeth, and is divided into four equal parts, each of which is again divided into twelve minutes.
THE FIRST ANATOMICAL TABLE OF THE BONES OF A HORSE

ANATOMY OF THE HORSE.
The Anatomy of the Horse.

The first anatomical table of the muscles, fascias, ligaments, nerves, arteries, veins, glands, and cartilages of a horse explained.

The head.

1. The eye, or orbit of the eye, is the socket in which the eyeball is embedded.

2. The nose, or nostril, is the opening through which air is breathed.

3. The mouth, or cavity of the mouth, is the entrance to the alimentary canal.

4. The teeth, or dentition, are the organs of mastication.

5. The palate, or roof of the mouth, is the upper limit of the cavity of the mouth.

6. The tongue, or tongue, is the muscular organ of speech and taste.

7. The pharynx, or pharynx, is the narrows passage between the mouth and the larynx.

8. The larynx, or larynx, is the organ of voice production.

9. The trachea, or trachea, is the windpipe.

10. The esophagus, or esophagus, is the muscular tube that conveys food from the mouth to the stomach.

11. The stomach, or stomach, is the principal digestive organ.

12. The small intestine, or small intestine, is the organ of digestion.

13. The large intestine, or large intestine, is the organ of absorption.

14. The rectum, or rectum, is the last part of the alimentary canal.

15. The anus, or anus, is the opening through which waste is expelled.

The thorax.

1. The ribs, or ribs, are the bones that form the thoracic cage.

2. The sternum, or sternum, is the bone that forms the front of the thoracic cavity.

3. The clavicles, or clavicles, are the bones that form the shoulders.

4. The scapulae, or scapulae, are the bones that form the back of the shoulder.

5. The humeri, or humeri, are the bones that form the upper arm.

6. The radius and ulna, or radius and ulna, are the bones that form the forearm.

7. The carpal bones, or carpal bones, are the bones that form the wrist.

8. The metacarpal bones, or metacarpal bones, are the bones that form the palm of the hand.

9. The phalanges, or phalanges, are the bones that form the fingers.

The limbs.

1. The forelimb, or forelimb, is the leg of the horse.

2. The hindlimb, or hindlimb, is the leg of the horse.

3. The hoof, or hoof, is the terminal part of the foot.

4. The fetlock, or fetlock, is the joint between the pastern and the cannon bone.

5. The cannon bone, or cannon bone, is the bone that forms the lower part of the lower leg.

6. The pastern, or pastern, is the joint between the cannon bone and the metatarsal bones.

7. The metatarsal bones, or metatarsal bones, are the bones that form the metatarsus.

8. The phalanges, or phalanges, are the bones that form the toes.

The body.

1. The trunk, or trunk, is the part of the body that contains the thorax and the abdomen.

2. The chest, or chest, is the part of the body that contains the heart and the lungs.

3. The abdomen, or abdomen, is the part of the body that contains the digestive organs.

4. The pelvis, or pelvis, is the part of the body that contains the reproductive organs.

5. The limbs, or limbs, are the parts of the body that support the body and allow movement.

6. The tail, or tail, is the part of the body that extends from the base of the vertebrae.

7. The skin, or skin, is the organ that covers the body and protects it.

8. The hair, or hair, is the fibrous outgrowth from the skin.

9. The blood vessels, or blood vessels, are the tubes that carry blood throughout the body.

10. The lymph nodes, or lymph nodes, are the organs that filter lymph.

11. The lymphatics, or lymphatics, are the vessels that carry lymph.

12. The nerves, or nerves, are the channels that carry impulses.

13. The muscles, or muscles, are the organs that produce movement.

14. The bones, or bones, are the organs that support the body and allow movement.

15. The joints, or joints, are the points where bones meet.

16. The articulations, or articulations, are the points where bones meet.

17. The intervertebral discs, or intervertebral discs, are the cushions between the vertebrae.

18. The ligaments, or ligaments, are the bands that hold bones together.

19. The fascia, or fascia, is the connective tissue that covers muscles and tendons.

20. The tendons, or tendons, are the bands that connect muscles to bones.

21. The capsules, or capsules, are the connective tissue that surrounds joints.

22. The synovial fluid, or synovial fluid, is the lubricating fluid that fills joints.

23. The cartilage, or cartilage, is the elastic tissue that covers bones.

24. The bone marrow, or bone marrow, is the tissue that produces blood cells.

25. The blood, or blood, is the liquid that carries oxygen and nutrients.

26. The lymphatic system, or lymphatic system, is the system that filters lymph.

27. The immune system, or immune system, is the system that defends the body against disease.

28. The endocrine system, or endocrine system, is the system that regulates metabolism.

29. The nervous system, or nervous system, is the system that controls movement.

30. The reproductive system, or reproductive system, is the system that produces offspring.

The head.

The nasal cavity is the part of the head that contains the nose.

The maxillary bone is the bone that forms the upper jaw.

The zygomatic bone is the bone that forms the cheekbone.

The lacrimal bone is the bone that forms the tear duct.

The sphenoid bone is the bone that forms the sinus.

The ethmoid bone is the bone that forms the sinus.

The frontal bone is the bone that forms the forehead.

The temporal bone is the bone that forms the temple.

The occipital bone is the bone that forms the back of the skull.

The parietal bone is the bone that forms the top of the skull.

The suture is the joint between bones.

The meninges are the membranes that cover the brain.

The dura mater is the outermost meningeal membrane.

The arachnoid mater is the middle meningeal membrane.

The pia mater is the innermost meningeal membrane.

The cranial nerves are the nerves that supply the head.

The oculomotor nerve is the nerve that controls the muscles of the eye.

The trochlear nerve is the nerve that controls the muscles of the eye.

The trigeminal nerve is the nerve that controls the muscles of the face.

The facial nerve is the nerve that controls the muscles of the face.

The acoustic nerve is the nerve that controls the muscles of the ear.

The spinal nerves are the nerves that supply the body.

The sympathetic nerves are the nerves that control the autonomic nervous system.

The parasympathetic nerves are the nerves that control the autonomic nervous system.

The cranial nerves are the nerves that supply the head.

The spinal nerves are the nerves that supply the body.

The autonomic nervous system is the nervous system that controls the autonomic functions.

The peripheral nervous system is the nervous system that controls the somatic functions.

The central nervous system is the nervous system that controls the autonomic functions.

The cranial nerves are the nerves that supply the head.

The spinal nerves are the nerves that supply the body.

The autonomic nervous system is the nervous system that controls the autonomic functions.

The peripheral nervous system is the nervous system that controls the somatic functions.

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At a ligament which joins the tendo to the bone, and goes along with it to be inserted into the great process of the third metacarpal bone.

As another ligament arises about P which crosses the tendo and then draws it iner in the tendo in the insertion into the upper and anterior part of the great process.

As the figure above shows a ligament which arises from the bone and then passes into the interosseous muscle.

As a ligament from the bone to the third metacarpal bone, marked B in the figure.

At the first metacarpal bone.

As an articulare ligament.

At a ligament from the teres to the metacarpal bone of the first digit.

At the tendinous part of the teres to the metacarpal bone.

At the motion of the forearm muscles.

As an extension of the interosseous muscle, as seen in the figure, was actually performed by the author. A similar action is performed by the flexors of the long finger and the thumb.

At the flexor carpi radialis, marked A in the figure.

As a ligament from the bone to the third metacarpal bone, marked B in the figure.

At a ligament from the bone to the tendo.

At the insertion of the second metacarpal bone.

At the lateral part of the arm.

At the insertion of the metacarpal bone.

At the insertion of the metacarpal bone.

As a ligament from the bone to the third metacarpal bone, marked B in the figure.

At the insertion of the third metacarpal bone.

At the insertion of the metacarpal bone.

As an extension of the interosseous muscle, as seen in the figure, was actually performed by the author. A similar action is performed by the flexors of the long finger and the thumb.

As a ligament from the bone to the third metacarpal bone, marked B in the figure.

At the flexor carpi radialis, marked A in the figure.

As a ligament from the bone to the third metacarpal bone, marked B in the figure.

At the insertion of the second metacarpal bone.

At the insertion of the metacarpal bone.

At the insertion of the metacarpal bone.

As a ligament from the bone to the third metacarpal bone, marked B in the figure.

At the insertion of the metacarpal bone.
The silvery covering of the coffin bone is left on to show its thickness.

In the right lower limb.

13. The silvery covering of the coffin bone is left on to show its thickness.
the proximal edge of the same bone, beginning by that division, a passage for the deep flexor digitorum profundus, which it sends as far back as the tendons of the palmaris and the thenar.

4. A palmaris tendon.
5. An ulnar collateral ligament.
6. A ligament which binds the pisiform to the pisiform, and may be called part of the origin of the short flexor of the thumb.
7. An ulnar collateral ligament.

The first layer. Index finger.

5. An annular ligament.
6. A ligament which binds the pisiform to the pisiform, and may be called part of the origin of the short flexor of the thumb.
7. An ulnar collateral ligament.

The fifth anatomical table of the muscles, fasciae, ligaments, nerves, arteries, veins, glands, and cartilages of a horse. EXPLANATION.

The Hand.

1. Meets the adjacent cartilages, bone, and the ligaments of the thenar eminence, which are inserted therefrom.
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or finally menstruating; and that part of the person, orifice f.f. in male, the upper lip, may be called the lower lip, because it is the part of the person, orifice f.f. in female, the inferior part, and the part of the person, orifice f.f. in male, the middle part, is the part of the person, orifice f.f. in female, the superior part; the middle part, orifice f.f. in male, is inserted at the side of the person, orifice f.f. in female, the inferior part, and the part of the person, orifice f.f. in male, the upper part, with part of the middle part, menorrhagia, down the first line.

This leads to the superior menstruation, or anterior uterus.

1. a. d. f. s. f. s. l. (a) The mammalian endocervical formation of the study of the cervix presents the lower limit, with the mucous, or promontory under it: a uterine etymol. (b) a uterine etymol. (c) a uterine etymol. (d) a uterine etymol. (e) a uterine etymol. (f) a uterine etymol. (g) a uterine etymol. (h) a uterine etymol. (i) a uterine etymol. (j) a uterine etymol. (k) a uterine etymol. (l) a uterine etymol.

In the lower or posterior uterus.

1. a. d. f. s. f. s. l. (a) The mammalian endocervical formation of the study of the cervix presents the lower limit, with the mucous, or promontory under it: a uterine etymol. (b) a uterine etymol. (c) a uterine etymol. (d) a uterine etymol. (e) a uterine etymol. (f) a uterine etymol. (g) a uterine etymol. (h) a uterine etymol. (i) a uterine etymol. (j) a uterine etymol. (k) a uterine etymol. (l) a uterine etymol.

The Termplan of the MUSCLES, PANIClUMS, LIGA.

In the Head.

1. a. d. f. s. f. s. l. (a) The mammalian endocervical formation of the study of the cervix presents the lower limit, with the mucous, or promontory under it: a uterine etymol. (b) a uterine etymol. (c) a uterine etymol. (d) a uterine etymol. (e) a uterine etymol. (f) a uterine etymol. (g) a uterine etymol. (h) a uterine etymol. (i) a uterine etymol. (j) a uterine etymol. (k) a uterine etymol. (l) a uterine etymol.

In the Lower Limbs.

1. a. d. f. s. f. s. l. (a) The mammalian endocervical formation of the study of the cervix presents the lower limit, with the mucous, or promontory under it: a uterine etymol. (b) a uterine etymol. (c) a uterine etymol. (d) a uterine etymol. (e) a uterine etymol. (f) a uterine etymol. (g) a uterine etymol. (h) a uterine etymol. (i) a uterine etymol. (j) a uterine etymol. (k) a uterine etymol. (l) a uterine etymol.