THE LIFE

OF

JOHN HUNTER, F.R.S.

BY

DREWRY OTTLEY.

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PREFATORY ADVERTISEMENT.

Those who have traced the progress of modern surgery to its true source will not fail to have discerned, in the principles which Hunter established, the germs of almost all the improvements which have been since introduced. Like a wise master-builder, he laid the foundation of the profession upon so broad a basis that it has withstood the attacks of adversaries and the versatility of public opinion not only uninjured, but with fresh accession of fame to himself, and (with few exceptions,) the most complete verification of his opinions. The strict inductive method of reasoning which he pursued, upon physiological subjects, led the way to juster modes of investigation; the zeal which he evinced stimulated many ardent followers in the path which he had opened, and the principles which he inculcated became the fruitful source of an infinity of practical applications, which were capable of being worked out by inferior minds. Thus the fame of Hunter, after a lapse of nearly half a century, is rather augmented than diminished by each succeeding year: the country which gave him birth is justly proud of his name; and those who have shown the deepest insight into the principles of their profession, and made the greatest improvements in the practice of it, have ever been most forward in celebrating his merits.

But it is unnecessary to enlarge further on the celebrity of this distinguished philosopher, of whom it has been truly said, that "he was the greatest man in the combined character of physiologist and surgeon that the whole annals of medicine can furnish."* For a more full account of the character of Hunter's genius, and the peculiarities of his works, the Editor begs leave to refer the reader to the ensuing memoir, in which the language of indiscriminate panegyric, so freely employed by his preceding biographers, has given place to the voice of truth. His merits have been weighed in a just balance, and the less favourable parts of his character, as a man and as a philosopher, pointed out without disguise.

The reconstruction and enlargement of the Hunterian Museum, together with the publication of well-digested catalogues of its contents, seem well calculated to extend the fame of its founder, as well as to fix it on a more rational foundation. To the Editor these circumstances have appeared to afford a favourable occasion for the re-publication of Mr. Hunter's writings, considering that as all his labours were directed to the elucidation of the laws of life, they can only be advantageously studied in their totality. Those, therefore, who have familiarized themselves with his style and mode of thought, as displayed in his writings, possess the best clue to his museum; as, on the other hand, those who have made themselves well acquainted with the contents of his museum, possess the best guide in the perusal of his works. The two may be regarded as forming necessary parts of that general undertaking in which the author was engaged; his writings forming the text to his museum,—his museum the appropriate illustration of his writings.

It cannot but be a subject of deep regret to all those who have the interest of science or of their profession at heart, that no one should have undertaken to collect these writings before. Dispersed through scattered volumes of the Transactions of the Royal and other learned Societies, many of his most valuable papers have been unknown or neglected, or at least have been inaccessible to the great bulk of the profession; while of those which have been published separately, some are nearly out of print and scarcely to be obtained, others are extremely incorrect, and the greater number are excluded from general circula-

*Lawrence.

tion in consequence of their expensive form or inconvenient bulk. To remove these disadvantages, by presenting to the profession a cheap and correct edition of the author's *whole works*, has been one of the principal objects of the present edition.

It was considered that the utility of the work would be greatly promoted by an incorporation of the most important results of modern discoveries, in the form of foot notes; and in the prosecution of this part of his scheme the Editor has to acknowledge the able assistance of several distinguished friends, whose particular acquaintance with the subjects which they have respectively undertaken is well known to the public. As far as possible brevity has been consulted, and it is scarcely necessary to add, that each gentleman is alone responsible for the opinions contained in his own notes.

The superiority of the present edition above all the preceding will appear from the following particulars:—

1. It embraces the *whole* of Mr. Hunter's published works.
2. It contains a full and collated copy of his Surgical and Croonian Lectures.
3. It is preceded by a new life of the author, containing original anecdotes, a critical disquisition concerning the character and writings of the author, and a summary exposition of his Museum; to which has also been added Mr. Hunter's correspondence with Dr. Jenner and Sir Joseph Banks.
4. It is illustrated by numerous engravings.
5. The whole work is accompanied by illustrative notes, with the purpose of supplying such deficiencies as the progress of science has rendered necessary.
6. The text has been corrected, the punctuation rectified, and the modern synonyms introduced. Obscurities (so far as they have appeared to depend on improprieties of expression,) have been obviated, and a copious index has been added to the whole.
7. The work has been printed in a clear and legible type, at the same time that the size and price of the Edition, and the manner of its publication, have been accommodated to the convenience of purchasers.

Having thus stated the design and object of the undertaking, it is hoped that the reader will not be disappointed in his expectations. The writer is well aware that the works of so great a master deserve a much more learned and critical Editor than he can pretend to be. He begs, however, that it may be borne in mind, that so far as he is concerned, the work is not designed for those who have completed, but for those who are commencing their profession, and if he has failed in the execution of his task, he at least will have the satisfaction of having attempted a good work, which ought, in his opinion, to have been long since finished by a more able hand.

J. F. PALMER.

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INTRODUCTION TO THE LIFE.

Besides several brief memoirs of John Hunter which have appeared in various works of general biography, his life has already been written at considerable length by three different authors. Neither of these publications, however, furnishes us with more than a very imperfect account of his character, either as a private individual or as a Natural Philosopher.

The memoir by Sir Everard Home, prefixed to the work on Inflammation, is a scanty outline, almost wholly devoid of those characteristic anecdotes which form so essential a part of biography, and which his near connexion with Mr. Hunter would have enabled him to introduce; whilst nearly a third part of the whole is occupied with a detailed account of his various illnesses. The memoirs by Dr. Adams, and Mr. Jesse Foot, stand in singular contrast to each other, the former displaying everywhere marks of indiscriminate and unbounded partiality towards Mr. Hunter, the latter of bitter hostility, leading to the most flagrant misrepresentations of facts.

It appeared, therefore, if not necessary, at least appropiate and desirable, to prefix to this new and revised edition of his writings, a full and impartial account of this eminent man.

It is known to most of those who have kindly furnished information for this work, that Mr. Palmer did at first intend himself to have undertaken the office of Mr. Hunter's biographer; and he feels that some apology is due to those from whom he received communications under this supposition, for transferring the task to another.

A want of sufficient time to execute the task was the chief, if not the only reason, for his declining to fulfil his intention; and it was only when satisfied that such was the fact that I consented to engage in an undertaking which I should gladly have seen continued in more able hands.

In fulfilling the charge with which I have been entrusted, I have endeavoured to avail myself of all the information respecting Mr. Hunter to be found in preceding publications; nor have I scrupled to adopt the opinions of others regarding him where I thought them correct.

In addition to the materials gathered from these sources, I have been enabled to enrich this memoir with the whole of the letters written by Mr. Hunter to Dr. Jenner, during a friendship of more than twenty years' duration. The originals of these, many of which have already appeared in Dr. Baron's Life of Jenner, were liberally communicated to Mr. Palmer by Robert Fitzhardinge Jenner, Esq., of Berkeley.

The letters of Hunter to Sir Joseph Banks, as well as the interesting correspondence between the latter and Lord Auckland, respecting the Museum, were obtained through the kind intervention of Dawson Turner, Esq., of Yarmouth, to whom were entrusted the whole of Sir Joseph Bank's papers, by his executor, Sir Edward Knatchbull.

During the time that Mr. Palmer contemplated writing this life himself, he was at the pains to gather as much general information, and as many authentic anecdotes as possible, respecting the subject of this memoir, from his surviving friends and pupils. Of these anecdotes, many of which are highly characteristic, I have introduced by far the greater number; some which I have inserted may be thought so trivial as scarcely to have merited notice, but I have preferred rather to risk having this laid to my charge than to omit anything that might serve to illustrate Hunter's real character.

It will be seen from what I have said that my duty has been greatly lightened by having the already accumulated materials placed at my disposal; in addition to this I have to acknowledge the receipt of many valuable suggestions from my friend Mr. Palmer, respecting the various parts of the work,—suggestions from which I have rarely dissented, but which have often made me regret that circumstances prevented his being able himself to carry them into execution. How far I may have satisfactorily accomplished what I have undertaken, is not for me to judge. I will not pretend to indifference respecting the judgment that others may come to on the point; on the contrary, it would afford me much satisfaction to feel that my time had not been uselessly employed, but that I had succeeded in furnishing, what has been hitherto a desideratum in medical literature, a full and faithful account of the life of John Hunter.

DREWRY OTTLEY.

Exeter, March 3d, 1835.

THE LIFE

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JOHN HUNTER, F.R.S.

CHAPTER I.

1728 to 1751.

Mr. Hunter's birth and family;—his early habits.—Dr. Wm. Hunter's rise to fame;—his difficulties at the outset of life.—Mr. Hunter's arrival in London;—his rapid acquisition of anatomical knowledge;—becomes a pupil of Cheselden.—Cheselden's mode of operating for stone;—his character and death.—Mr. Hunter's employments at this period;—the advantages which he derives from his brother's society.

John Hunter was born at Long Calderwood, a small estate belonging to his family, situated about eight miles from Glasgow, in the parish of Kilbride East, Lanarkshire. His father, who appears to have been a small farmer living on his own estate, was descended from the ancient family of Hunter of Hunterston, a part of which property they had received from Robert the Second. His mother, whose maiden name was Paul, was the daughter of a respectable citizen of Glasgow, who held the office of Treasurer of that place. John, the youngest of ten children, was born in the year 1728, but on what day is not exactly known: the parish register states the 13th of February to have been his birthday, but he himself used to date it on the day following, and it is on the 14th, consequently, that his anniversary is celebrated at the College of Surgeons. We have no means of knowing whether either of his parents displayed any remarkable degree of talent, but it is certain that their offspring, both in the first and second generation, included an unusual number of persons eminent for their intellectual superiority.* Besides William, of whom mention will often be made in

* Mr. Wardrop, in his interesting life of Dr. Baillie, observes, that "the extent of talent united in his family and connexions was remarkable. He was not only the son of an able Professor, and nephew of the two Hunters, but his sister, Miss Joanna Baillie, has attained the most elevated rank in literature. Mrs. Baillie's

the course of these memoirs, another brother, James, the eldest of the family, possessed considerable abilities. He was intended for the Law, and completed his studies with a view to practising as a writer to the Signet in Edinburgh; but on visiting London in his twenty-seventh year, he became so enamoured of the pursuits in which he found his brother William engaged, that he determined on devoting himself thenceforward to Physic. He immediately began the study of anatomy, and pursued it with such zeal and dilligence, as speedily to attain considerable proficiency; added to this he was possessed of peculiarly engaging manners, and displayed talents which, in Dr. Hunter's opinion, could not have failed to place him in the highest rank as a professional man in London. He was, however, attacked with a spitting of blood, which obliged him to relinquish his pursuits and return to his native place; but the change proved of no avail, his complaint increased, and in no long time proved fatal.

One of the daughters, Dorothea, was married to Dr. James Baillie, Professor of Divinity in the University of Glasgow, and gave birth to the late Dr. Baillie, author of the 'Morbid Anatomy,' and for many years the first physician in London; and to Mrs. Joanna Baillie, the highly gifted authoress of the Dramas on the Passions.

Agnes, another daughter, married Mr. Buchanan, a cabinet-maker of Glasgow. The other children all died young. Hunter's father died in 1738, at the age of 78, and John was thus left, at ten years of age, to the care of a fond, and apparently over-indulgent mother: the consequence was, that being in a great measure master of his own actions, and having little taste for books, he preferred engaging in country sports, to studying those elementary branches of knowledge which are best acquired in youth, and the want of which, as in the case before us, is sure to be severely felt in after-life.

When Hunter was about seventeen, he went to stay for a time at the house of his brother-in-law, Mr. Buchanan, under the hope of being able to assist in freeing him from the pecuniary difficulties into which his convivial habits and inattention to business had led him. It is probable that whilst here, Hunter, who prided himself on his manual dexterity, assisted his brother-in-law in his workshop, and that hence originated the statement made by Foot, that he had served as a millwright or a carpenter. His efforts, however, proved unavailing to accomplish the object of his visit, and Mr. Buchanan soon after resigned his business, and earned a scanty livelihood as a teacher of music, and clerk to an Episcopalian chapel in Glasgow.

sister was married to the late Sir Richard Croft, a man whose name is endeared in the recollection of many, as well for his manly and upright heart as for his professional celebrity: and Mr. Denman, who has distinguished himself so much at the bar, (now Lord Chief Justice), was Dr. Baillie's brother-in-law." Of this tendency of genius to display itself in various members of the same family, many remarkable examples might be adduced from ancient as well as modern history.

During this time Wm. Hunter was rapidly pursuing his way to fame and fortune. After receiving a classic education at Glasgow University, and studying medicine for three years as a pupil of Cullen, who was at that time practising at Hamilton, he resorted to Edinburgh, where he spent a winter attending the schools of anatomy and medicine, and finally settled in London in 1741.

He was immediately engaged by Dr. Douglas to assist him in making preparations for a work on the bones, and also to take charge of the education of his son. With these views, accordingly, he became an inmate of the family; but on the death of Douglas, in the following year, he turned his thoughts to lecturing on anatomy, and immediately set about making preparations on a large scale for the purpose.

In 1745 a fair opening for his exertions offered, on the resignation of Wm. Sharpe, who had for several years past given a course of lectures on surgery, which he had undertaken at the express request of a number of naval surgeons. To this class Wm. Hunter succeeded, and after a time altered the plan of the lectures so as to render his course much more of an anatomical than of a surgical nature.*

Previously to this time, Wm. Hunter's means had been very limited, for though the family property had fallen to him at his brother James's death, yet as his mother continued, with his permission, to reside on the estate, the surplus accruing to him could have been but small. In proof of this, Mr. Watson, formerly surgeon to the Westminster Hospital, and one of Wm. Hunter's earliest pupils, used to relate, that as they were walking home together after the introductory lecture, the latter, who carried a bag containing seventy guineas, which he had received for entrance fees, remarked, that this was a larger sum than he had ever before been possessed of. Linnæus gives a similar account of his own slender beginnings where he says, "Exivi patriâ, triginti sex nummis aureis dives;" and it is related by Sir James Earle, that at Pott's death, a small box was found among his papers, containing a few pieces of money, not amounting to five pounds, being the whole which he ever received from the wreck of his father's fortune. Such anecdotes may serve to encourage those who, at the outset of their journey through life, chance to have their purses but slenderly furnished: numbers more might be found by a reference to the lives of eminent men in all professions, many of whom, though they have afterwards

* It was customary for the lecturers of that day to treat in one course on a number of subjects, sufficient to furnish matter for three or four distinct courses according to our present system; and the meagre amount of information afforded to their hearers may be judged of by the following facts, mentioned by Mr. Chevalier in his Hunterian Oration. Mr. Bromfield, who was surgeon to St. George's, and a lecturer of considerable note, comprised anatomy and surgery in a course of thirty-six lectures. Dr. Nicholls, at whose school Wm. Hunter studied, professed to teach anatomy, physiology, and the general principles of pathology and midwifery in thirty-nine, and Mr. Nourse of St. Bartholomew's embraced "totam rem anatomicam" in twenty-three lectures.

reaped a bountiful share of the favours of Fortune, were doubtless obliged, on their first starting in life, to have recourse to shifts quite as curious as those of Johnson's Irish friend, who in describing how a man may live respectably in London on thirty pounds a year, allots ten for the expenses of clothes, and provides that all visits are to be paid on *clean shirt days.*

Wm. Hunter had many difficulties to overcome in establishing his anatomical school; he was the first surgeon, unconnected with a hospital, who had lectured on anatomy,* and no one had attempted it on a scale at all equal to what he proposed: his predecessors had been accustomed to employ but one subject for demonstrating all parts of the body, excepting the bones and arteries, which were described on preparations; and the nerves, for exhibiting which a fœtus was usually employed. Practical dissection was unknown to the great bulk of the profession. Added to all this, a far greater horror of anatomical pursuits existed in the public mind at that time than at the present.

William Hunter's address and perseverance at length triumphed over all these difficulties, and he succeeded in forming an establishment, which, in consequence of the superior advantages it afforded, and the unrivalled talent of its founder as a lecturer, for a long time maintained its rank as by far the first anatomical school in London.

John Hunter was now in his twentieth year, when the fame of his brother's success made him desirous of entering into the same profession. He accordingly wrote to his brother, requesting to be allowed to join him in London, and offering his services as an assistant in the dissecting-room. The reply was favourable, and contained a kind invitation to visit London. He lost no time in complying with this, but set out on horseback in September, in company with Mr. Hamilton, a friend of the family, and arrived at his brother's house about a fortnight before the commencement of the autumnal course of lectures. No long time elapsed before

* It was not until 1745 that the alliance between barbers and surgeons was happily dissolved : before this time, any surgeon dissecting a body out of their Hall was liable to a fine of ten pounds. Amongst other privileges, they possessed the right of claiming annually the bodies of four executed felons, which probably led Dr. Caius to choose the Barber-Surgeons' Hall, to deliver his anatomical lectures in, soon after their incorporation in 1540. From this time to the dissolution of the company, their readers of anatomy were, with very few exceptions, chosen from the College of Physicians, to whom, with the exception of Cowper and Cheselden, is due the merit of supporting the fame of this country in anatomical pursuits, from the time of Caius to that of the Hunters. In the list of physicians who successively taught anatomy in England, we find the names of Caius, Harvey, Glisson, Mead, Willis, Lower, Wm. Hunter, and last, though not least, of Matthew Baillie. With Dr. Baillie ended the race of Physician-Anatomists, with the exception of Dr. Wilson, who lectures at the present day. This resignation of the professor's chair of anatomy on the part of the physicians, arose not however from any lack of able men to fill it, but from a conviction that the surgeons were now fully capable of instructing their own pupils, and with more practical effect.

John's skill was put to the trial in preparing for the lecture a dissection of the muscles of the arm. It is probable that Wm. Hunter had not as yet formed a very high estimate of the talents of his hitherto idle brother, and little foresaw that he was ere long to eclipse his preceptor: he was, however, so well pleased with his pupil's first essay, that he soon after entrusted him with the preparation of a similar part, of which the blood-vessels were injected. In this the young student again succeeded so well as to obtain much praise for his dexterity from his brother, who foretold that he would soon become a good anatomist, and promised that he should never want employment. From this time, therefore, we may consider Hunter as engaged in the dissecting-room, under the instruction of his brother's assistant, Mr. Symonds, where he pursued his studies with such zeal and diligence that by the next season he was able to take the charge of directing the pupils in their dissections;—thus, by his rapid progress, showing what may be effected by great diligence, and adding another to the examples furnished by Cheselden, Haller, Albinus, Baillie, Abernethy, and a host of others, that the surest foundation for future professional eminence is an early and extensive knowledge of anatomy.

The summer after he arrived in town, Wm. Hunter obtained permission for his brother to attend at the Chelsea Hospital, under Cheselden, of whom, as Hunter's first master in surgery, and as the most celebrated surgeon of his day, no apology will be necessary for introducing a short account. This admirable surgeon was now more than sixty years of age, and had retired in great part from the toils of a profession in which he had been engaged during nearly forty years, and in which he had attained the highest rank. As a surgeon, Cheselden may be said to have enjoyed the same repute, both in England and on the Continent, which his contemporary and friend Dr. Mead had acquired as a physician. He was educated at St. Thomas's Hospital, under Mr. Ferne, a very able man, and studied anatomy under the celebrated Cowper. At twenty-two he became a lecturer on surgery and anatomy, and in the following year was elected a member of the Royal Society, to whose Transactions he contributed several papers, the most remarkable of which contained the description of the operation by which he restored to sight a lad who had been blind nearly from birth. At Ferne's death he was elected first surgeon to St. Thomas's, and was appointed consulting surgeon to St. George's and the Westminster Hospitals. He was eminent in every department of surgery, but it was as a lithotomist that his name first became known all over Europe. The operation he at first adopted was that called the high method, when the bladder is entered above the pubes, which be performed with considerable success, saving six out of every seven who were cut. About this period, however, all Europe rang with the name of Raw, the famous Dutch lithotomist, who had adopted Frère Jacques's method, with improvements of his own, but kept his plan so profound a secret

as to blind the eyes even of the famous Albinus, his assistant, as to the exact parts through which he cut. Cheselden, with Douglas, and other surgeons in London, who had met with less success by the high method, tried the mode described as Raw's by Albinus, in which the whole wound in the bladder was made beyond the prostate; but they experienced such ill fortune that they felt assured the operation was not correctly described, and Cheselden, abandoning this, planned the lateral operation as it is at present performed. He now met with such signal success, that Morand, then one of the first surgeons in Paris, came over to this country purposely to learn the operation, and during his stay saw Cheselden cut twenty-seven patients without losing one. Cheselden's manners were exceedingly kind and gentle, and notwithstanding the extensive practice he had enjoyed, he always, before an operation, felt sick at the thoughts of the pain he was about to inflict; though during its performance his coolness and presence of mind never forsook him.* In alluding to this feeling, Morand relates an anecdote of a French surgeon who, on visiting the Hospital, expressed great surprise at witnessing such an evidence of weakness, as he considered it, on the part of so famous a surgeon: after the operation was over, the visitor was invited by Cheselden to accompany him to the fencing school, whither he was going to see a sparring match; but here the tables were completely turned, for no sooner did the contest begin, than the stranger turned pale at the sight, and was obliged speedily to betake himself to the open air.

It was under this great man that Hunter received his first lessons in surgery,—a worthy master for so eminent a pupil; and he continued to attend regularly at the Chelsea Hospital during the summer months of 1749 and 1750. Here he would have probably continued for some time longer, but in the following year Cheselden was obliged to resign his situation in consequence of an attack of paralysis, which entirely unfitted him for business. He repaired to Bath in the hope of amendment, but in 1752 he was seized with apoplexy, which put an end to his life, in the sixty-fourth year of his age. Besides his talents as a surgeon, Cheselden displayed considerable taste in the fine arts; he was fond of poetry, and an intimate friend of Pope; he had also made architecture his study, and it was from his plans that Putney Bridge, and the former Surgeons' Hall in the Old Bailey were erected.

But to return to Hunter. We may consider him as now fully entered on his professional studies; and as he was not one who ever loitered over an undertaking, it is probable that his time was pretty fully occupied between the hospital and the dissecting-room. He was, however, fond of company, and as he had not, like Haller, forsworn the use of wine on commencing his medical studies, though he found it necessary to do so in after life, he mixed much

*Such feelings, in a less marked degree perhaps, are far more commonly experienced than is generally supposed, by the very best surgeons previously to undertaking operations of importance.

in the society of young men of his own standing, and joined in that sort of dissipation which men at his age, and freed from restraint, are but too apt to indulge in. Here, as in graver matters, his ambition urged him to take the lead of his companions, amongst whom he went by the familiar title of "Jack Hunter." Nor was he always very nice in the choice of his associates, but sometimes sought entertainment in the coarse broad humour to be found amid the lower ranks of society. He was employed by his brother to cater for the dissecting-room; in the course of which employment he became a great favourite with that certainly not too respectable class of persons the resurrection men; and one of the amusements in which he took especial pleasure, was to mingle with the gods in the shilling gallery, for the purpose of assisting to damn the productions of unhappy authors, an office in which he is said to have displayed peculiar tact and vigour.

It must not, however, be supposed that it was to company like this, or to the society of wild young men, that Hunter was confined. His brother was a scholar, and possessed of gentlemanly manners, and though comparatively a stranger in London, he was already known as a man of much talent, and as likely to rise to eminence; he was also fond of society, and his house was consequently frequented by many of the first men, not only in his own but in other professions. It has therefore seldom fallen to the lot of young men to enjoy equal opportunities of cultivating their minds by association with men of talent; and though there can be no question that by far the greater part of his future eminence was owing to the original powers of his mind, yet, in recording the history of his life, it will be proper to trace the means by which those powers were improved, and to show, as far as may be, the assistance he received in bringing them fully into action. It is the more necessary to do this, in order to correct an unfounded opinion which generally prevails, that Hunter should be classed with those untaught geniuses who have risen to the highest honours by their own unaided powers. This was evidently not the case, and the meagreness of his early history seems sufficiently to prove that it was at his brother's table, and in his brother's dissecting-room, that his ambition and his talents were first roused to activity: without such a stimulus his genius might have slumbered, or have taken a wrong direction. Nor does this detract from his real merit. There is perhaps nothing that more distinguishes the man of genius than the manner in which he turns to account the advantages which common minds would let slip without profit. Hunter was a man of extraordinary powers; he was placed in circumstances the best fitted to excite these powers, and give them their full effect, and the result was such as could only have been produced by this fortunate combination of circumstances.

CHAPTER II.

1751 to 1763.

Hunter becomes a pupil of Pott.—Pott's character as a Surgeon.—Hunter enters at St. Mary's Hall, Oxford;—enters as a pupil at St. George's Hospital;—discovers the mode of connexion between the placenta and uterus;—his conduct as a lecturer and demonstrator of anatomy.—Disputes of the Hunters with contemporaneous anatomists respecting the anatomy of the testes, the office of the lymphatics, and the hernia congenita.—Hunter traces the nerves of the nose;—his experiments on the subject of venous absorption;—commences the pursuit of comparative anatomy;—embarks for Belleisle;—is still ardent in the pursuit of science.—Jesse Foot and his Life of Hunter.

On the retirement of Cheselden from the Chelsea Hospital, Hunter entered as a surgeon's pupil at St. Bartholomew's. To this hospital Pott had been elected surgeon about two years before, after having served as assistant from 1745. He was now in his thirty-eighth year, and was fast rising in reputation as a most able practical surgeon. As an author he was not yet known, for his first work of importance, the "Treatise on Ruptures," which was composed during his confinement with a compound fracture of the leg, did not appear until 1756. Nor had he at this time commenced the delivery of his surgical lectures. At the hospital, however, Hunter must have acquired many a useful lesson, from a comparison of the lenient practice of leaving much to the efforts of nature, which Pott's sound judgment had led him to adopt, with the rude and pernicious interference with these efforts, which Nourse and his other colleagues, according to the custom of their day, were in the habit of employing.

Surgery was at this time beginning fast to emerge from the state of barbarism in which it had long existed. To this change the French Academy of Surgery greatly contributed, and they have left us, in their Memoirs, a fine example of men laying aside petty jealousies and uniting their powers for one common object,—the advancement of their common profession.

It was in the operative parts of surgery, as might be expected, that the chief improvements were first made, a result almost necessarily arising from the knowledge of anatomy becoming more diffused. Far less had been done towards simplifying the curative department. The actual cauteries and charcoal-pan were still considered an essential part of the dressing apparatus at the hospital, and a farrago of applications, going under the names of suppuratives, digestives, and sarcotics, were implicitly relied on for effecting those changes which Nature was all the while performing in spite of her injudicious allies.

Pott was the first surgeon in this country who successfully attacked these abuses, and, as usually falls to the lot of innovators,

was laughed at by his colleagues for his attempts. Several of the improvements suggested by him were, no doubt, introduced after the time when Hunter was a student; yet we may fairly suppose that the latter obtained many useful hints from those he witnessed, which, confirmed and improved on during his practice in the army, may have formed the basis of some of the philosophic views which we owe to his genius.

At this hospital Hunter attended regularly during the summer months of 1751, and occasionally in the winter, when any operation of importance was to be performed. During the next summer he was absent from town, on a visit to Scotland, whither he went, partly probably to enjoy some relaxation from his labours, but principally for the purpose of accompanying to London his sister, Mrs. Buchanan, whose husband had died not long before.

In 1753 Hunter entered as Gentleman Commoner at St. Mary's Hall, Oxford. Neither of his biographers satisfactorily explains the motives which led him to take this step, but it seems probable that he was persuaded to it by his brother. It was not yet decided what line of practice John should pursue, and if there were thoughts of his becoming a physician, as it seems there were, it was natural that William, who was a good classic, and valued literary attainments, should recommend his brother to devote some time to the cultivation of those branches of knowledge, which he had hitherto so entirely neglected. He was also recommended, it would seem, to try his fortune as an accoucheur; but neither this proposal nor the former was to his liking, and he eventually decided on confining himself to the practice of surgery. In speaking of this period of his life some years afterwards to Sir Anthony Carlisle, then a student at the hospital, Hunter said: "They wanted to make an old woman of me; or that I should stuff Latin and Greek at the University; but," added he, significantly pressing his thumb-nail on the table, "these schemes I cracked like so many vermin as they came before me." It was fortunate, probably, that he decided as he did, for though his future progress was slow, the roughness of his manners would have been a still greater impediment to him in either of the other branches of the profession.

Having determined, then, on adhering to the practice of surgery, Hunter naturally felt anxious to secure for himself a chance of election at some future day to one of the London hospitals. His prospect of obtaining the situation of surgeon to the Chelsea was too uncertain and too remote to be calculated on; and at St. Bartholemew's it would have been necessary for him to serve an apprenticeship of five years to one of the surgeons, which, at his age, and with his occupations, was quite out of the question. Fortunately, no such obstacle offered at St. George's, where he accordingly entered as surgeon's pupil in 1754, and attended, as in the former instances, during the summer months, whilst the winter was devoted to his duties and studies in the dissecting-room. Two years after this he served the office of house-surgeon to the hospi-

tal, a most desirable post for a young man intending to enter on surgical practice, since, in addition to the immediate care of all the patients under the direction of the surgeons, in their absence, a a great part of the treatment of fractures, and several of the minor operations of surgery, usually devolve upon this officer.

Hunter's extensive acquaintance with anatomy was now generally known and appreciated, and he was not unfrequently applied to by others to assist them in clearing up any difficulties they might encounter in their researches. It was on an occasion of this kind, and about this time, that the important discovery of the mode of connexion between the placenta and the uterus was made. The honour of solving this anatomical problem was laid claim to by each of the Hunters, and the dispute to which it gave rise twenty-five years afterwards caused a breach between them that was never healed until William was on his death-bed; and scarcely, it would seem, in his mind, even then. The following is the account which John Hunter has given of the transaction in his work on the "Animal Œconomy."

In May 1754, Dr. Mackenzie, then an assistant with Dr. Smellie, had been particularly successful in injecting the arteries and veins of the uterus, in a woman who had died during pregnancy. The appearance being new, he applied to Hunter for his assistance in making the examination, who, after having dissected and made the whole into preparations, on his return home in the evening communicated what had been done to Dr. Hunter. The latter treated his brother's account at first with good-natured raillery, but on seeing the parts was soon convinced of the truth of the statement. Some of the portions were given to the Doctor, who afterwards exhibited them at his lectures; but in what manner he mentioned the subject, or what credit he gave to John on these occasions, does not appear. In his work on the gravid uterus, published in 1774, he gives general acknowledgments to his brother for his assistance, but does not mention his name in connexion with this particular subject. As it will be necessary to recur briefly to this dispute at a latter period, no more need be said at present, except to remark, that attempts have been recently made to show that this discovery, on which so high a value was set at the time, is in truth not a discovery, but an erroneous opinion.

The most distinguished anatomists and physiologists of the present day, on the Continent, take this view of the subject; still, the doctrine of the Hunters is supported by evidence too strong to be easily overset, and it is said that some recent minute dissections instituted by Mr. Owen, which have not yet been made public, still further confirm the truth of their opinion.

In the course of this year Hunter became a partner with his brother in the anatomical school, and a portion of the lectures was regularly allotted to him; besides which, he took his brother's station whenever he was unavoidably absent. The lecture-room was not, however, a place in which John Hunter was calculated to shine,

as he had always great difficulty in delivering himself extempore, an acquirement almost indispensable in anatomical teaching. Hence, notwithstanding his extensive and accurate knowledge of anatomy, he never gained a popular manner, and could not but have appeared to great disadvantage when contrasted with the Doctor, who was so pre-eminently qualified as a teacher.

In the dissecting-room he felt himself more at home, and it was here that he spent all his leisure hours, in making preparations, and in pushing his inquiries in anatomy and physiology beyond the point which his predecessors had attained.

Since the time of Vesalius anatomy had been prosecuted with great zeal and success by eminent men, both in England and on the Continent, and the most important parts of the human body had been more or less accurately described. There still remained, however, many minor parts, the structure of which had not been fully made out, and the newly discovered system of the lymphatics was as yet but imperfectly known. The invention of various modes of injecting the vessels had of late greatly facilitated researches into the minute structure of parts. Many able anatomists in the various schools of Europe were ardently engaged in pursuing such researches, and by none were they carried on with more zeal than by the Hunters.

A natural consequence of this direction of many minds to one object was, that a new discovery was frequently made nearly at the same time by different inquirers, and it became difficult to apportion the degree of credit due to each. The eagerness of the claimants for honour often led to disputes, in which far more warmth was displayed than the point in question merited, so that on reading the annals of these paper wars, we cannot but feel surprise at the violence shown about matters of such little moment. Dr. Hunter himself was a very Achilles in this sort of warfare.

Impiger, iracundus, inexorabilis, acer.

Jealous of his supposed rights, and unwilling to admit the possibility of a discovery occurring to two independent inquirers, he was far too apt to accuse his antagonists of plunder if they displayed as their own any of those anatomical trophies to which he could establish a prior claim.

In several of his encounters, the discoveries which gave rise to them were due in great part to John, who, being far more dexterous with the scalpel than the pen, left the defence of their common property to William, whose literary attainments better fitted him for the service, and who displayed considerable ability in its performance.

Two of these disputes were with the Munros: the one, as to the first successful injection of the tubuli testis with mercury; the other, as to the discovery of the true office of the lymphatics. In both cases Dr.

Hunter fairly showed that he had taken the lead of the Munros. On the former question, indeed, he had been, to a certain extent, forestalled by Watson and by Haller; but on the latter, though other physiologists may have somewhat earlier suggested that the lymphatics were probably absorbents, the merit of proving this by observation and experiment, and of pointing out the great importance of these vessels in the animal œconomy, is undoubtedly chiefly due to William and John Hunter.

The third encounter was with Pott, who was no favourite with the Scotch faction in London, of which William Hunter was a leading member. He accused Pott of stealing from himself and his brother the knowledge of the true nature of hernia congenita, without acknowledging it in the paper he published on the subject. Pott, however, denied the accusation, and we have no reason to doubt his veracity. Be this as it may, both had been anticipated by Haller, who had a year or two before explained the nature of the disease, and given it the name of congenital hernia.

There was a question, however, connected with this latter subject which required to be cleared up, namely as to the cause and mode of descent of the testis in the fœtus. The explanation of the process given by Haller and Pott was fanciful and unsatisfactory; and to John Hunter alone is due the merit of explaining the steps of this curious physiological problem in so full a manner as to leave nothing to be added by others on the subject. The details of this inquiry, which gained him great credit, were first published in Dr. Hunter's Commentaries, and are given more at length in John Hunter's valuable work on the Animal Œconomy.

In addition to the above researches, he about this time traced the ramifications of the first pair of nerves within the nose; and from his preparations the engravings were executed which he published in the Animal Œconomy, accompanied by some valuable physiological remarks on the nervous system generally.

In 1758, and the following year, he instituted a set of experiments, which are detailed in Dr. Hunter's Medical Commentaries, for the purpose of ascertaining whether veins possess the power of absorbing. These were ingeniously contrived, and, to the minds of all present, so satisfactorily decided the question in the negative, that they greatly contributed to confirm the opinion that absorption was carried on by the lymphatics and lacteals only, and apparently gave the death-blow to the ancient doctrine of absorption by veins. Here again, however, later physiologists, by new and more varied inquiries, have succeeded in throwing considerable doubts on the correctness of Hunter's inferences, and have brought forward evidence, which, if not decisive, yet affords strong ground for believing that the veins are to a certain extent absorbents. What are the relative parts taken by these two sets of vessels in carrying on this function, or whether the apparent absorption by veins is not a mere effect of simple imbibition, still remains to be discovered.

It was one time Hunter's intention to have made a series of pre-

parations of the whole system of lymphatics, and to have published engravings of them. With this view he had completed a preparation of the lymphatics of the lower extremity, from which Rymsdyk had executed a drawing; but ill health, and a variety of occupations, prevented his carrying the plan into effect.

Hunter had now been ten years engaged in the study of human anatomy, and having found that there were many parts the structure and functions of which required to be elucidated by a reference to other sources, he began with the same diligence to pursue his researches in the wide field of comparative anatomy. His health, however, was beginning to suffer seriously from his incessant labours. In the spring of 1759 he was attacked with inflammation of the lungs, which left behind it symptoms that threatened to end in consumption. He was strongly advised, therefore, to leave London for a time, and seek a more southerly climate. With this view he applied for an appointment in the army, and was immediately made Staff-Surgeon by Adair, who was then Inspector-General of Hospitals.

Europe was at this time engaged in the seven years' war, one of the most sanguinary of those in which nations were formerly so often involved, by their mutual jealousies, or the ambition of their rulers. England was, as usual, amongst the foremost in the contest, and early in 1761, a powerful armament was sent from this country under General Hodgson and Commodore Kepple, to lay siege to Belleisle, an island off the western coast of France. With this armament Hunter embarked; and as the siege, though short, was extremely sanguinary, he was at once furnished with ample opportunities for practice in the treatment of gun-shot wounds.

By the following year England had embroiled herself with Spain. British troops were sent out for the protection of our Portuguese allies, and with these Hunter proceeded to the Peninsula. Here he remained on active duty until the end of the year, when all parties being heartily tired of the contest, the preliminaries of peace were agreed on.

Notwithstanding his constant employment in the practical duties of his profession whilst with the army, Hunter found time to pursue those physiological researches in which he took supreme delight. He made several experiments on lizards and snakes, to ascertan whether digestion continues during their torpid state; and he was also engaged in some inquiries on the faculty of hearing in fishes. It was during these campaigns, too, that most of his observations on gun-shot wounds were made, and that many of the peculiar views which his work on inflammation unfolds, first suggested themselves to his mind, though they were not published until more than thirty years afterwards, as he constantly endeavoured during his whole life to confirm and amend them, and to build them up into a work on which his future fame should depend.

We have no authentic account of Hunter's private life during the time he was with the army. Jesse Foot accuses him of exciting

jealousies and quarrels amongst his colleagues; but to Foot's statements no sort of credit is due. He wrote what he is pleased to call the Life of Hunter with the same view that he made all his other attacks on him, under the hope, namely, that he might succeed in dividing the town into two parties, and himself become the Magnus Apollo of one of them. His hope of rivaling Hunter was certainly sufficiently ridiculous, and it need hardly be added that he utterly failed in his aim. Whether he carried his abuse so far as to disgust those he wished to please, or that his talents were not equal to filling a high station, certain it is he never made much figure in his profession; and whilst Hunter's name and works have been year after year rising into higher and still higher esteem, those of his traducer, Foot, are already well nigh buried in merited oblivion.*

In the spring of 1763, peace having been proclamed, Hunter accompanied the forces home, and on arriving in England immediately returned to the metropolis.

* When Hunter published his work on the Venereal Disease, Foot followed with a book of his own on the same subject, filled with abuse of the doctrine and practice of his predecessor. Hunter was too wise to give consequence to his petty foe by publicly replying to his attacks, but the following comments were written by him on a couple of scraps of paper, destined for pipe-lights, but rescued from the flames by Mr. Clift. "One may say of Jesse Foot as we say sometimes of young men, 'It was well their fathers were born before them.' It was well for Jesse Foot that I published my book before he wrote his." "Jesse Foot accuses me of not understanding the dead languages; but I could teach him that on the dead body which he never knew in any language dead or living." Foot's best work was the life of his relative Murphy, the translator of Tacitus; but by an unfortunate blunder in the motto prefixed, he has betrayed how little pretence he, at least, had for reproaching Hunter with his want of classical knowledge. This motto he solicited and obtained from Mr. Thomas Copeland of Golden Square, a gentleman as distinguished in his profession as he is for true taste in classic literature; but by an absurd mistake Foot perverted its meaning, and thereby entirely destroyed its beauty. The following is the motto as it stands in his work. "Non hoc præcipuum amicorum munus est, prosequi defunctum ignavo *quæstu*, sed quæ voluerit meminisse, quæ mandaverit exsequi." *Tacit. Ann.* lib. ii. By substituting *quæstu* for *questu*, as in the original, he has spoiled an elegant motto.

It is said that Foot received four hundred pounds from some of Hunter's enemies for writing his life; if so, he deserves only to be remembered in connexion with a homely remark of Hunter's, in answer to a gentleman who was condemning this sort of conduct, "O, sir! we all have vermin that live on us."

CHAPTER III.

1763 to 1771.

Hunter settles in London.—Alienation between the brothers.—His straitened circumstances;—his favourable position in other respects.—Patience and fortitude required of young surgeons.—Obstacles to Hunter's success;—his contempt of humbug;—his thirst for fame and knowledge greater than his love of wealth;—delivers lectures on anatomy;—his persevering industry.—The state of surgery at this period.—The plan of his vast future labours conceived and entered upon.—The Baconian philosophy.—Earl's Court.—His encounter with a bull and two leopards;—is made F.R.S.—His description of the Proteus;—ruptures his tendo-Achillis;—is elected surgeon to St. George's Hospital;—removes to Jermyn-street.—Dr. Hunter's liberal offer to the Government rejected.—Mr. Hunter's house-pupils.—The pupils of distinguished surgeons themselves become distinguished.—Dr. Jenner;—his immortal discovery of vaccination.—Mr. Hunter's treatise on the teeth;—his marriage.—Mrs. Hunter.

A TERMINATION having been put to the late war, at the earnest desire of all parties, there was little probability that Hunter would be again called into active service by a renewal of hostilities; and as his health was re-established, he determined on immediately settling himself in London.

The situation which he had occupied in Dr. Hunter's school was now filled by Hewson, who had been taken into partnership soon after Hunter quitted England; and as this gentleman's talents, both as a lecturer and as a practical anatomist, were of a high order, and enabled him to fill the post with credit to himself and advantage to the establishment, there was no prospect of a vacancy soon occurring in this quarter. It may indeed be doubted, even if the situation had been open, whether Hunter would have again entered into partnership with his brother; for it would appear from Sir Everard Home's statement, that their former connexion had not been one of entire harmony; and that indeed the only tie which bound them together, long after other considerations would have led to a separation, was John Hunter's extraordinary skill as an anatomist, and the valuable contributions which he was continually making to Dr. Hunter's museum.

For the future, then, Hunter was to depend on his own unaided exertions; consequently, though his situation was one of more independence than that he before occupied, it must also have been one of more anxiety, as he had nothing certain to depend on beyond his half-pay.

The circumstances under which he commenced his career in London must be considered, however, to have been on the whole unusually advantageous. His age was sufficiently advanced to inspire his patients with confidence; he had a brother established

in extensive practice as a physician and accoucher; and the abilities he had manifested in his former situations had made him favourably known, not only in the army, but to many of the most eminent literary and scientific men of the day. With such advantages, it might have been expected that his unwearied industry and eminent natural endowments, improved as they had been by an education under the first surgeons of the day, and by the personal experience which three years of active service had afforded him, would have certainly and speedily introduced him into a large share of profitable practice.

Hunter was, however, destined to undergo a long trial of those qualities of passive fortitude and active perseverance, of which few situations in life demand a larger share than that a young man commencing practice in the higher branches of the profession of law or medicine in London; for assuredly it needs no small degree of fortitude to bear up against the disappointment of a young man so placed must experience, in finding his merits overlooked, whilst the world is showering wealth on many around him whom he, at least, thinks far less deserving than himself. It requires, too, much steady perseverance constantly to keep in view the destined goal, resisting the allurements which have so often led men of superior talents to desert the arduous contest, and devote themselves to the pursuits of literature or of science; pursuits which, though delightful, can seldom be extensively followed without the neglect of objects more essential to those who seek for fortune, as well as fame, from the practice of a profession.

Various circumstances combined to render Hunter's success in practice far less rapid than might have been anticipated. Of these, one of the most obvious was that of the field being already occupied by several men of real merit in their profession, and who by their writings had contributed largely to the improvement of surgery. First of these, and *facilè princeps*, stood Pott, in the prime of life, and in the zenith of his fame, who though he had never received, because he had never solicited, those titles and posts of honour which are usually bestowed on the leaders of our profession, yet had raised himself by his eminent abilities and industry, and by his gentlemanly manners, to the highest place in the esteem of his professional brethren and the public.

The second stations were ably filled by Bromfield and Sir Cæsar Hawkins, surgeons to St. George's Hospital; and Samuel Sharp and Warner, of Guy's. These divided amongst them the greater part of the civil practice, whilst Adair and Tomkins, from their long connexion with the army, enjoyed the chief share of what accrued from that quarter.

The narrowness of his income was no doubt also an obstacle to Hunter's success; for though his personal habits were very inexpensive, his scientific inquiries required more money than he could well afford. He was therefore obliged to be content with establishing himself in the plainest manner, and living a retired life; and

though this no doubt enabled him with more freedom to pursue those important objects in which he was about to engage, yet it would not be likely to conduce to his speedily increasing his professional connexions. It is in this respect, that, *cæteris paribus*, a man commencing with a moderate share of fortune has a decided advantage over the fortuneless; for though it has been truly said that "moneys are not the sinews of fortune, but the sinews and steel of men's minds,—wit, courage, audacity, resolution, temper, industry, and the like," yet even he who declared this, has allotted the second place to "wealth and means."

But besides these external difficulties which most men have to struggle with in a greater or less degree at the outset of life, there were in Hunter's case some great impediments arising out of his own character. He was deficient in those refined gentlemanly feelings, and those conciliating manners, which in all situations go far to win the good will of those whom we are in the habit of meeting in the daily intercourse of life, and are especially requisite in the medical profession. Conscious of great mental superiority, he was too apt to show this in a rude and overbearing manner, towards men who in station were his equals, and exhibited somewhat too large a share of that "pride of port" which the poet assigns to those

> Intent on high designs, a thoughtful band,
> By forms unfashion'd, fresh from Nature's hand.

Consequently, though the intrinsic excellences of his character insured him the friendship of a few, who knew and estimated his worth, this fault raised up against him many bitter enemies, and prevented him from ever becoming a general favourite with the profession. It might probably with justice be said, that of all who have attained to the highest rank as surgeons, no one ever rose so entirely by the pure force of superior talents as John Hunter, or was less indebted than he was for his success to the good will and assistance of his contemporaries.

Hunter had also a great contempt for those minor tactics, which constitute so large a part of what has been aptly called the art of rising in the world; and they who have carefully watched the progress of men to fortune, know full well how much of their success has often been due to the judicious management of these auxiliary means. It would be egregious folly to suppose that a man could ever attain to high repute as a surgeon in London, without possessing a large share of the essential requisites for the practice of his profession; but, on the other hand, it requires no great penetration to perceive that the vast difference in the amount of her favours, vouchsafed by Fortune to her different votaries, must be accounted for in some other way than by the amount of professional talent possessed by each. "He that is only *real* had need have exceeding great parts of virtue," says Bacon, "as the stone had need be rich,

that is set without foil;" and we need not a better illustration of the truth of this observation, than is afforded by Hunter's tardy progress in the path to fortune, compared with the rapid strides of others, who in professional attainments would be the first to acknowledge themselves but the humble disciples of this great master.

But after all, perhaps, the principal reason why Hunter was so long in obtaining a large share of practice was, that he looked not as most men do, to the acquisition of fortune as the end for which he was labouring; but, on the contrary, considered wealth only as a means by which he might advance the far more important objects he had in view. His powerful mind was unceasingly stimulated by an ardent desire to forward the acquisition of those branches of knowledge which to him appeared best fitted to promote the improvement of his profession; to this object was devoted every hour that he could spare from his daily avocations, or snatch from the time allotted by others to sleep, and to promote this end he was always ready to sacrifice the claims of worldly prudence and self-interest. To witness an interesting or extraordinary case he would take any trouble, or go almost any distance, without a chance of pecuniary recompense; but to the daily routine of practice he always returned unwillingly, and even when he had acquired a lucrative and extensive business he valued it only as affording him the means of pursuing his favourite studies. This feeling he would often express to his friend Mr. Lynn, when called to see a patient, by saying, as he unwillingly laid by his dissecting instruments, "Well, Lynn, I must go and earn this d——d guinea, or I shall be sure to want it to-morrow."*

As a means of increasing his income, Hunter determined on delivering lectures on anatomy and operative surgery to a private class. These he continued for several years; but so far were his talents and his enlightened views, from exciting the attention they merited, that his hearers never amounted to twenty. Amongst them, however, were numbered Cline, Lynn, Brande, Adams, Vaux, and Justamond. "Dr. Garthshore,† too," says our modern Democritus, the late worthy and facetious William Wadd, "occasionally looked in, wound up his watch, and fell asleep."

Hunter's leisure hours were never allowed to remain unemployed. He returned to the study of comparative anatomy with increased

* Hunter was much addicted to swearing, and constantly interlarded his conversation with expressions of this sort. In relating anecdotes respecting him, the author has generally omitted these expressions, since the objections to introducing them appeared to him greatly to outweigh any advantage that such verbal exactness could afford.

† Dr. Garthshore was quite a physician of the old school, always well dressed, and exceedingly polite, and a great favourite with the dowagers. He was intimate with John Hunter, who did not however treat him with much ceremony. One day the Doctor, on entering the dissecting-room where Hunter was at work, began as usual with great *empressement*, "My d-e-a-r John Hunter"—"My dear Tom Fool," replied Hunter, looking up and imitating the tone and manner of the astonished Doctor.

delight; and to furnish subjects for his researches, he obtained the refusal of all animals which chanced to die in the Tower, or in those smaller zoological collections, which used at that time, more frequently than at present, to perambulate the country; and to insure the good will of the owners, he used to allow them a life interest in any rare animals he was able to purchase, on condition that their carcases were restored to him after their decease. All the money he could spare was devoted to procuring curiosities of this sort, and Sir Everard Home used to state, that as soon as he had accumulated fees to the amount of ten guineas, he always purchased some addition to his collection. Indeed, he was not unfrequently obliged to borrow of his friends, when his own funds were at a low ebb and the temptation was strong. "Pray, George," said he one day to Mr. G. Nicol* the bookseller, with whom he was very intimate, "have you got any money in your pocket?" Mr. N. replied in the affirmative. "Have you got five guineas? because if you have, and will lend it to me, you shall go halves." "Halves in what?" inquired his friend. "Why, halves in a magnificent tiger, which is now dying in Castle Street." Mr. Nicol lent the money and Hunter got the tiger.

It was probably about this period that Hunter laid the plan of those vast researches into the animal œconomy, to the execution of which the best hours of his future life were to be devoted.

At the time he commenced his labours, surgery, though holding a far more respectable station as a practical art than it had done fifty years before, was yet destitute of those sound general views of the nature and treatment of disease which constitute the foundation of practice in the present day, and the possession of which justly entitles it to claim the rank of a science. The able men who, in this country and on the Continent, immediately preceded Hunter, had succeeded, by the exercise of correct observation and sound judgment, in removing a load of absurd practices with which the art had been clogged; but the improvements suggested by them depended for the most part on isolated experience, and were defi-

* Mr. Nicol, bookseller to the king, and a highly accomplished scholar, was father to the present Mr. W. Nicol of Pall Mall, who probably owes his life to Hunter's interference. Mrs. Nicol, who was a sister of Cruikshank, had lost five children, and was in the family-way for the sixth, the present Mr. N. Hunter, in passing one day, dropped in, and asked Mr. Nicol whether he intended to kill this, as he had killed all the rest of his children. Mr. N., who was a North-countryman, had on false principles endeavoured to inure his children to cold and rough usage, thinking that if they could not survive this they would never live to be reared to manhood. Not understanding such a question, therefore, he demanded of Hunter what he meant. "Why," said Hunter, "do you know what is the temperature of a hen with her callow brood? because if you don't, I'll tell you." He then proceeded to explain the necessity of warmth to young animals, and convinced Mr. Nicol of the propriety of changing his plan; which he did, and with complete success. The justice of Mr. Hunter's remarks on this subject, which is one of great importance, has been beautifully illustrated by Dr. Edwards's admirable experiments in his work "On the Influence of Physical Agents on Life," &c.

cient in a solid and satisfactory foundation upon well known principles of the animal œconomy. As yet little had been done towards explaining the real nature of diseases, by showing in what particulars they are allied to natural processes, and what are the aberrations from those processes, which give them their peculiar character. Nor were the actions by which Nature operates in the cure of diseases at all better understood, and the most vague notions prevailed respecting the important functions of nutrition and absorption, and the processes of adhesion, suppuration, granulation, &c.; the right understanding of which, forms as it were the very cornerstone of a good surgical education at the present day.

Hunter perceived the want of this knowledge, which in his opinion could alone furnish a sure foundation for the future improvement of surgery; and it was to contribute towards supplying the deficiency that his labours were hereafter to be unceasingly directed.

He clearly saw, that in order to obtain just conceptions of the nature of those aberrations from healthy actions which constitute disease, it was necessary first to understand well the healthy actions themselves: and these required to be studied, not in man alone, but throughout the whole animal series, and even to receive further elucidation by comparison with the functions of vegetable life. It was no less an undertaking, then, than the study of the phenomena of life, in health and disease, throughout the whole range of organised beings, in which Hunter proposed to engage; an undertaking which required a genius like his to plan, and from the difficulties of executing which, any mind less energetic, less industrious, and less devoted to science than his own would have shrunk.

In pursuing these researches, he strove not, like many of his more learned but less philosophic predecessors, to unravel the mysteries of nature by taking up some principle *à priori*, and seeking for facts to support his theory. On the contrary, he followed, in the strictest manner, the inductive method laid down by the great father of modern philosophy, as the only sure though arduous road to knowledge. He aimed not at discovering the essence of life, satisfied that this was beyond the province of philosophical research; but he sought to know how the various organs are constructed, and how they act in accomplishing those various processes by which the presence of this principle is manifested. Nor was he content to acquire his information at second hand. Instead, therefore, of referring to the discoveries detailed in books,* he appealed directly to Nature herself, and rested nothing upon the facts related by others, until, by the evidence of his own senses, he had ascertained their truth.

As the labours of Hunter in this field of knowledge were con-

* It often, therefore, happened to him, as it has done to others, to find that he had been anticipated in many discoveries: such confirmations, however, of previously discovered truths are always valuable, particularly when they depend on a distinct line of proofs.

tinued during his whole life, and as the various discoveries he made will require to be mentioned in noticing his publications, and more fully in the chapter devoted to a description of his museum, it will be unnecessary to enter into a detail of them in this place. As many of the inquiries which he was desirous of instituting could not be carried on conveniently, if at all, in the centre of a crowded city, he purchased a piece of ground called Earl's Court, at Brompton, about two miles from London, and built a small house, where he used to spend much of his time, and where he pursued most of those researches which form the subject of his papers in the Philosophical Transactions, or are detailed in his work on the Animal Œconomy. Here it was his delight to spend an hour or two, amongst the strange inmates congregated from all parts of the globe, engaged in observing their habits and instincts, and amusing himself in making them exert their various methods of self-defence against his playful attacks. As might be expected, he sometimes got himself into perilous situations in his character of assailant. On one such occasion he was thrown down by a little bull which the Queen had given him, and with which he had been wrestling; and had not one of his servants accidentally seen his danger, and driven off the victor, he would not have escaped without severe injury. In another of his adventures, still more serious consequences might have ensued. Two leopards, which he kept chained in an outhouse, broke from their confinement, and got into the yard with the dogs: a fierce encounter immediately commenced, the noise of which alarmed the neighbourhood, and quickly brought out Hunter to inquire into its cause. He found one of the leopards engaged with the dogs, whilst the other was making his escape over the wall, and instantly, though quite unarmed, he ran up and laid hold of both the animals, which fortunately submitted to be led back to their den and secured. When the danger was over, however, he became so agitated at the recollection of it, that he fainted.

In 1767 he was elected a Fellow of the Royal Society; and although persons, except on account of their rank, are not generally admitted members before they have furnished some paper of original research to be read before the Society, yet this custom seems not to have been rigorously enforced in Hunter's case, as the only communication he had made was an appendix to a paper by Ellis, on a new marine animal, the Proteus; nor did he contribute any entire paper to their Transactions until five years after: he was, however, a very regular attendant at the meetings of the Society, and, with Sir C. Blagden and others, used to meet and discuss papers, which had been presented, on topics of interest.

It is somewhat singular that John Hunter should have been elected before his brother William, who had been ten years longer in London, and certainly at this time occupied a higher station in public opinion than he did.

It was in this year that he ruptured his tendo-Achillis whilst dancing, after the muscles of the leg had been fatigued. He did

not confine himself to bed for this accident, but continued to walk about during the cure. His mode of treatment was to keep the heel raised, and to compress the muscle gently with a roller, by which any fresh separation of the ends of the tendon by spasmodic and involuntary contractions of the muscles was prevented, for he found that by no *voluntary* impulse could he excite them to contract after the rupture of their tendon, "the muscle refusing to act as if from a sense of imperfection," as he expressed it. This accident led him to examine into the process by which divided tendons are reunited. He divided the same tendon in several dogs, by introducing a couching-needle under the skin at some distance from it, and killed the dogs at different periods to see the progress of the union, which was found to be similar to that of fractured bones where the skin is not wounded. It was ascertained at Mr. Hunter's death that the union of the ruptured tendon was by ossific deposition.

In 1768 a vacancy occurred at St. George's Hospital, by the retirement of Gataker, the translator of Le Dran; and Hunter became a candidate for the situation. He was opposed by Mr. D. Bayford, but being supported by the powerful interest which Dr. Hunter possessed, he was elected surgeon on the 9th of December by a majority of 114 votes against 42. Soon after this he was chosen a member of the Corporation of Surgeons; but he seems not to have assimilated well with his brother corporators, for he gave them but little of his society. By his election to the hospital he was ensured the means of making his talents as a surgeon more generally known, and was enabled to obtain as private pupils, on advantageous terms, young gentlemen coming to town to complete their medical education.* This was further facilitated by his removal to a more commodious house in Jermyn-street, which his brother had just vacated.

Dr. Hunter had, in the year 1765, in the most liberal way proposed to the then Ministry to build a public theatre of anatomy, at an expense to himself of 7000*l.*, and to endow a professorship of anatomy in perpetuity, on condition that they would grant a piece of ground in the Mews as a site for the building. But Lord Grenville and his colleagues, with the apathy which the English Government has too often shown to the interests of science, declined the offer. Lord Shelburne was desirous that the plan should be executed by subscription, and generously requested his name should be put down for one thousand guineas. Dr. Hunter's delicacy, however, led him to decline this proposal, and he determined to erect a building at his own expense. For this purpose, he purchased a spot of ground in Great Wind-mill-street, where he built a spacious house, with a theatre and museum, to which he removed in 1770, passing over the lease of his house in Jermyn-street to his brother John.

* Hunter received a fee of 500 guineas with each of his pupils, who were bound to him for five years.

Amongst those gentlemen who successively became inmates of Hunter's house, as private pupils, were Dr. Jenner, Mr. Guy of Chichester, Mr. Kingston, Dr. Physick of Philadelphia, and Sir Everard Home. Mr. Lynn and Sir A. Carlisle, although not living in his house, were admitted there on the most intimate terms, assisted in his dissections, and contributed several valuable preparations to his museum. All of these gentlemen have risen to high reputation in their various stations, and it is not unworthy of remark, that of the eminent surgeons of which this country has had to boast, by far the greater number have pursued the most important part of their professional education under the roofs, and as the private pupils, of the most able of their predecessors in the art. This may no doubt, in some cases, be accounted for by supposing that the disciple had previously shown such talent as to lead his friends to seek the best situation for its improvement; but more has been probably due to the stimulus imparted to their energies by the examples before them, and still more to the advantages derived from daily witnessing the best modes of practice, and receiving information on those nicer distinctions in treatment which can never be fully conveyed in lectures, but the knowledge of which forms a distinguishing mark of the accomplished surgeon.*

It is to the credit of the gentlemen above named that they continued on friendly terms with Hunter until his death, for he not unfrequently conferred his friendship rather hastily on young men if he perceived any thing in their characters which pleased him, but as suddenly threw them off again on finding them to be of less sterling metal than he had anticipated.†

Dr. Jenner was amongst the earliest of Hunter's pupils, having become one in 1770, when he was in his twenty-first year, and Hunter in his forty-second. His mind was ever strongly impressed with respect and esteem for the character of his great master, whose vigorous and independent intellect excited the admiration,

* Thus we find that most of the surgeons who in the present day enjoy the largest share of the public confidence are, as it were, the direct mental descendants of the men who a century ago introduced the first important improvements into modern surgery. Cheselden, Nourse, and Douglas, were then the leaders of our profession, of whom Sharp, Pott, and the Hunters were the immediate pupils; they, again, became the instructors of Cline, Lynn, Home, Abernethy, Carlisle, Macartney, Sir James Earle, and Cooper; and from them the mantle has descended to a Brodie, a Lawrence, a Green, an Earle, and others, who now occupy with so much credit to themselves the places which their great predecessors adorned.

† Hunter set a high value on anatomical skill, and especially on dexterity in making preparations. Sir Anthony Carlisle stood high in his good graces on account of his ability in this art; but he used to abuse Sir Everard's clumsy fingers, swearing "that his fingers were all thumbs, and that he would never have sense enough to tie down a bottle." This was of course a mere sally of passion: his engaging him as his assistant, and leaving him the care of all his patients when unable to attend them himself, sufficiently proved the good opinion he entertained of the abilities of his brother-in-law, who was, there can be no doubt, a very skilful surgeon.

while his kind, free, and manly nature insured the affection of such a pupil. Their intercourse did not cease on Jenner's leaving London, but was kept up by letter until within a short period of Hunter's death. Many of the letters written by the latter have been published in Dr. Baron's Life of Jenner; and these, as well as some additional ones which Robert F. Jenner, Esq., of Berkeley, has kindly permitted to be introduced into this work, furnish interesting and truly characteristic memorials of the mind of him who penned them; for though generally but brief, and often faulty in orthography and in grammatical construction, they everywhere show the vigour and originality of his thoughts, and the untiring ardour with which he prosecuted his researches. Several of these letters will be inserted in the next chapter, but the following, though written two or three years later, may be introduced here, as evincing the interest Hunter felt in the welfare of a deserving pupil. Jenner, on the other hand, never mentioned Hunter but in terms of regard and affection; his usual appellation for him was "the dear man," an epithet which is used, in speaking of him, by others of his friends who still survive, and which shows how strong a hold he had acquired on the esteem of those who were on sufficiently intimate terms with him to know his real worth.

"Dear Jenner,

"I received yours, and was extremely happy to hear of your success in business: I hope it will continue. I am obliged to you for thinking of me, especially in my natural history. I shall be glad of your observations on the cuckoo, and upon the breeding of toads: be as particular as you possibly can. If you can pick me up anything that is curious and prepare it for me, either in the fish or flesh way, do it. Pictures* have been very cheap, but the season is now over. There will be but one sale, viz. Fordyce's; but I believe all his pictures are exquisite, and will go beyond you or me. Since you wrote to me I purchased up a small landscape of Barrett's, of cattle and herd: I gave five pounds seven shillings and sixpence: it is one of his eight-guinea pictures. You shall have it or not, as you please. I have one of the same size that I bought of him some time ago.

"I saw the young lady, your patient: I do not know well what can be done. If it is possible to pass a bougie from the nose up the duct to the sac, it might be of service; but nothing but a solid can be of any use as a local application. Her general habit should be attended to, such as sea-bathing, or cold bath, using a good deal of gentle exercise, such as getting up early in the morning, riding, &c. She might take gentle mercurials with the bark and cicuta. Let me hear from you soon.

"Ever yours, John Hunter."

At the time this was written Jenner was practising as a surgeon at Berkeley in Gloucestershire. Here he remained for many years, and conducted those inquiries which led to the introduction of vaccination. It seems that whilst in London he frequently mentioned the opinion that prevailed in the dairy districts, that persons who had had the cowpox were safe against the infection of small-

* Hunter was very fond of pictures, and valued himself on his connoisseurship in the art: his other pursuits, however, prevented his indulging his taste by the purchase of many oil paintings, but of prints he had a large and valuable collection.

pox. Hunter considered the subject worthy of investigation, mentioned the opinion occasionally in his lectures, and recommended Jenner to prosecute further inquiries into its truth. There is no ground, however, to suppose that Hunter assisted him in the investigation, as has sometimes been insinuated. On the contrary, it is quite evident that the merit of conducting every part of it belongs exclusively to Jenner. As his letters to Hunter have been destroyed, it is not possible to say what communications he made to him on the subject, for no allusion is made to the inquiry in Hunter's letters. It would seem that in 1788 Jenner was in London, and on that occasion showed a drawing of the vaccine pustule, as it appeared on the fingers of milkers, to several medical men, and amongst the rest, no doubt, to Hunter. Indeed there exists, amongst the Hunterian drawings, a rough sketch of the pustule, as seen under the above circumstances, on the envelope of a letter from Jenner, without date. It was not, however, until eight years after this, and three years after Hunter's death, that the question was subjected to the *experimentum crucis*, by actually inoculating a boy with lymph from the hand of a person affected with cowpox, and afterwards submitting him, without effect, to inoculation with variolous matter: and even then nearly two years elapsed before Jenner considered the inquiry sufficiently complete to be made public.*

In May 1771, Hunter published the first part of his "Treatise on the Teeth."† This contained the natural history of those organs in their healthy state, and was followed in 1778 by a second part, in which he treats of their diseases. It was the first work on the subject, which, in addition to an accurate anatomical description, furnished comprehensive views of the physiology and pathology of

* Various attempts were made to deprive Jenner of the credit of his discovery, but unjustly. That an opinion prevailed extensively in the dairy districts, that a person who had been infected with cowpox was no longer liable to smallpox, is certain; but no one who is acquainted with the utter groundlessness of many prevalent opinions on medical matters would put much faith in such an opinion until supported by direct experiments, instituted by a competent person. It would further appear, that a farmer Jesty had actually inoculated some of his family with matter taken from the teat of a cow; and claims to the discovery of vaccination were made on behalf of a Mr. Nash of Shrewsbury, on similar grounds. But was Dr. Jenner acquainted with either of these cases? And if not, how do they affect his merit any more than the existence of printing at an early date amongst the Chinese detracts from the merit of the discovery in Europe? With regard to Mr. Nash's case, Dr. Baron states that they were proved to have been cases of smallpox inoculation. But supposing them to have been cases of vaccination, does not his silence on the subject until the publication of Jenner's work argue either a want of faith in his own powers of investigation, or a want of courage to publish the facts? Does not the whole merit belong to Jenner of distinguishing the true from the spurious vaccine—of tracing the origin of the disease—of subjecting the opinion to the test of rigid experiment, and of conducting his inquiries to a triumphant conclusion, amidst difficulties and opposition of no ordinary kind?

† It is said that the proceeds of this publication, which came out only two months before his marriage, were appropriated to defraying the expenses attendant on that event.

these organs. Like all Hunter's productions, it evinces marks of accurate observation and sound judgment; and though too brief in some of its descriptions, and not altogether free from errors and omissions, which subsequent inquiries have pointed out, it continues to hold its place as one of our standard surgical works. It needs, indeed, but to receive the additions and corrections of the able practitioner and accomplished naturalist who has undertaken to revise it for this edition of Hunter's works, to become one of the best treatises on the subject in this or any other language.

Hunter had for some years been engaged to Miss Home, daughter of Mr. Home, surgeon to Burgoyne's regiment of light horse, and sister of Sir Everard Home. As she was without fortune, and as his income, at the time they first became acquainted, was considerably under a thousand a year, and scarcely sufficed for his own expenses, their union was deferred until he was able to arrange his affairs sufficiently to allow of their marrying. This he had now succeeded in doing; and as his practice was yearly augmenting, they were married in July of the present year.

Mrs. Hunter was an agreeable, clever, and handsome woman, a little of a *bas bleu*, and rather fond of gay society, a taste which occasionally interfered with her husband's more philosophic pursuits; for, though fond of mixing in society at his own house and at the houses of others, it was not exactly in such as is generally to be found at fashionable *soirées*. He sought company, not so much as a relaxation as because he preferred acquiring knowledge from conversation rather than from books; and this being the case, he naturally preferred the company of able and scientific men, to that of the gay circle in which Mrs. Hunter's brilliancy was fitted to shine. So far was he indeed from finding relaxation for his mind in mixed society, that he really experienced fatigue from remaining long in company where the conversation wanted connexion; and he therefore occasionally interposed his marital authority to check the inroads of these troops of idlers.* No serious disturbance to their concord, however, seems to have arisen from this very natural difference in the tastes of Mr. and Mrs. Hunter, and there is every reason to believe that this alliance was a source of great consolation and happiness to him during the remainder of his life. The fruits of their union were four children, two of whom died young; the other two are still living,—John his eldest son, and Agnes, who married Captain, afterwards Sir James Campbell.

* Hunter's mode of exerting this authority was occasionally somewhat too unceremonious. On returning late one evening, after a hard day's fag, he unexpectedly found his drawing-room filled with musical professors, connoisseurs, and other idlers, whom Mrs. Hunter had assembled. He was greatly irritated, and walking straight into the room, addressed the astonished guests pretty much in the following strain: "I knew nothing of this kick-up, and I ought to have been informed of it beforehand; but as I am now returned home to study, I hope the present company will retire." This intimation was of course speedily followed by an *exeunt omnes*.

CHAPTER IV.

1772 to 1778.

Mr. Hunter's paper on the digestion of the stomach ;—his museum ;—his private practice ;—his illness, attended with a cessation of the heart's action ;—his correspondence with Dr. Jenner ;—his paper on the torpedo ;—his lectures on surgery ;—his character as a lecturer.—Hunter effects a revolution in surgery ; —his paper on the receptacles for air in birds, and on the stomach of the gillaroo trout.—The general character of his monographs.—Mr. Bell.—Mr. Hunter's warmth of temper ;—his method of employing his time ;—his punctuality.—Anecdote of Mr. Cline.—Dictates his various compositions ;—his domestic habits ;—contemplates the establishment of a school of natural history ;—his paper on the heat of animals and vegetables ;—is appointed surgeon extraordinary to the King ;—his paper on the recovery of drowned persons ;—Croonian lectures ;—correspondence ;—is attacked with an alarming illness, attended with peculiar symptoms ;—his visit to Bath ;—his character as an experimentalist ;—his second part on the teeth ;—his expenses and difficulties.

Hunter had now been five years a Fellow of the Royal Society ; but deterred, partly by the difficulty he experienced in literary composition, and partly by an unwillingness to make any of his observations public until he had thoroughly satisfied himself of their correctness, and investigated a subject in all its bearings, he had contributed no paper to the Philosophical Transactions since his election. About this time an opportunity offered for making known his opinions on a physiological phenomenon which had hitherto entirely escaped investigation, and on which, at the instance of Sir John Pringle, he was induced to communicate his thoughts in a memoir to the Royal Society. Pringle was at this period the President, and had distinguished himself in this honourable post by the learned and eloquent orations he had annually delivered, on presenting the Copley medal to those who had successively gained it by their important contributions to science. He and Hunter were on intimate terms, and occasionally met in consultation, and on the present occasion chanced to be engaged together in examining the body of a man who had died under Sir J. Pringle's care, of some disease in which the stomach was thought to have been not implicated. To Pringle's surprise, however, on opening this organ an extensive perforation was observed at its great end, an alteration of structure for which he could not account, until Hunter informed him that he had frequently met with such an appearance, both in men and animals, and attributed it to the action of the gastric juice on the coats of the stomach, after the death of this organ. This explanation forcibly struck Pringle, who was the more interested in the subject from having himself been engaged some years before in experiments on digestion. He accordingly

urged Hunter to commit his thoughts to paper, and communicate them to the Royal Society, a request with which the latter, though somewhat unwillingly, complied. His memoir was accordingly presented, and read on the 18th of June, and was published in the Transactions for the year. This curious question in physiology did not at the time excite much attention. Spallanzani, who made several experiments, with a view to its further elucidation, concluded by rather throwing doubt on the possibility of this *post mortem* digestion, and the point was thus left *sub judice*. Of late years more attention has been paid to the inquiry, and though several continental pathologists, and amongst others Cruveilhier, have maintained that the appearance described by Hunter is always caused by morbid action going on during life, the experiments of Dr. Carswell, detailed in the Edinburgh Medical and Surgical Journal for October 1830, have fully proved the correctness of Hunter's explanation. This gentleman killed several rabbits during digestion, and hung them up by the hind legs, when the depending part of the stomach was always found more or less digested. The gastric juice of one rabbit was conveyed into the stomach of another previously killed, and digestion of a part of its stomach was the consequence.

In the autumn of this year Hunter's brother-in-law, Mr., afterwards Sir Everard Home, became his pupil. He describes the museum as at this time beginning to assume an imposing degree of magnitude. All the best rooms in the house were already devoted to its reception; and though, from the increase of his professional engagements, Hunter had less time to devote to comparative anatomy, yet as he always spent three or four hours before breakfast, and as much time as he could spare during the remainder of the day, in the dissection of animals, he was constantly adding to its size and value. His increasing reputation as a naturalist, also, facilitated to him the acquisition of objects on which to pursue his researches, as it induced scientific travellers to send him specimens of rare and curious animals, assured that they could not better forward the cause of science than by conferring them on one so ardently devoted to its promotion. "Hunter's private practice and professional character," adds Home, "were at this time advancing fast;" and yet his income, until 1774, never reached a thousand a year, a convincing proof how much his fame as a naturalist had outrun his fortune as a surgeon.

In the spring of the year following Hunter suffered under an alarming attack of spasm, apparently seated about the region of the pylorus, but attended with a cessation of the heart's action, which lasted three quarters of an hour, in defiance of various active remedies suggested by Dr. Hunter, Sir George Baker, Dr. Huck Saunders, and Dr. G. Fordyce, who were hastily called in on the occasion. The complaint was probably of a gouty nature, for he had this year escaped a regular fit of gout, such as he had suffered from during the spring of the three preceding years; but the im-

mediately exciting cause was a violent mental affection, the nature of which Sir Everard Home does not mention. During this attack the sensation and voluntary actions continued unaffected, and Hunter continued to respire by a voluntary effort, with a view of keeping himself alive; though, as he afterwards observed, the continuance of respiration was probably of no service, as the circulation had ceased.* This seems to have been the first warning he received of the existence of disease about the heart; although it never again manifested itself by an exactly similar attack; nor was it until several years after that this organ became permanently deranged in its actions.

It has been stated, in the preceding chapter, that soon after Jenner settled at Berkeley, Hunter entered into a correspondence with him, which was kept up nearly to the period of his own death. Hunter's letters alone have been preserved, and these consist, for the most part, of requests to his former pupil to procure for him various objects of natural history, which a residence in the country rendered easily attainable, or of directions respecting experiments to elucidate those inquiries into the vital actions, in which Hunter was constantly engaged, and in the prosecution of which Jenner was always ready to lend his valuable aid. The letters seldom bear any date, but when this can be ascertained, either from the post-mark or from the nature of their contents, it will serve as the guide for their insertion in this and the succeeding chapters. The following one appears to have been written somewhere about this time.

"Dear Jenner,

"I received yours, as also the cuckoo's stomach: I should like to have a few more, for they do not all show the same thing.† If possible, I wish you could remove the cuckoo's egg into another bird's nest, and tame the young one, to see what note it has. There is employment for you, young man! If you collect eggs, you should also collect the nests, and I do not care how many you send. I wanted a crow's nest as also a magpie's, in the branches of the trees where they are built, but I am afraid it is now too late.

"This evening, looking into my book of patients to scratch out the name of one who had paid me, and whose name began with M., I saw a Mr. Matthews of Berkeley, recommended by you. He did not pay me. I forget whether he was recommended by you as a friend to serve him or me; if it was to serve him, I scratch him out of my book. Do you keep an account of the observations on the

* This curious fact in physiology has never been satisfactorily explained. Bichat and his school insist on the necessity of arterial blood constantly circulating through the brain in order to the continuance of its functions, but here we find its functions going on though the circulation had ceased. In the collapse of cholera, the sensorial functions continue perfect for hours after all perceptible circulation has ceased, and when the blood is as dark as pitch.

† The internal coat of the cuckoo's stomach is found thickly set with the hairs of caterpillars on which it feeds. These hairs are laid circularly over each other in one direction, showing the circular motion of the two portions of the gizzard, on each other, in grinding the food. It is to this, probably, that Hunter alludes, as there is a preparation in the museum showing this fact. Jenner had now commenced his observations on the hatching and rearing of the cuckoo, which were communicated many years after to the Royal Society.

cuckoo, or must I refer to your letters? I want a nest with the eggs in it; also one with a young cuckoo; also an old cuckoo. I hear you saying, there is no end of your wants.

"Ever yours,
"JOHN HUNTER."

The phenomena of electricity had of late begun deeply to engage the attention of scientific men. Mr. Walsh was one who had devoted much attention to the subject, and who had been making experiments, to ascertain whether the shock communicated by the Torpedo is analogous to that of an electrical battery. Being anxious to learn the exact anatomical arrangements of the parts in which the peculiar power resides, he requested Hunter to examine them, a request with which the latter willingly complied, and in July communicated, in a paper to the Royal Society, an accurate description of the electric organs of the Ray, and pointed out the vast nerves with which they are supplied as the probable source of their peculiar power.

In the autumnal session of this year, Hunter for the first time delivered a course of lectures exclusively on surgery. These lectures were for the first two years given gratuitously to the pupils attending St. George's Hospital, but after that the usual fee for admittance was required.

It has been before observed that he appeared but to little advantage as a lecturer; his language, though forcible, was inelegant, and often coarse;* his delivery was heavy and unengaging, as he rarely raised his eyes from his book; and as, in addition to this, the doctrines he taught were new, and often obscure and theoretical, his hearers were never numerous. The many who found it troublesome to think, and desired only straightforward directions for every day practice, sought other teachers; for notwithstanding the length of the course, which in late years extended to eighty-six lectures, he entered but little into the minuter details of practice, and gave little or no account of the operations of surgery, but confined himself almost exclusively to the theory and principles of the art.

It was an instance of Hunter's perseverance, that though his dislike to delivering himself in public was so great that he never commenced a course of lectures without having recourse to laudanum to relieve his uneasy feelings, he notwithstanding continued the practice of lecturing for many years. He was induced to this by other motives besides the more obvious one of increasing his reputation: his opinions were for the most part peculiar to himself; he was desirous of subjecting them to the test of public opinion, and

* In speaking, for example, of a case of gun-shot wounds, he described the ball, as "having gone into the man's belly and hit his guts such a d—d thump, that they mortified." And in relating his own case, where secondary symptoms had ensued on inoculation with the matter of chancre, he repeated over so often, and in so peculiar a tone, "I knocked down the disease with mercury and I killed it," that the whole class at length burst into a loud fit of laughter.

thought this the best mode of doing it, until they were sufficiently matured in his own mind to be committed to print; he felt also that the practice of lecturing was beneficial to himself, by discovering to him the amount of knowledge he possessed on any subject, and when this knowledge was deficient.* In this respect he was accustomed to compare the process of preparing a lecture to that of a tradesman taking stock.

Boldness and independence in the pursuit of truth, one of the striking characteristics of Hunter's mind, was well exhibited in these lectures. He attached no value to opinions, except they could be shown to be firmly based on fact: fallacious reasoning, though ingenious, he quickly saw through, and instantly demolished; and he was not more indulgent towards his own theories when he discovered them to be erroneous. To a pupil (Sir Astley Cooper) who asked with surprise, whether he had not the year before stated an opinion on some point, directly at variance with one he had just put forth; he replied, "Very likely I did; I hope I grow wiser every year:" and to the same purport he answered Professor Coleman (another of his pupils), who asked whether he had not written so and so; "Never ask me what I have said, or what I have written; but if you will ask me what my present opinions are, I will tell you." Occasionally, too, he would say to any of the pupils whom he saw taking notes, "You had better not write down that observation, for very likely I shall think differently next year:" and on one occasion, after lecturing for a considerable time, he stopped short, raised his spectacles, and said, "Gentlemen, I think you had better omit what I have been saying; the fact is, I had an idea when I wrote down this, but I have lost the train of thought connected with it, and I cannot now recall it."† Such a mode of lecturing was not likely to become popular; his class consequently never exceeded thirty, and not half that number derived much benefit by their attendance. Those, however, who would take the pains to understand what they heard, set a high value on these lectures, by which, perhaps even more than by his writings, Hunter originated that revolution in surgery, of the occurrence of which none can doubt, who compares the best surgical works written half a century since, with those of the present time.

* "Reading," says Lord Bacon, "makes a full man, conference a ready man, and writing an exact man." Public lecturing, and more particularly extempore lecturing, combines these advantages in a remarkable degree.

† This was a difficulty he not unfrequently experienced. After thinking deeply, he would make short notes of his thoughts, on looking at which some time after he would find them unintelligible until his mind was prepared to fall again into the same train of reasoning. It may fairly be questioned, when Mr. Hunter had got so deep, whether he had not got out of his depth. At least from the specimens we have of his hypothetical reasoning, we have no reason to regret that he did not oftener indulge in it. Dr. Beddoes observed: "John Hunter fancied that what he could not find words for was very profound: but he was mistaken; whenever he found himself at a loss for words, he was labouring with the delivery of nothing."—*Dr. Beddoes's Common Place Book.*

We find, accordingly, that most of the eminent surgeons who immediately succeeded to the time of Hunter, were at one period or other attendants at his lectures; and that in effecting those improvements which they were the means of introducing into the practice of surgery, they pursued that path into which he had directed their steps at the very outset of their career. Besides those before mentioned, we must enumerate the names of Home, Carlisle, Abernethy, Astley Cooper, Wilson, Chevalier, Macartney, Coleman, and Physick; and others might no doubt be mentioned, who have, like them, done honour to the surgical profession in this century.

In 1774 two papers by Hunter were read before the Royal Society, and published in the Transactions. The first of these contains a general account of the receptacles for air which are found in the abdominal cavity, the cellular tissue, and bones of birds. In the second, a description is given of the stomach of the Gillaroo Trout, a peculiar species of trout found in some of the lakes in Ireland, the stomach of which is so thick and muscular, as to have led to the name of Gizzard Trout being applied to this animal.

There is another paper on the subject, in this volume of the Transactions, by Henry Watson, and it is not uninteresting to observe the different manner in which the two men have handled the same topic. Watson has contented himself with giving a plain anatomical description of the organ, from which he draws the conclusion that it is not properly a gizzard, but only a very muscular stomach. Hunter arrives at the same conclusion, but has given interest to a rather meagre subject, by introducing it with a general view of the various modes in which the preliminary process of digestion, that of comminuting the food, is effected in different animals. He points out the analogy between the gizzard of granivorous birds and the grinders of mammalia; shows how, by imperceptible gradations, we pass from the membranous stomach to the gizzard; and finally determines, that though the object to be effected in the stomach of the Gillaroo Trout is very much the same as in the gizzards of birds, yet that in structure it more resembles a true membranous stomach than a gizzard. The introduction of such general remarks was a common practice with Hunter in treating any anatomical question, so that the titles of his papers seldom afford us any adequate notion of their contents. He employs the subject treated of as a text, on which he freely expatiates, introducing valuable original researches of a physiological character as a prelude to some point in anatomy, which, separately considered, would possess little interest.

Hunter's increasing professional avocations began now to render it impossible for him to devote as much time as he desired to extending and perfecting his collection. The field of his labours, too, was considerably increased; on the one hand, by the opportunities for the cultivation of morbid anatomy, which his connexion with a hospital, and his increasing private practice afforded him;

on the other, by the augmented stores of rare and curious animals, which the kindness of his friends, and the liberality of scientific men, continually accumulated on his hands. He therefore engaged Mr. Bell, a young artist of considerable merit, to reside in his house, and to devote himself, under his superintendence, to making anatomical preparations and drawings, and to the general care of the museum. Mr. Bell's engagement was for ten years, and he eventually remained fourteen, in the course of which time he became an accomplished anatomist, and added a large number of valuable preparations and several hundred admirable drawings to the collection. He was also frequently employed by Hunter as his amanuensis, and some of the catalogues now in existence are in his handwriting.

The fact that Mr. Bell remained so much longer with Hunter than he originally engaged to do, is an evidence that he was not dissatisfied with his situation. Probably, like most of those who were intimately acquainted with this great man, he gradually acquired a strong personal attachment to him, which led him to tolerate the violent sallies of passion to which the inmates of Hunter's house were not unfrequently subjected on very trivial grounds. Home states that "Hunter's temper was warm and impatient, readily provoked, and when irritated not easily soothed;" and this account is confirmed by most of those who were intimately acquainted with him. An intrusion on his studies, even by one with whom he was on friendly terms, would call forth expressions of strong disgust and impatience: an object of which he was in want being misplaced, would bring down all the vials of his wrath on the offender; and during these fits of passion he used to swear in the most outrageous manner, a vicious habit, which was not uncommon, even amongst men of education, fifty years ago, and to which Hunter was greatly addicted.

The accession of Mr. Bell to his staff did not lead Hunter at all to relax in his own exertions; on the contrary, every hour of the day, and of great part of the night, found him busily employed. He commenced his labours in the dissecting-room generally before six in the morning, and remained there until nine, when he breakfasted. After breakfast he saw patients at his own house until twelve,* when he made it a point to set forth on his rounds, even though persons might be in waiting for the purpose of seeing him; for, said he, "these people can take their chance another day, and I have no right to waste the valuable time of other practitioners by keeping them waiting for me." Hunter was a great economist of time,

* The following note shows that Mr. Hunter went out at an earlier hour at one period of his life:

"Dear Sir,—I can hardly be at home after 11 o'clock *any* day, but on Friday I will wait till half-after, and if that should not suit your convenience, and you do not come by that time, I will be at home by three to meet you.

"I am your most obedient servant,

"*Wednesday Evening.* John Hunter."

and was always very punctual in fulfilling his appointments, to ensure which he kept a regular entry of his engagements in a book at home, and carried an exact copy of this in his waistcoat pocket, so that by a reference to the book he could always be found at any hour of the day, in the event of his being wanted. Any unnecessary discomposure of these engagements greatly annoyed him, and caused him to give vent to his feelings in no measured terms. The late Mr. Cline once excited his ire by an offence of this kind. He had engaged Hunter to meet him in consultation on a case in the afternoon, but in the course of his morning rounds saw another patient, respecting whom he wished to take Hunter's opinion, and accordingly, without giving him previous notice, appointed to call with him after the former engagement was ended. When the first visit was over, Cline mentioned the second appointment, on hearing of which Hunter got into a towering passion, and asserted that Cline had acted in the most unjustifiable manner in thus deranging the whole of his arrangements for the afternoon.* Cline, who was of a very placid temper, was amazed to see such a storm excited by so trifling a cause, and said what he could to appease it. In this he succeeded, and Hunter soon recovering himself, turned to him, and in a very altered tone said, "Come along, then, let us go and see our patient." Hunter was equally strict in enforcing punctuality on his household; he dined at four, then the fashionable hour, and gave strict orders that dinner should be ready punctually whether he was at home or not. He was a very moderate eater, and set little value on the indulgence of the palate. During many of the latter years of his life he drank no wine, and therefore seldom remained long at table after dinner, except when he had company; but then, though he abstained himself, he was not willing to allow his friends to follow his example.†

After dinner he was accustomed to sleep for about an hour, and his evenings were spent either in preparing or delivering lectures, in dictating to an amanuensis the records of particular cases, of which he kept a regular entry, or in a similar manner committing to paper the substance of any work on which he chanced to be engaged. When employed in the latter way, Mr. Bell and he used to retire to

* This attention to punctuality was also displayed by Hunter's nephew, Dr. Baillie, in as remarkable a degree. When accidentally detained beyond his time, he made it a point to forfeit one appointment to save the rest. He used to say: "I consider it not only a professional, but a moral duty to meet punctually my professional brethren of all ranks. My equals have a right to such a mark of my respect, and I would shudder at the apprehension of lessening a junior practitioner in the eyes of his patient, by not keeping an appointment with him."

† "Come, fellow," said he, in his usual blunt way, to Mr., now Sir William Blizard, "why don't you drink your wine?" Mr. B. pleaded in excuse a whitlow, which caused him much pain. Hunter would not allow the validity of the plea, but continued to urge him and ridicule his excuse. "Come, come, John," said Mrs. Hunter, "you will please to remember that you were delirious for two days when you had a boil on your finger some time ago." This turned the laugh against Hunter, who now ceased from importuning his guest.

the study, the former carrying with him from the museum such preparations as related to the subject on which Hunter was engaged; these were placed on the table before him, and at the other end sat Mr. Bell, writing from Hunter's dictation. The manuscript was then looked over, and the grammatical blunders, for Bell was an uneducated man, corrected by Hunter.* At twelve the family went to bed, and the butler, before retiring to rest, used to bring in a fresh argand lamp, by the light of which Hunter continued his labours until one or two in the morning, or even later in winter. Thus he left only about four hours for sleep, which, with the hour after dinner, was all the time that he devoted to the refreshment of his body. He had no home amusements, as cards, for the relaxation of his mind, and the only indulgence of this kind he enjoyed consisted in an evening's ramble amongst the various denizens of earth and air which he had congregated at Earl's Court, where he slept, and, with his family, spent the greater part of his time during the autumnal months.

In 1775 Hunter entertained thoughts of establishing a school of natural history, in which he purposed himself to take the chief part; but as it was necessary that he should obtain the assistance of some young man of talent in carrying on the undertaking, and as none was better qualified for the office than Jenner, he applied to him in the following letter to say if he felt disposed and at liberty to join him.

"Dear Jenner,

"I have received many things from you, and will thank you in the lump; but while I thank you, I have a great scheme to communicate to you, and I want you to take part in it; but remember, it is as yet a most profound secret. My scheme is to teach natural history, in which will be included anatomy, both human and comparative. The labour of it is too much for one man, therefore I must have some one to assist; but who that person shall be is the difficulty. When running over a variety of people, you have come into mind among the rest. Now if it is a scheme you would like, and a possibility of your leaving the country,—at the same time, able and willing to lay down one thousand guineas,—I will send you the whole proposals; but if you cannot leave the country on any terms, then it is unnecessary to go any further; and all I have to beg is to keep it a secret. I would not have you mention it to Ludlow, ——, &c. I proposed it to L—— before he left London, but his father objected, I believe, to the money. I know the scheme will be to your taste. Before you ask any of your friends, consult with yourself, and ask, Can I go to London, and can I give one thousand guineas for any chance that may be worth it? Let me hear from you very soon. Yours,

"*London, May 24th.* J. Hunter."

* Burke used to say that it was impossible for any man to arrive at great eminence by his own unassisted talents: the power to combine the assistance of inferior men, in subserviency to his own views, used always to constitute an essential part of his definition of a truly great man. This power Hunter possessed. All his pupils and intimate friends contributed more or less to the formation of his museum; fourteen years of Mr. Bell's life were devoted to this object; he called in the aid of the ladies of his family in the prosecution of his researches on the economy of bees, and he even carried this so far as to call on his coachman occasionally to act as amanuensis when Mr. Bell was otherwise engaged. There were no drones in his hive.

Jenner declined the offer, for what reasons cannot now be known, as his letters have been destroyed; but it would appear, from Hunter's next letter, that the refusal was not unexpected, and we may judge, moreover, from his language, that he had already given up the project himself.

"DEAR JENNER, *August 2d.*

"I received yours, in answer to mine, which I should have answered. I own I suspected it would not do; yet as I did intend such a scheme, I was inclinable to give you the offer.

"I thank you for your experiment on the hedgehog; but why do you ask me a question by the way of solving it? I think your solution is just; but why think? why not try the experiment? Repeat all the experiments upon a hedgehog as soon as you receive this, and they will give you the solution. Try the heat: cut off a leg at the same place; cut off the head, and expose the heart, and let me know the result of the whole.

"Ever yours, J. HUNTER."

It is probable that Hunter abandoned his intention on finding that it was not likely to be attended with success proportionate to the trouble and expense it would entail on him, since the number of persons who would have been willing to become pupils in a school of comparative anatomy was in those days extremely limited. This was probably the chief reason which weighed with him in determining to abandon his scheme; but we may gather, from the following anecdote, that he was also in part deterred by the difficulties of the undertaking itself. Hunter was one morning at breakfast, when a young man, who was on intimate terms with him as a friend and pupil, mentioned, as if casually, that he had some thoughts of giving a course of lectures on comparative anatomy. Hunter looked up, and drily replied, "Sir, that is a bold undertaking; I had thoughts once myself of doing the same thing, but the difficulties and necessary qualifications were so great that I do not think myself competent to the task: but you, I dare say, may feel yourself quite equal to it."

In the early part of this year Sir C. Blagden presented to the Royal Society the details of some interesting experiments instituted by Dr. Fordyce, himself, and others, to ascertain how far the living body possesses the power of maintaining its standard heat when exposed to air at high temperatures. This drew from Hunter a valuable paper on the heat of animals and vegetables, containing an account of various experiments made some years before,* by which the counterpart of the above proposition was proved, namely, that living bodies possess a power of maintaining their heat against

* Hunter's experiments were made with a view to discover if it were possible to restore to life animals which had been frozen. This was for some time a favourite inquiry, and he used to speculate on the possibility of freezing human beings, and thawing them to life two or three centuries after, a project which, if he could realize, he expected would make his fortune. Whilst his friends Lynn and Benjamin West, therefore, were warming themselves with a bout of skating on the Serpentine, Hunter staid at home freezing his fingers in pursuit of this his philosopher's stone.

the influence of external cold, and this in a degree proportioned to their rank in the scale of organization.

In January 1776 Hunter received the appointment of surgeon-extraordinary to the King, the first and only one which brought him within the atmosphere of Royalty.

In the course of this year he contributed to the Philosophical Transactions a memoir on the means to be employed in the recovery of drowned persons. This paper was drawn up at the request of the Humane Society, then newly established. Its contents are so generally known, that it will be sufficient to remark, that the directions it furnishes are based on sound physiological principles, and still continue to guide the conduct of those who may be called to the assistance of a fellow-creature suffering under this form of asphyxia.

He also commenced this year a series of six Croonian lectures, on muscular motion, which he had been appointed by the Royal Society to deliver.

In return for the assistance which Jenner afforded him in his pursuits, Hunter was enabled sometimes to give him the benefit of his professional advice, in such cases of difficulty as the former might encounter in his practice. The following letters are of this kind, and relate in part to the treatment of a case of *fungus cerebri* under Jenner's care.

"Dear Jenner,

"I don't know any one I would as soon write to as you. I do not know any body I am so much obliged to. I thank you for a fish, but I should thank you more if you had let me know who it comes from.

"I beg for the future you will always write when you send me anything. Somebody sent me a cheese, with a fish upon it; perhaps it was you; you know I hate to be puzzled. Also let me know what things you have sent me lately. I have not received the cuckoo's nest yet. Now for your patient. I believe the best thing you can do is to do little. I would not touch the fungus with an escharotic, for fear the brain should be near: I would also use but very slight compression, as the fungus will be a bandage to the brain; and as to the fungus itself you have nothing to fear, for wherever the parts underneath are sound, the fungus will subside of itself. Keep your patient rather low, and quiet. Let me know how he goes on, and anything else you can.

"Ever yours, J. H."

"Dear Jenner, [*Post-mark, Jan. 10th.*]

"You must think me very fond of fish when you send me cheese as much fishified as possible: however, it is an excellent cheese, and every country has laid claim to its birth. The fish is called ——*

"I have but one order to send you, which is, to send everything you can get, either animal, vegetable, or mineral, and the compound of the two, either animal or vegetable, mineralized.

"I would have you do nothing with the boy but dress him superficially: these funguses will die, and be damned to them, and drop off.

"Have you large trees, of different kinds, that you can make free with? If you have, I will put you upon a set of experiments with regard to the heat of vegetables.

"Have you any eaves, where bats go to at night? If you have, I will put

* There is an omission here, which Hunter probably intended to supply before closing his letter, but forgot to do so.

you upon a set of experiments concerning the heat of them at different seasons. I should have been extremely happy to have had the honour of a visit from Lord Berkeley.

"Ever yours, JOHN HUNTER.

"Anny sends her compliments, and thanks you for all favours. Write down the case."

"DEAR JENNER, [*Post-mark, Jan. 22d.*]

"I did not understand that the funguses which you described were brain; and I should still very much doubt that they are brain, for their keeping into one substance would make me inclinable to believe that it is a new substance; but let it be what it will, I would advise you not to meddle with it: if it is brain, let it drop off; if it is fungus, let it either drop or waste off: therefore be quiet, and think yourself well off that the boy is not dead. You do not mention a word about bats. I have no particular experiments at present about fixed air; it is such a wide field that a man may make a thousand experiments before he determines anything. Have you got the bones yet of a large porpoise? I wish you had. Is ever the salmon spawn seen after she has parted with it? If it is, I wish you could get some: I want to examine the spawn of fish in the progress of the formation of the young one.

"I am, dear Jenner, your most obedient Servant, JOHN HUNTER."

In the second of the preceding letters we have seen that Hunter expresses a wish that Jenner would undertake some experiments on animal and vegetable heat. This was a subject in which Hunter was much interested, and about which he continued for several years to institute experiments. The following letters, which appear to have been written early in this year, refer chiefly to this inquiry.

"DEAR JENNER,

"I received the box; also your letter. I am very much obliged to you for your kind attention to me, and how to reward you I do not know. Let that be as it will, I must still give you commissions. If you can get me easily salmon spawn, I should like to have it, and out of different places, as it will be of different ages. It should be put into bottles immediately, with spirits. The spirits should be proof, and there should be rather more spirit than spawn.

"I will also take any specimens of fossils you may send me, or indeed anything else. Did I send you any of my publications in the Philosophical Transactions? If I have not, let me know. I want to put you upon some experiments this winter. What do you think of examining eels? Their sexes have not yet been found out, nor their mode of propagation; it is a thing of consequence in natural history. I began it, but could not get eels immediately from the river, and to get them of fishmongers, who buy them in custom, does not do. My intention was to examine several pretty large eels on the first and fifteenth of every month. If the eels are plenty with you, and if you like the proposal, let me know, and I will give you full instructions how to proceed. Also, next spring, I would have you make the experiments on the growth of vegetables; and if you have no objection, I will set you upon a set of experiments upon the heat of vegetables in the winter. If, in any of these pursuits, you discover any principle worthy of the public, I will give it to the Royal Society for you. I must pick you up a picture this winter. I saw Mrs. Black* at Mr. Drummonds: I suspect Mr. Black is dead, but I durst not inquire. Cannot you get me a large porpoise for love or money? What is the bird you sent me? also the young animals, which I imagine to be guinea-pigs?

"Ever yours, JOHN HUNTER."

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* Jenner's elder sister.

"DEAR JENNER,

"I received your salmon, and very fresh, and just examined enough to want another, but will wait till another season. If I was to have another, it should be one that had just spawned: I will take a cock salmon when you please. If you catch any bats, let me have some of them; and those you try yourself, open a hole in the belly, just size enough to admit the ball; put the ball down towards the pelvis, and observe the heat there; then up towards the diaphragm, and observe the heat there; observe the fluidity of the blood. Do all this in a cold place. Extraneous fossils are all vegetable and animal substances found in a fossil state. See if you can catch the number of pulsations and breathing in a bat without torture. If the frost is hard, see what vegetables freeze: bore holes in large trees, and see whether the sap runs out, which will show it is not frozen. I am afraid you have not a proper thermometer: I will send you one.

"Your very much obliged Servant. J. HUNTER.

"I have not seen Dr. H., but I dare say he will be glad to have the cases."

The two foregoing letters appear to have been written in January or February. Hunter, in the multiplicity of his engagements, forgot to send the thermometer he had promised, and Jenner, after waiting for some time, began to fear lest he might in some way have offended his friend, and accordingly wrote to inquire the cause of his long silence. To this Hunter replied in the following letter, which bears the post-mark of April 12th.

"DEAR JENNER,

"I can never be offended with you. The reason for not sending the thermometer was I entirely forgot it, but it shall be sent next week. I shall be glad to present your paper if you mean to give it to the public. The large porpoise I would have coarsely stripped, and the bones put into a cask and sent; the young one, if not too large, put into spirits to be able to inject it. If the breasts of the old one were taken off and put into the cask among the spirits, I should like it. You will find the nipples on each side of the vulva, and the gland passes along under the skin of the belly, almost to the breast, so that it would be only preserving the belly part. Did I write to you some time ago about cuckoos? I have forgot: if I did not, I must give you a long order.

"*Friday night.* I am, dear Jenner, ever yours, J. HUNTER.

"I was at my club last night, and not coming home till twelve is the reason I did not write."

"DEAR JENNER, [*Post-mark, April 16th.*]

"I have received your fish, as also your letter; for both I thank you. It came quite fresh, and it is under dissection and drawing. The bubbies of this are as flat as a pancake, but I have injected the ducts. Was the milk sweet? Could you save some of it? if but two drops, to see if it grows sour. Try it with the syrup of violets. Are the breasts demolished? Are the kidneys demolished? If not, could you send them? I will leave it to you what is to be done at present with the bones; either send them as they are, or steep them in water till the flesh rots off. If you could, send me the stomach and a piece of intestine, if the large one was different from the small; but if it had the same head, then you need not send them, as the present informs me of the class. I have got the thermometer, but let me know to whose care I am to send it. You did not in your last tell me if I wrote to you about the cuckoo.

"Ever yours, J. HUNTER."

Very soon after the date of the last letter, Hunter was attacked with an alarming fit of illness, brought on by anxiety of mind, at being called on to pay a large sum of money for a friend, for whom he had become security; a call which his circumstances made

exceedingly inconvenient. The most distressing feature of this complaint, which Sir Everard Home has described at considerable length, was a constant vertigo, which rendered him incapable of raising his head from his pillow for ten days: this sensation was accompanied by a morbid acuteness of the organs of sense, with a feeling of being suspended in the air, of his body being much diminished in size, and of every motion of the limbs or head, however slight, being both very extensive and accomplished with great rapidity. This complaint was unattended by fever. Various remedies were employed, but without any perceptible effect on the symptoms, which, at the end of ten days, began to disappear spontaneously. Sir Everard Home dates this illness in 1776; but in one part of his memoir he says it happened in the spring, and in another in the autumn. The following letter of Hunter's to Jenner, which, contrary to his usual practice, bears the date of the year, shows that it occurred in 1777.

"DEAR JENNER,

"I have before me two letters of yours, which I should have answered much sooner. Your friend Dr. Hicks I have not seen. I was not at home when he called, and I have not had time to wait on him, as he lived entirely out of my walk. I should have been glad to have seen him, but I suppose he stood upon ceremony. I received the fossils, and should be glad of any that you can get. If any bones of animals are found, be sure and get them for me. I should be glad to have some of the salmon-fry. I had the pleasure of seeing your brother, but only for a time. I received the bird: I am not acquainted with it: send me some more if you can get them readily. I sent with Mr. Jenner the thermometer: if you do not understand it let me know.

"Not two hours after I saw your brother I was taken ill with a swimming in my head, and could not raise it off the pillow for ten days: it is not yet perfectly recovered. Have you begun the eels? No porpoises. No salmon spawn before it has hatched. You see I am very greedy. Be sure to keep an account of all outgoings.

"My compliments to Mrs. Black and your brother, and let me hear from you.

"Ever yours, J. HUNTER."

"*London, May* 11, 1777.

In July he wrote again to Jenner, explaining the mode of using the thermometer, and treating of divers other matters, with his accustomed brevity.

"DEAR JENNER,

"Excuse me for not answering your letters as soon as you could wish. Send me all the fossils you find. What I meant by bones was all the bones that are found any depth below the surface of the earth: many are found in stones, &c. I suppose those skeletons are not complete, but send me some of them; and if any history can be given, send it also. The thermometer is a very useful one when understood. You will observe the scratch upon the glass stalk, perhaps about two inches from the globe, which is the freezing point: put 0, or nought, which is upon the ivory scale, two degrees below the scratch, then 0 becomes the thirtieth degree, and the scratch, being two degrees above it, stands at the freezing point; then, from that count upwards: or if the cold is below 30°, then put 1 or 2 at the scratch, and count down: every No. is ten degrees. What the devil becomes of your eels in the winter? but try them in summer, and see what you can make of them.

"I do not remember Dr. Fordyce's ever supposing a polypus vascular. I

should rather believe that he supposed the contrary: you know it comes near my idea that the blood is the bond of union everywhere. But I should very much suspect that a polypus formed after death is not of that kind. I am pretty certain that I have injected them in arteries after amputation. I have a preparation which shows it, and which supports my theory. Yours,

"*London, July 6th*, 1777. J. HUNTER."

Hunter was disposed to treat his late illness as one of trifling moment; but his medical friends thought more seriously of it, and as he had never fully regained his health, urged his resigning business for a time and retiring to Bath. In compliance with this advice, he proceeded thither in the autumn, after having deputed Mr. Bell and Mr. Home, in his absence, to complete a catalogue of all the preparations in his museum with which they were acquainted, a task which had been hitherto entirely neglected. Before leaving London he announced to Jenner his intended visit to Bath in the following letter.

"DEAR JENNER, *August 6th*, 1777.

"I just now found your last letter. I think I answered it, but am not sure; if I did not let me know. Is there any judging whose these human bones are? Let us have some of them, especially skulls, as complete as possible, with the lower jaw, &c. I am very well, but for all that I set out, in a few days, for Bath.

"Ever yours, J. HUNTER."

Soon after his arrival at Bath he was visited by Jenner, who was greatly shocked to perceive the alteration which had taken place in his appearance, and concluded, from the symptoms under which he laboured, that his disease was angina pectoris, an affection not then well understood, but which Jenner had been led to believe, by the dissection of former cases, depended on an organic change in the heart. He abstained from telling Hunter his opinion, as he feared the effect such an announcement might have on his mind, but communicated it to Dr. Heberden, one of Hunter's medical advisers, in a letter, which Dr. Baron has published in his Life of Jenner.

During the time Hunter remained in Bath he appears to have had frequent communication with his friend, and the following letter affords a good example of the familiarity which existed between them.

"DEAR JENNER,

"Till yesterday we did not know from whom the hare came; but the cook found it out. We thank you: it was a very fine one. By your not taking any notice of my letter, I do suppose you did not receive it. Near three weeks ago I wrote to you to meet us at the Hotwells, Bristol. Some days after the date of my letter we went to the place appointed, by ten o'clock in the morning; but no Jenner there. We breakfasted, we dined, we staid all night, and set out for Bath the next day. We would have come on to Berkeley, but we were afraid you might not be there. I am afraid it will not be in my power to come and see you, though I wish it much. I shall be obliged to take Southampton in my way home. Are the hedgehogs so saucy as to refuse coming without coming for them? See if you can coax them. We are alive here. The downs look like a beehive. Let me hear from you. Mrs. Hunter gives her compliments to you.

"*Bath, 18th.* Yours, J. HUNTER."

"My letter was sent to your friend in Bristol by the coach, but perhaps the coachman forgot to deliver it."

After remaining three months in Bath, he became very desirous to be at home again, and decided therefore on immediately returning to London, though his health was not fully re-established. Fortunately, he felt no inconvenience from this step, but continued to improve after his return, and shortly regained his usual state of health.

He now recommenced his ordinary pursuits with unabated diligence, and appears about this time to have been chiefly engaged in confirming and extending his inquiries on vital heat. He was anxious to engage Jenner's assistance in conducting some of the experiments, for which his residence in the country afforded him the necessary facilities, and determined to write to him on the subject; but as he had received no reply to several of his late communications, his first letter was written to inquire the cause of Jenner's long silence.

"DEAR JENNER,

"I wrote to you twice from Bath since I saw you, and have had no answer to either; what the d—l is become of you? I have got your candlesticks: to where shall I send them? Let me know by return of post; and all the news you can. Yours,

"*Nov. 6th*, 1777. JOHN HUNTER."

Having ascertained, to his satisfaction, that Jenner had not become a subject of "Pluto's dreary reign," he forthwith transmitted him the necessary instructions for his guidance.

"DEAR JENNER,

"I have sent you the candlesticks as you desired. I hope you will like them. They cost five pounds and a shilling; so I owe you four shillings. I have received the hedgehogs. If you have time, see their natural winter haunts, and in the very cold weather run the thermometer into the anus, and observe the heat; then open the belly by a shall hole, and pass the thermometer down towards the pelvis, and observe the heat; then towards the liver or *diaphragm*, and observe the heat: you may do all this in a very few minutes. Observe the fluidity of the blood, by comparing it with another that has been kept warm for a few days. I have heard of Mr. Cattgal's collection of fossils, and not till I came to London: I suppose he will not sell any. I shall think of your lymphatics; and if I can pick up a preparation or two, I will. I am sorry you did not get my first letter, as we intended going to Berkeley with you, but did not choose to come without an answer, as it was possible you might not be at home. I have seen your old master, who has given me the use of a very curious bone: I hope he will give it me altogether. Dear Jenner, yours,

"*Nov. 23d.* JOHN HUNTER."

Unfortunately, his hedgehogs all died, either from exposure to cold or some other cause; he therefore referred the experiments, for the present, to Jenner, until he could learn what means were requisite to keep them alive.

"DEAR JENNER,

"I am always plaguing you with letters, but you are the only man I can apply to. I put three hedgehogs in the garden, and put meat in different places for them to eat as they went along; but they all died. Now I want to know what this is owing to; therefore I want you to find out their haunts, and observe, if you can, what they do; if they make a warm place for themselves; if they have

any food by them, &c. I would have you kill one, and see its heat. First, make a small hole in the belly, and introduce the thermometer into it, first down to the pelvis, then up to the liver and diaphragm, and see the difference, for I believe they will answer the purpose as well as bats. See if there is any food in the stomach; what the intestines contain; examine if they are fat, and in the spring see if they are much leaner; see if the blood is as fluid as common, or if thicker. In short, make what observations you can. Let me hear from you when you have nothing else to do. Yours,

"*London, Dec.* 17. J. HUNTER."

His next letter, written in March 1778, is as follows:

"DEAR JENNER,

"Your letter of December has lain before me ever since I received it, to put me in mind that it was not answered. I am glad you liked the candlesticks: I thought them pretty. The fossils were none of the best; but I know you did not make them, therefore it is not your fault. The particular one you put the Q? on is only the cast of a bivalve. I wish I had seen E.'s collection. I am matching my fossils, as far as I can, with the recent. Have you made any experiments with the hedgehogs, and can you send me some this spring? for all those you sent me died, so that I am hedgehogless.

"Mr. Ludero sent me the bone; it is a very curious one: whether he will let me keep it or no I do not know. I received yours by Mr. Jones, with the bird. I thank you for thinking of me. Frogs live an amazing while after they are dead; as also all animals of that tribe. The directions I gave you about the blackbirds were, when you have a blackbird's nest, viz. with four young ones, take one and put it bodily into spirit by the head, extending the wings and legs. Observe when the feathers begin to sprout; then take another, and serve it in the same way; then a third, and a fourth, so as to get a series of the growth of the feather; but the last, or fourth, must not be so old as the feathers to cover other parts where feathers do not grow. This you will better understand when you come to make the trial. I have a picture of Bassan's that I lent a poor devil three guineas upon: he died and never redeemed the picture. I intend sending it to you: it is a good deal damaged, but some of the figures are very good. Get a frame for it, and hang it in a strong light. There are some experiments of mine publishing in the Philosophical Transactions, which I will send you with the picture; accept them as a remembrance of the trouble I put you to. Let me hear from you when convenient. Mrs. Hunter desires her compliments to you.

"I am, dear Jenner, your most obedient and most humble servant,

"*London, March* 29, 1778. JOHN HUNTER."

It is not very clear what are the experiments to which Hunter alludes in the foregoing letter as about to be published; it seems most probable, however, that they were those contained in his second memoir on the heat of animals and vegetables, which he this year presented to the Royal Society. The only ground for doubting it is, that at the head of this paper, in the Transactions, it is stated to have been read in part on the 19th of June, and the remainder on the 13th of November, whereas the date of the foregoing letter is March.

This was one of the most valuable of the many excellent papers which Hunter furnished to the Royal Society, both on account of the importance of the subject treated of, and the valuable deductions he has drawn from his experiments. The inquiry was both new and complicated, and it is not therefore surprising, that whilst adding much to what was before known on the subject, he yet left some errors to be corrected, and many parts requiring to be ex-

tended and filled up by the labours of later physiologists. Hunter never contented himself with the character of a mere maker of experiments, but always aimed at drawing general conclusions; and he perhaps occasionally fell into the error of generalizing from insufficient data. Hence we find that on the present subject his experiments are sometimes not sufficiently varied, and are defective, for want of those precautions against disturbing influences which characterize the inquiries of Edwards, Marshall Hall, and other physiologists, who have of late trodden in the same path.

Hunter does not seem to have considered his own inquiries on the subject as at an end, for he recurs, in many of his letters written after this time, to his experiments on hedgehogs, as the following letter written about this time, evinces.

"Dear Jenner,

"I received yours by Dr. Hicks, with the hedgehog alive. I put it into my garden: but I want more. I will send you the picture; but by what conveyance? or by what place? I have a picture by Barrett and Stubbs. The landscape by Barrett; a horse frightened at the first seeing of a lion, by Stubbs. I got it for five guineas: will you have it? I have a dearer one, and no use for two of the same masters; but do not have it excepting you would like it, for I can get my money for it.

"I am glad you have got blackbirds' nests. Let me know the expense you are at, for I do not mean the picture to go for anything, only for your trouble.

"Ever yours, J. H.

"N. B. I should suppose the hedgehogs would come in a box full of holes all round, filled with hay, and some fresh meat put into it."

Jenner had, about this time, become involved in an *affaire du cœur*, which, unfortunately, ended in disappointment. Hunter had heard a rumour of his expected marriage, but not of the rejection of his addresses; and in his next letter expresses his hopes that his information may prove to be correct.

"Dear Jenner,

"I don't know what I wrote to you last. I do not know if I thanked you for the cider. The hedgehogs came, with one dead, which was a female with young, and which I made a preparation of. I have since got the blackbirds, which I think will do vastly well. I have not yet sent the picture; it is packed up ready to go, and shall be sent immediately.

"I was told the other day that you was married, and to a young lady with considerable fortune. I hope it is true, for I do not know anybody more deserving of one. Let me know whether it is so or not. I hope you keep an account of all expenses. What is become of your paper on lead in cider? Let me have it, and I will send it to the Medical Society. How do the fossils go on?

Jenner was of a rather sensitive disposition, and as he had probably calculated pretty certainly on success in his suit, was much affected for some time by the disappointment. Hunter was, moreover, not exactly the person "to trust a love tale to," and Jenner accordingly delayed to reply to his inquiries until the receipt of the following letter, which requiring an immediate answer, he summoned courage to communicate the real state of affairs.

"Dear Jenner, [*Post-mark, Aug.* 30.]

"I hope this winter to be able to get you some preparations of the eye and

lymphatics; but Hewson's preparations are to be sold this month; now perhaps for four or five pounds some preparations may be picked up. If you have no objection to throw away so much money, let me know, and what subjects you would like best. I shall give you some commissions about heat, cold, &c.

Yours, JOHN HUNTER."

On learning how Jenner's hopes had been frustrated, Hunter kindly expresses his regret, but, as might be expected, recommends to the lover a summary dismissal of the lady from his memory, and like a skilful physician, undertakes to find him other employment for his thoughts.

"DEAR JENNER,

"I own I was at a loss to account for your silence, and I was sorry at the cause. I can easily conceive how you must feel, for you have two passions to cope with, viz., that of being disappointed in love, and that of being defeated; but both will wear out, perhaps the first soonest. I own I was glad when I heard you was married to a woman of fortune; but 'let her go, never mind her.' I shall employ you with hedgehogs, for I do not know how far I may trust mine. I want you to get a hedgehog in the beginning of winter, and weigh him; put him in your garden, and let him have some leaves, hay, or straw, to cover himself with, which he will do; then weigh him in the spring, and see what he has lost. Secondly, I want you to kill one in the beginning of winter, to see how fat he is, and another in spring, to see what he has lost of his fat. Thirdly, when the weather is very cold, and about the month of January, I could wish you would make a hole in one of their bellies, and put the thermometer down into the pelvis, and see the height of the mercury; then turn it upwards, towards the diaphragm, and observe the heat there. So much at present for hedgehogs. I beg pardon,—examine the stomach and intestines. If Hewson's things go cheap, I will purchase some that I think proper for you; those you mention will, I am afraid, be everybody's money, and go dear. Ever yours,

"*London, Sept. 25th*, 1778." J. HUNTER."

Hunter's next letter is dated in November, and relates chiefly to the physiological experiments which he had requested Jenner to make, and to another inquiry respecting the breeding of eels, to which he had directed Jenner's attention in a former letter.

"DEAR JENNER, *London, Nov.* 9, 1778.

"I received yours, with the eel. The spawn of the salmon was lost. I shall send you back the eel again, with the liver, stomach, and gut removed, and nothing left but a fringe which passes down the sides of the backbone, which I took, and still take to be the spawn; but I never saw any difference in it at any time of the year; and this one you have sent is similar to all I have yet seen. I think your stopping the eels a good plan, if you can; but I should suspect they would be more slippery than hedgehogs. I do not know if hedgehogs burrow. About a month hence examine another, and compare him with your notes and memory also. Examine his heat in the pelvis, diaphragm, &c.; a month after that another, &c. I like your experiment on the toad and snake; but bury them rather deeper, and let the ground be kept moist about them, especially in summer. I shall keep all your letters, but I expect in the end all your notes. I like your friend Ludlow much; he is a lively sensible fellow. I have got a few preparations for you; I am getting them put into a little order for you before I send them. Are there no bats in the old castle of Berkeley? I should like similar experiments to be made upon them to those of the hedgehog. Mrs. H. desires her compliments to you.

"Believe me to be, most sincerely yours, JOHN HUNTER."

Hunter this year completed his work on the Teeth, by publishing

the second part, containing an account of the disease which these organs are liable.

Mr. Home had now resided six years with Hunter, in which time he had completed his education; and as he had no emoluments to expect by remaining longer an inmate of his house, since, says he, "his expenses had always hitherto exceeded his income," he was glad to obtain the very eligible appointment of surgeon to the new naval hospital at Plymouth, where he was immediately called on to take charge of the men who had been wounded in the late action under Admiral Keppel.

It may seem surprising, that after having been so long in practice, and after acquiring so considerable a reputation as Hunter at this time enjoyed, his finances should still have been in an embarrassed state; but it must be remembered that Hunter had for some years past maintained his two establishments in London and at Earl's Court; to supply the wants of an increasing family, and, what was probably most expensive of all, to provide for the outlay required for the maintenance and extension of his museum. Mr. Hunter once declared to Mr. Lynn that the museum had cost him upwards of 70,000*l.*; and when it is recollected that the whole of his professional income, which for the last ten years of his life was very considerable, was, with the exception of his domestic expenses, wholly devoted to this object, we cannot doubt that this estimate was near the truth; at least the sum of 15,000*l.*, voted for its purchase by Parliament, fell very far short of the actual outlay, to say nothing of the time and talent unceasingly devoted by himself and others to its completion. Rarely, however, have the labours of those great men who have advanced before the age they have adorned been duly appreciated, until another generation has arisen to weigh their merits in an impartial balance.

CHAPTER V.

1779 to 1788.

Mr. Hunter's paper on the hermaphrodite black cattle;—his anxiety for rare specimens to enrich his museum;—renewal of the disagreement between him and his brother.—Mr. Hunter's paper on small-pox during pregnancy;—his paper on the hen pheasant.—Trial of Sir T. Boughton.—Croonian lectures.—His paper on the organ of hearing in fishes;—removes to Leicester square;—assists in forming the Society for the Improvement of Medical and Chirurgical Knowledge.—Charlatanism.—Correspondence.—Mr. Hunter's notion of the immateriality of matter from the theory of colours;—his paper on the inflammation of veins;—his fame and practice at this time;—his merits as an operating surgeon;—his illness returns;—his second visit to Bath;—Mr. Home acts as his assistant.—Mr. Hunter's paper on the double-coned Terebella;—his operation for popliteal aneurism;—is appointed Deputy Surgeon-general to the Army;—his Treatise on the Venereal Disease;—his work on the Animal Œconomy;—prints his own works at his own house;—his paper on the Wolf, Jackal, and Dog;—his paper on Whales.—The giant O'Brien.—Obtains the Copley medal;—opens his museum to the public.—Mr. Home and Mr. Keate appointed assistant surgeons at St. George's Hospital.—Sits for his portrait to Sir Joshua Reynolds.—Sharpe's engraving.—Death of Pott;—comparison between him and Hunter.—Pott's character.

In 1779 Hunter's valuable memoir on the hermaphrodite black cattle, or free martin, was read before the Royal Society.* As usual, he has by no means confined himself to a bare anatomical description of the peculiar malformation of the genital organs in these animals, but has introduced the subject by a variety of observations on hermaphroditism in general, which render his paper a very important contribution to this branch of physiology.

It will be remembered that in his last letter to Jenner, Hunter had requested him to make some further experiments on the heat of the hedgehog during its torpid state. He had as yet received no com-

* Amongst those present at the reading of this paper was the illustrious anatomist Von Soemmerring, then a young man, as the following letter, written by him on his being elected a Fellow of the Royal Society, will show:

"*Franfurt am Mayn*, 20*th August*, 1827.

"Dear Sir,—Feeling myself extremely honoured in being admitted as a foreign member by the very first literary Society in the world, I beg the more from you the favour to return my best and sincerest thanks, as I always remembered with singular pleasure to have been present in the year 1788, at the reading of John Hunter's celebrated paper on the free martin, not imagining at that time once to become myself associated to that illustrious assembly, by whose exertions I profited infinitely in all my studies.

I am, dear Sir, with great respect, your obedient humble Servant,

Samuel Thomas von Soemmerring, F.R.S.,
Privy Counsellor to H. M. the King of Bavaria,
Knight of several I. and R. Orders.

To Dr. Young, Foreign Secretary of the Royal Society."

munication on the subject, and accordingly wrote the following short note, as a spur to his friend's activity.

"Dear Jenner,

"What are you doing? How do the hedgehogs get on? How cold are they in the winter? &c. &c. Let me hear from you. I have not yet sent the preparations for you. I have added an eye to one of them of my own making.

"*London, Jan.* 16, 1779. Yours, J. Hunter."

Jenner had not been idle, however, but was able to give so good an account of his proceedings that Hunter seems to have resolved not to allow so valuable a coadjutor to remain unemployed; accordingly, though he rarely put confidence in any experiments which were not conducted by himself, or under his own eye, he suggested to Jenner some further ones, respecting the state of the digestive powers during torpor.

"Dear Jenner,

"I thank you for the trouble you have taken. I do not see another experiment to be made with the hedgehogs, but one: get a piece of meat into the stomach of one, during the very cold weather, and kill him twenty-four hours after, to see if it is digested, which I have done with lizards. This may be difficult; but suppose he was made lively in a warm room, and then fed, and put out into the cold immediately, with a little hay over him. If this does, two or three may be served in the same way, and kill them at different distances, respecting time. Observe their breathing when in the cold; if possible, the quickness of the pulse and fluidity of the blood. If you chance to get more than you use, I would take a few to put into my garden, to walk about in the evenings.

"Is there no chance to see you in London this winter? Do come and see us. I shall send you a paper of mine on the free martin, also one to Ludlow. I wrote to him in answer to his letter; I hope he received it. If a good deal of that air in the hog's guts could be collected, see if a candle would burn in it as large as in common air. I had a letter from Mr. Cheston, of an ossified thoracic duct; I wish he would let me have it: you see how greedy I am. You will hear from me soon.

"Ever yours, John Hunter."

The above letter furnishes an example of the eagerness with which Hunter sought to draw all curiosities connected with his researches within the sphere of his museum. He was indeed a most resolute beggar for every specimen which particularly pleased him by its rarity, and which chanced to be in the possession of any of his friends. The late Dr. Clarke had a preparation of an extra-uterine pregnancy, in which the fœtus had been detained in the fallopian tube, and had there undergone partial development, when the mother died from internal hemorrhage, consequent on the rupture of the tube. On this specimen he set a high value, and Hunter had often viewed it with longing eyes. "Come, Doctor," said he, "I positively must have that preparation." "No, John Hunter," was the reply, "you positively shall not." "You will not give it me, then?" "No." "Will you sell it?" "No." "Well then, take care I don't meet you with it in some dark lane at night, for if I do, I'll murder you to get it."

Winter returning, brought back Hunter's thoughts to his inquiries

on vital heat, and we find him accordingly writing to remind Jenner to prepare for fresh operations against the hedgehogs.

"Dear Jenner,

"I have not troubled you with any letter this long time, nor have I heard from you. This moment, I do not know if I sent you the butterflies; if they are not sent, they shall this week. I want you to pursue the experiments on the heat of the hedgehog this winter; and if you could send me a colony of them, I should be glad, as I have expended all I had, except two: one an eagle ate, and a ferret caught the other.* Mrs. Hunter and I were at Bath the other day, and came home by way of Gloucester; we wished much we could have staid a day, to have waited on you. Let me hear from you soon.

I am, dear Jenner, yours,

"*London, Nov. 8th*, 1779. John Hunter."

In 1780 that unfortunate disagreement took place between the Hunters, of which mention has been made in a former part of this memoir. It commenced in John Hunter's presenting to the Royal Society a paper on the structure of the placenta, in which he claimed for himself the honour of discovering the true mode of union between this organ and the uterus, a discovery which Dr. Hunter had communicated as his own, in his work on the Gravid Uterus. What could have induced Hunter to bring forward such a claim twenty-five years after the alleged discovery, and five years after the publication of Dr. Hunter's work, it is not easy to say. The probable explanation seems to be, that something unpleasant had previously passed between the brothers, and that, under a consequent feeling of irritation, Hunter transmitted his paper to the Royal Society.† Whether his claims were well or ill founded; whether any part of the discovery was his; or what it was, it is impossible, from the evidence now before us, to decide. Dr. Hunter, in a letter to the Royal Society, denied having derived his information from his brother, and asserted that the discovery was the result of many years' patient investigation of the subject on his part.‡ To this a

* Hunter's account of his hedgehogs reminds one of Magendie's remark on the dogs whose evil stars bring them acquainted with the interior of his physiological slaughter-house. "*Vous savez, Messieurs*," said the Professor to his class, "*que les chiens ne s'amusent pas ici.*"

† Such an explanation has, in fact, been commonly given, but the causes assigned have been various. Some confidently allege that Hunter's resolute determination to marry Miss Home gave offence to his brother, who strongly remonstrated against his forming an alliance with a lady who had neither rank nor fortune, which, he asserted, would slacken his endeavours after fame, and mar his fortune. By others a dispute is said to have occurred between them respecting certain preparations, now in the Hunterian Museum at Glasgow, to which both brothers laid claim; but through the inquiries of Professor Badham, who has kindly investigated the subject, it has been shown that no just grounds for this account exist, although such a tradition has certainly prevailed on the spot. It is needless at this time to scrutinize further into so unpleasant an affair, although it was one which probably affected Mr. Hunter's feelings more powerfully than any other event of his life.

‡ Letter I. "*Windmill Street, Feb.* 3, 1780.

"Dr. Hunter begs the favour that the Secretary to the Royal Society will read to the Society what follows.

"Mr. Hunter's account of the structure of the human placenta, explaining

rejoinder was sent by Hunter, reasserting the truth of the account he had given of the transaction, but adding that as his brother seemed unwilling to allow him the whole merit, the former should

the connexion and circulation between the mother and the *fœtus in utero*, which was read at the last meeting of the Royal Society, informs us that it was a discovery which he made with Dr. Mackenzie, and that it was not claimed by me. The Society will be sensible that I am reduced to the necessity of taking notice of this mistake, when they are informed of the following facts :

"First. That the doctrine has been many years ago published in printed books as my discovery, and had been communicated as such by myself. See Baron Haller, for instance, in the second part of the eighth volume (p. 220) of his great Physiology, in quarto, printed thirteen or fourteen years ago.

"Secondly. Besides treating of it as my own discovery, in my lectures upon the subject, I have always done so for many years last past, in the very first lecture of my course, which is the most public of all, because the door is then open to every person whose curiosity prompts him to be present.

"In the third place, occasionally both in what I have printed, and in my lectures, I hope I have not overlooked opportunities of doing justice to Mr. Hunter's great merits, and of acknowledging that he had been an excellent assistant to me, in this and in many other pursuits. By doing so I always felt an inward gratification, shall I call it, or pride? I had given him all the little anatomical knowledge which I could communicate, and put him into the very best situation that I could for becoming what this Society has for some time known him to be. May it be presumed, then, that I stand possessed of the discovery in question, till proofs shall be brought to dispossess me? I shall most willingly submit to the pleasure of this Society. If they signify an unwillingness that this emulation (I will call it) should go on, I shall acquiesce, and be silent. If curiosity, justice, or the laws and practice of the Society should incline the Council to seek out and determine upon the merits, I shall be equally ready to obey their commands. And if it should appear reasonable to them, I would first beg to know the grounds of Mr. Hunter's claim, as I am too well acquainted with his abilities not to think that he must be able to support his claim by something that I am ignorant of. And if I should receive that satisfaction, I shall immediately show that I am more tenacious of truth than even of anatomical discoveries. But if that information should not alter my thoughts upon the question, I shall show to the satisfaction of the Society, if I can at all judge of my own employments and pursuits, that my pretensions arise out of a long series of observations and experiments, made with a view to the discovery in question : that it was not a random conjecture, a lucky thought, or accidental occasion, but a persevering pursuit for twelve or thirteen years at least, the progress of which was always publicly known here, and admits of the most circumstantial proof.

WILLIAM HUNTER."

LETTER II.

"*To the President of the Royal Society.*

"SIR, *Jermyn-street, Feb.* 17, 1780.

"Though I know the constitution of the Society over which you preside too well to suppose that they will give their judgment on any subject, and respect it too much to think it a proper field for waging the war of controversy, I cannot avoid requesting you to lay before that learned body a short answer to the paper given in by my brother, Dr. Hunter, as silence on my part, after his charge, may be interpreted by my enemies into an acknowledgment that I have intentionally claimed to myself a discovery in reality his due. I am as tenacious as he is of anatomical discovery, and, I flatter myself, as tenacious, also, of truth. The discovery was made in the manner in which I stated it in my paper. Dr. Mackenzie had injected the subject, and being unable, as I conceived, to explain an appearance which he had found in dissecting it, sent for me. I came to him,

be welcome to share it, provided that a part at least of the discovery was adjudged to himself; which, after all, would have probably been the fairest mode of adjusting their claims.

Here the discussion terminated. The Royal Society decided to take no further cognizance of the matter, and would not allow the offending paper to be published in the Transactions. Between the brothers, unhappily, the estrangement produced by the dispute continued undiminished until Dr. Hunter was on his death-bed, though to John Hunter at least, if not to both, it was often a cause of deep regret. During Dr. Hunter's last illness, which occurred three years after, his brother requested that he might be admitted to see him: this was acceded to, and he continued to visit him daily, and to afford him professional assistance until his death. Notwithstanding this apparent reconciliation, the feeling of soreness seems not to have been quite obliterated from the mind of Dr. Hunter, since it did not lead him to make any alteration in the previous disposal of his property, and he died without leaving any portion of it to his brother. Dr. Baillie, however, to whom Dr. Hunter left the family estate, with great generosity ceded it to Mr. Hunter, as soon as the will was proved.

Two other papers of Hunter's were read before the Royal Society, and published in their Transactions for this year. The first of these, which was presented in January, contained the account of a woman who had taken the small-pox during pregnancy, and passed safely through the disease, but some weeks after fell into premature labour, and was delivered of a dead child, bearing on its body an eruption precisely similar in its character to the small-pox in an

and having examined it further, explained the appearauce in question, then, for the first time, to my own satisfaction and that of Dr. Mackenzie; and in the evening of the same day, full of the discovery, I came to Dr. Hunter, and brought him with me to Dr. Mackenzie, to see and judge of the explanation I had given and Dr. Mackenzie had agreed to. This is my state of the fact upon which I ground my belief of myself being the author of this anatomical discovery; but as my brother thinks differently, after a period of twenty-five years, I am content to abolish all remembrance of the successions of time in the course of that day, and to suppose that Dr. Mackenzie, Dr. Hunter, and myself, inspected the parts together, and made the discovery: by which means the honour of it will be divided into three, one of which I may surely be allowed to take to myself, the other two may appertain to Dr. Mackenzie and Dr. Hunter, if they choose to claim and be content with them; though in this division we must make some reserve for the claim of several ingenious young men, at that time pupils, who were with us, and, of course, entitled to some proportional share in the discovery, though their present situations, settled at a distance from this town, have prevented them from getting early notice of the present claim, and, of course, of making application to the Society for their share. However, I may here declare, that if Dr. Hunter will produce to me any claim which I can allow of his having discovered this anatomical fact at any period of time prior to this conference at Dr. Mackenzie's, I shall first declare, in excuse for having troubled the Society, that I was not before acquainted with it, and immediately after declare that he is entitled to the sole honour of it, at least in preference to myself.

"I am, sir, your much obliged, and most obedient humble servant,

JOHN HUNTER."

advanced stage. To the details of the case are subjoined some valuable considerations, suggested by them to Hunter's mind.

The second paper contains observations on a phenomenon of not unfrequent occurrence amongst pheasants, and several other species of birds; that, namely, of the hen bird's assuming a plumage like the cock's. This change is found to occur only when the hen has ceased from breeding, and, as Hunter supposed, only when the cessation was the result of old age; but more recent researches have shown, that a disease of the ovary, unfitting this organ for producing eggs, may give rise to the change of plumage even in young hens.

The following letter to Jenner, dated 4th of March, appears to have been written this year, and like most of the others, relates chiefly to various objects of natural history received or expected by him from Berkeley.

"Dear Jenner,

"This very evening I was going to write to you, when behold a basket came with pea-fowls, lizards, and birds' legs. I know nothing of the natural history of the viviparous lizard, but shall ask Sir Joseph Banks, who, I dare say, knows; but I should like to have them when with young, therefore beg you will give a genteel reward to those who will bring you several; and let me know in what situations they are commonly found, that I may employ others to hunt for me. How did the puppy and you agree?

"Last night I looked over all your letters, to see the one giving me the account of the porpoise, but I could not find it; therefore I must beg your account of them, and the milk, &c., which I hope you will send soon. Lord Berkeley has not sent for his dog. Have you had any account of the bustard?

"Monday morning has produced nothing new; so good day to you.

"*March 4th.* J. Hunter."

In March 1781 Hunter appeared as a witness at the Warwick assizes, in the famous trial of Capt. Donellan, for the supposed murder of his brother-in-law, Sir Theodosius Boughton. Great public interest was excited by this trial at the time, and the medical evidence adduced on the occasion has furnished subject for comment in almost every English work on legal medicine published since that time.

Sir T. Boughton, a young man, previously in good health, expired in convulsions about half an hour after taking a draught of rhubarb and jalap, sent him by his medical man, but with which it was supposed Capt. D. had subsequently mixed laurel water, as Sir T. Boughton's mother observed that the draught smelt of bitter almonds.

Suspicions of poison were excited, and about ten days after death the body was disinterred, and examined by several medical men, who, however, made but an imperfect inquiry, as they neglected to investigate either the brain or the intestines. At the inquest suspicion fell on Capt. Donellan, who was consequently arrested, and tried at the following assizes.

On the trial, four medical witnesses gave it as their opinion, from the symptoms, and the appearance on dissection, that Sir T.

Boughton had been poisoned, and that laurel water had been the means employed.

Hunter, on the other hand, with that proper caution which resulted from his extensive knowledge, avoided drawing so hasty a conclusion. He asserted that the appearances described as having been seen on dissection, were such as might have arisen from putrefaction alone; and with regard to the symptoms, that they might have been caused by apoplexy or epilepsy as well as by poison, a point which an examination of the head would have gone far to decide. He allowed, on his cross-examination, that the occurrence of the symptoms immediately after taking the draught, was a circumstance in favour of it having caused them; and "*if*," said he, "*I knew the draught was poison, I should say that, most probably, the symptoms arose from that.*" But he very properly, and indeed with the direction of the Court, separated in his mind the circumstantial evidence adduced to show that the draught was poison, from the medical testimony he was called on to draw from the symptoms and dissection: and having done so, he said he felt it impossible to give any decided opinion as to the cause of death.

Mr. Justice Buller, who presided at the trial, seems to have lost his temper at not being able to draw a more decided opinion from Hunter as to the real cause of death, and on summing up, threw out some sarcastic remarks on the doubts he had suggested, and attached no weight whatever to them. The consequence was, Capt. Donellan was found guilty and executed. The circumstantial evidence against him, indeed, was rather strong, so that we ought not perhaps to consider this, as some have done, an instance of judicial murder: assuredly, however, there was not sufficient ground for conviction, and the conclusions of the medical men opposed to Hunter rested, for the most part, on completely unsatisfactory data, and should have had but little weight in the decision of the question.

In 1781 Hunter was elected a Fellow of the Royal Society of Belles Lettres at Gottenburg.

In 1782 he completed his series of six Croonian lectures on muscular motion,* of which he had annually delivered one since 1776, with the exception of 1777, when for some reason he

* From the following letter of Hunter's to Sir J. Banks, it would seem that he experienced some difficulty in getting paid the money allotted for the support of the Croonian lectures. With whom the fault rested does not appear; but as Hunter was not fond of being troubled about money matters, to cut short the affair he applied to the President.

"*Jermyn-street, July* 25, 1781.

"Sir,—The last lecture on muscular motion which I had the honour to deliver was the fifth. Sir John Pringle made a point of my applying for the money allotted for such purposes, which I did; but there were reasons given for my not receiving it then. You have also desired me to apply, which I have done, both to Mr. Wegg and Mr. Robertson, but have been shifted from one to the other. I thought it my duty, both to you and the Society, to acquaint you of this. I have the honour to be, with great respect,

"Your most obedient and most humble Servant, John Hunter."

did not give any lecture. In these discourses he unfolded many novel and ingenious views respecting the causes of motion in vegetables and animals, and on the various modes of progression employed by the latter, in swimming, flying, leaping, running, &c. At their conclusion the Royal Society expressed a desire of publishing them; but Hunter objected to it, as he did not consider his information sufficiently complete for this, and was accordingly allowed to withdraw them, with a view to publication at some future period. He never found leisure, however, to carry this intention into effect; but some of his observations were introduced into the work on Inflammation, and others Sir Everard Home embodied in his own publications on comparative anatomy. The latter have met with general approbation amongst continental physiologists, but they have not always been traced up to their true author.

He also presented this year a paper on the organ of hearing in fishes, in which he gives a general account of the structure of the organ in this class of animals, and shows that in the Ray tribe and some other fishes there is an external opening. He was the first who pointed out this fact, and, as appears by the following letter, was anxious to secure himself the credit of his discovery, which he feared some other philosopher might run off with; since, from the date of the following letter, it would seem that his paper had been given in the year before, but for want of opportunity could not be read.

"Dear Sir Joseph, 1781.

"If it was possible and agreeable to read a little bit of my paper upon the ears of fish, so as to be able to publish it, I should be glad, as somebody now will rob me of the external opening in the Ray kind, and in other fish.* I have left it open for future inquiry, because I have a preparation of it, but cannot say what fish till I shall learn that by future inquiries; but all this I leave to you, as I know you have my credit at heart.

"I am, dear Banks, your much obliged, John Hunter."

In 1783 Hunter was elected a Member both of the Royal Society of Medicine and the Royal Academy of Surgery in Paris.

The lease of his house in Jermyn-street expiring this year, he purchased the remainder of the lease of some more extensive premises, now occupied by the National Repository of Arts, on the east side of Leicester-square, consisting of a dwelling-house in the square, with a large portion of ground extending to Castle-street, where there was a second smaller dwelling; between the two he determined on building a museum. That this was a very imprudent transaction, in a pecuniary point of view, there can be no doubt. His lease was only for twenty-four years, and the sum he expended in the building was not less than three thousand pounds. It seems, however, that his mind had been so harassed with the difficulty of obtaining an eligible site, that it was a relief to be able

* Dr. Hunter used to say that "philosophers lie like the devil." It would seem that his brother thought they also thieved like the devil; and we must allow him to have had some experience.

to conclude even such a bargain as this. The new building was to consist of a room above, for the reception of his collection, fifty-two feet long by twenty-eight wide, lighted from the top, and furnished with a gallery all around. Under this were two apartments, one of which he designed to employ as a lecture-room; the other, for which no particular use was at first allotted, afterwards became the place of meeting for the Lyceum Medicum, a society which Hunter and Fordyce were the means of establishing, and of which they were chosen two of the patrons. All that Hunter could spare from his income was for the next two or three years devoted to carrying the above plan into effect, and he used often to complain to his friends that he was now obliged to spend in bricks and mortar what would have been otherwise expended in enlarging his collection. To the new building, the house in Castle-street was subservient, and in the various apartments of it the different departments of human and comparative anatomy were carried on. The house in Leicester-fields was occupied by Hunter and his family.

Notwithstanding his architectural engagements, Hunter found time to take an active part, with Dr. Fordyce and others, in the formation of the "Society for the Improvement of Medical and Chirurgical Knowledge," which was established in 1783, and continued in existence about twenty years. This, like the present Medico-Chirurgical Society, had its appointed meetings for receiving and discussing treatises on medical subjects, and those which were judged worthy of it were reserved for publication. During the whole existence of the Society only three volumes of transactions were published; but these contain many valuable papers from the pens of Fordyce, Hunter, Baillie, Home, Blane, Wells, Abernethy, and others. Amongst the early contributors we also find the name of Jenner, whose attention had lately been turned to improving the mode of preparing the emetic tartar, and who communicated the results of his experiments in a paper to the Society. Several of Hunter's letters to Jenner, written about this time, relate to the subject, in which, as usual, he took a kind and active interest.

"Dear Jenner, [*Post-mark Nov. 14th.*]

"I received yours, with the experiments on heat and colours, but have not had time to pay sufficient attention to the colours. I also received your little publication with the Tart. Emet. I have a great deal to say about it. First, do you mean to take out a patent? Do you mean to advertise it? or do you mean to let it take its chance? I approve of it much, and will do all in my power to promote the sale; but I would advise you to give it a new name, expressive either of the composition, or of its virtues on the body, viz. sal antim., or sal sudorif., or sal antim. sudorif. I would also desire you to burn your book, for you will have all the world making it. Let me have your answer to all this.

"Ever yours, J. Hunter."

The piece of advice given in the latter part of the foregoing letter affords an example of that want of high professional feeling occasionally displayed by Hunter. Perfect liberality in the communication of professional knowledge which may contribute to the general benefit should ever characterize the enlightened physician.

It is this conduct which forms the honourable distinction between quackery and one of the noblest of human pursuits; and the practitioner who, in seeking after wealth, neglects to observe it, deserves to rank only with the venders of secret medicines and professors of secret modes of cure, who in all ages have found ready dupes amongst the ignorant and credulous, whether of high or low degree.* Jenner had too high a respect for his professional character to follow the advice, and, accordingly, made his method generally known, by publishing it, as has been before observed, in the Transactions of the Society for the Improvement of Medical and Chirurgical Knowledge, a channel which, as will be seen in one of his future letters, Hunter himself recommended.

The following letter was probably written soon after this proceeding, as it is filled with directions respecting experiments on colours, a subject on which, as we have there seen, Jenner had been making some experiments. The want of this gentleman's letters leaves us to guess at the object of the experiments proposed, but from their nature it may be inferred that they were to be conducted on an individual labouring under that incapacity for discriminating between certain colours which is not unfrequently found, in a greater or less degree, in different individuals. Hunter's object appears to be, to ascertain whether the incapacity arises from a general defect in the perceptive power, or whether certain primary colours fail to make their accustomed impression, and hence the compounds into which they enter appear different from what they really are.

"Dear Jenner,

"I thank you for your last letter: I want you to pursue the inquiry considerably further: and to give you an idea of what I mean, I will first premise that there are in nature but three colours, viz. *red*, *blue*, and *yellow*, all the others being

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*Notwithstanding some late notable instances of successful imposture, there seems fair ground for believing that quackery is on the decline in this country. We should hardly, in the present day, find a judge proclaiming from the bench his belief that a bone-setter was just as skilful and efficient in his business as any surgeon; nor can Sir Benjamin Brodie complain, as Mr. Pott did, that any Mrs. Mabb drives her carriage and four into London to take charge of the dislocated limbs of the nobility and gentry. It would appear, from the following anecdote, that in Hunter's time these worthies were even admitted into consultation by well educated professional men; and we know that certain departments of surgery, as the operations on the eye, &c., were still entrusted to men ignorant of the first principles of medicine. The Taylors of Whitworth were empirics who enjoyed much repute in treating diseases of the rectum. Thurlow, bishop of Durham, and brother of the Lord Chancellor, laboured under stricture of the rectum, for which the faculty promised little relief. The Chancellor invited Taylor to see his brother, and several medical men met him in consultation: Hunter came late, and Taylor was invited to proceed in the examination; but he bluntly refused, and said he would do nothing till Jack Hunter came, for he had no opinion of any but him. Hunter soon arrived: Taylor made his examination, and declared it a bad case; but passed a candle, besmeared with an ointment he had brought with him. Hunter took up the box, and asked what the ointment was made of. "That," said Taylor, turning to the Chancellor, "is not a fair question: no, no, Jack, I'll send you as much as you please, but I won't tell you what it 's made of."

combinations of these three. First, present him with these three colours singly, and see what he calls them; then altogether (not mixed), and see how far they correspond with his first ideas of them: when that is ascertained, then begin to mix them; for instance, blue and yellow (which make a green), see what he calls that; then a yellow and red (which make a scarlet); next a blue and red (which make a purple). Now to explain the intention of these experiments. Suppose he has a perfect idea only of one colour; and although you mix that colour ever so much, yet he sees none of the other, but only that colour in the mixture. Suppose all the three colours, when seen singly, or unmixed, with him are blue; mix blue and red (making a purple), he will only see the blue, the red not being visible to him; and so on of the others, according as he sees them. Suppose that a simple colour makes no impression, but a compound one does, viz. green (which is composed of blue and yellow); then mix blue and red in all proportions, to see what the colour is. Then mix yellow and blue in all proportions, and see what colour these are: if he sees no green in any of them, then mix all the three colours in various proportions, and see what colours those make. When all the colours are mixed in various proportions, and the whole is a green, perhaps of different shades, according to the quantity of blue and yellow, then you may fairly conclude that it is the mixture of the blue and the yellow which produces it, the red never making any impression.

"If there is any other simple compound that he sees, as scarlet, which is the yellow and the Modena red; or a purple, which is blue and red; see if, when those two are predominant in the mixture, (although there are all three colours in the mixture,) that the compound becomes the visible colour.

"The drawing of the skull has been made ever since you desired it, but I had forgot it. I have a cast for you of the aneurismal varix, as described by Dr. Hunter. How shall I send both? Let me know.

"Ever your much obliged, JOHN HUNTER."

The following letter, which was probably written about this time, relates to the metaphysical inquiry as to the nature of matter. It appears to have been hastily written, and certainly does not lead us to regret that Hunter did not more often quit natural philosophy for metaphysics. Both facts and reasoning are unsound.

"DEAR JENNER,

"I received yours, with the heron's legs. Could you not get a live heron or bittern,—or see how they make that noise,—and send them to me? I will pay expenses. By the by, you were to have sent me some hedgehogs. I am putting my things into some order, and shall find some Don Saltero's for you.

"My proof of the non-existence of matter is in colours, there being no such thing as a primary colour, every colour being a mixture of two, making a third. Thus, green is a mixture of blue and yellow; blue is a mixture of purple and green; yellow is a mixture of green and orange; and so on of the other colours. Therefore all colours are compounds. But what are they compounds of? Of nothing but themselves. And what are themselves? Nothing. If there were three colours that were permanent, (for with less than three we can hardly compound to any extent,) which could not be produced from any compounding of colours, then I would say, there is something immutable in matter, although metaphysicians might say this was only an immutable idea, or an idea of immutability; but that is only applying abstract reasoning to matter, or what we call matter; but when we see that there is no such thing as permanency in one species of matter, viz. light, and that it can be proved from the matter itself, it then comes more home to our understandings than all the reasoning in the world.

"Yours always, J. H."

His next letter, written in December, relates almost entirely to Jenner's new medicine.

"Dear Jenner, [*Post-mark Dec. 15th.*]

"I have delayed writing longer than I intended, and longer than what I should have done, and even now I do not know well what to write. I love a new name so well that I could have wished it had been christened. Mr. Jones informed me that there was a man of some fortune making experiments with the same view; he may hit on some method better than the present, and which may or may not be as good as yours; or it may be thought to be as good. I asked Jones if he had any objection to have it advertised at his shop: he did not give me a direct answer, and he is now out of town. I should be glad to have a few of the printed accounts. I could send them to different people; to Black and Cullen, &c., amongst the rest. I like your experiment upon the dogs with it: if you make any more, let me have them. The experiment on the dog's thigh you did not finish. You told me he had extracted the plug, and that the ball of the thermometer went in with ease, but you did not say how high the mercury rose. Let me know what service I can be to you.

"J. Hunter."

Hunter's next communication appears to have been made early in the year following. He again recurs to the tartar emetic; but other subjects are mentioned, especially the question as to the mode in which the young cuckoo is reared, a point which Jenner was at this time, at Hunter's request, endeavouring to clear up.

"Dear Jenner,

"I am puffing off your tartar as the tartar of all tartars, and have given it to several physicians to make trial, but have had no account yet of the success. Had you not better let a bookseller have it to sell, as Glass of Oxford did his magnesia? Let it be called Jenner's Tartar Emetic, or anybody's else that you please. If that mode will do, I will speak to some, viz., Newberry, &c.

"You are very sly, although you think I cannot see it: you very modestly ask for a thermometer; I will send one, but take care those d—d clumsy fingers do not break it also. I should be glad to have a particular account of the cuckoo, and, as far as possible, under your own eye. To put all matters out of dispute, if the cuckoo's eggs were taken out of the hedge-sparrow's nest in which they were laid, and put into another's, by human hands, there could be no supposition that the parent cuckoo would feed or take care of them. I also want some young ones. I had a series from you, but a moth got in among them, and plucked them. Let me hear from you when you can.

"Yours, J. Hunter."

Jenner had been also engaged in making some observations on the migration of swallows, the result of which he communicated to Hunter, who, in his reply, suggests a difficulty with regard to one of the observations.

"Dear Jenner,

"To show you how much I am pleased to hear from you, I sit down to acknowledge the receipt of yours this evening. Somebody before told me of your experiment on swallows; but you should not have made the same experiment on both the old and the young of the same nest, for you do not know whether it was the old or the young that returned. I have been for some time going to write to you, to inform you there is a medical society set up here,* who intend to give papers in medicine and surgery, and also to receive. I think your paper on the Tart. Emetic would make a good paper, and probably the one on the ophthalmia, which you may probably take a little more pains about. If you should like to have them published, I can communicate them. If your account of the cuckoo is not so full as you see it may be, keep it to another year, for I am in no hurry.

"I am, dear Jenner, ever yours,

"*Jan. 26th.* John Hunter."

* Society for the Promotion of Medical and Chirurgical Knowledge.

In February Hunter's paper on Inflammation of the Veins was read before the Medical Society above mentioned, and is included in the first volume of their Transactions. Hunter was the first who understood and explained the nature of this affection, which he has described in several of its more usual forms. Little attention seems to have been excited by it at the time. Mr. Abernethy indeed, not long after, contributed some additional information on the subject; but from that time until 1815, when Mr. Hodgson recalled the attention of the profession to the question, no pathologist had pursued the inquiry farther. Since that time much additional light has been thrown on the nature of these affections by the labours of Carmichael, Travers, Guthrie, Arnott, and Dr. Lee in this country, and MM. Bouillaud, Velpeau, Breschet, and Ribes in France, by whom it has been shown that many of the important and dangerous symptoms following venesection, amputations, parturition, &c., are due to inflammation of the internal coats of the veins.

In May Hunter wrote again to Jenner, and requested him to draw out his process for making tartar emetic, that he might present it to the Society for the Promotion of Medical and Chirurgical Knowledge.

"Dear Jenner,

"You must excuse me if I am not very punctual in my answers: it is my loss, not yours. In my last but one you mention my having anything of the porpoise I wanted. I should be glad of one of the nipples. I hope you have got the thermometer. I want the cuckoo cleared up: I am afraid it is now too late. I wish you would shoot an old one for me, and send its gizzard in spirits.

"I wish you would draw out the process for making the tartar emetic. The physicians that I have given it to speak well of it as a more certain medicine than the other; however, I am afraid it will be too late for this year's publication; but put it to paper. Your paper must be published before you can think of being a member, and then we will stir for you. Ever yours,

"*May 29th.* John Hunter."

Jenner immediately complied with his directions, and his paper was read at the first meeting of the Society, in June.

In the course of this year Mr. Home returned to London on leave of absence from Jamaica, where he had been acting as Staff-Surgeon, and on his arrival was permitted to exchange on half pay. "I found Mr. Hunter," says he, "advanced to a very considerable share of practice, and a still greater share of public confidence:" and he afterwards adds, "at this period Hunter may be considered as at the height of his chirurgical career; his mind and body were both in their full vigour; his hands were capable of performing whatever was suggested by his mind; and his judgment was matured by former experience;" in confirmation of which he goes on to mention some of the remarkable operations which Hunter successfully performed about this time.

With regard to this latter point, namely, Hunter's talents as an operator, a remarkable diversity of opinion exists amongst competent judges. By some, Sir Everard Home's account of his great

skill is most fully confirmed, whilst by others his ability in this department of surgery is rated very low. In the opinion of Sir Astley Cooper, whose judgment on the subject must be considered as at least as likely to be correct as that of any man living, Hunter scarcely deserved to be considered a dexterous operator, certainly not an elegant one; but his large experience, and his extraordinary skill as an anatomist almost always enabled him successfully to complete any operation he undertook: though slow, he was sure. Hunter does not seem, indeed, to have been ever ambitious of particular renown in this field. He used frequently to say, "To perform an operation, is to mutilate a patient we cannot cure; it should therefore be considered as an acknowledgment of the imperfection of our art."

The new building which Hunter had been erecting for his museum was completed in 1785, and Mr. Home, Mr. Bell, and Mr. Andre, whose services Hunter had engaged, were employed in superintending the removal of the preparations to their new site.

If Hunter's building-expenses had of late prevented his purchasing objects for his collection, he appears now to have again begun to add to its stores. We accordingly find him making his accustomed calls on Jenner for objects of natural history, and, amongst others, for a bustard, the largest and one of the rarest of English birds.

"Dear Jenner,

"I am very much obliged to you for your attention to me. I will very readily give three guineas for the bustard, therefore give such orders as you think fit. I request the whole history of the cuckoos this summer from you. I have bought a house in Leicester-fields, and shall move this summer, when I shall be able to pick out some things for you. Give my compliments to Clench, and I hope to see him before he sets out for Newfoundland; if I do not, let him think of the white hares, to tame a buck and doe, and send them to me. Let me know in your next what you are doing. I hope to see you in London in about two years hence, when I shall be able to show you something.

"I am, dear Jenner, ever yours, John Hunter.

"When the bustard arrives, I will write to you."

The bustard was accordingly procured and sent, and the receipt of it acknowledged in the following letter.

"Dear Jenner,

"I have received the bustard safe, as also the bones. Your friend Mr. Hazeland has been very kind, for which I wrote to him and thanked him; but when you see him or write to him, express the same, as an indirect thank is better than a thousand direct ones. Are hedgehogs in great plenty? I should like to have a few. You must pursue the cuckoo this summer. I am employed building, moving, &c. I wish this summer was well over. When I am fitted up, I hope you will come and see me. Ever yours,

"*April* 22. J. Hunter."

Soon after the date of the foregoing letter, Hunter began to suffer from a very painful and distressing affection of the heart and arteries; an affection, to the recurrence of which he was constantly liable during the remaining years of his life. He had been troubled, as usual, during the early part of the spring, with slight symptoms

of gout; after a time these subsided, but were succeeded by irregular spasmodic affections of the face, arms, chest, and stomach, and finally, by a violent spasm of the heart, which, after half an hour of agonizing pain, ended in syncope. The faintness continued about ten minutes, at the expiration of which he started up, without any recollection of his previous illness. Similar attacks, though slighter in degree, returned very frequently for some time after, especially on occasion of any extra exertion or mental anxiety; and indeed the latter cause seems to have been mainly instrumental in exciting the first incursion of the disease, for when pressed by Dr. D. Pitcairn on this point, he admitted that his mind had been much harassed with a fear lest he should be attacked by hydrophobia, in consequence of a wound which he had received in the hand whilst examining the body of a person who had died of that disease. After a time the spasms became less frequent, though even now they were easily re-produced by a fit of anger, or by trifling anxiety of mind, as about the hiving of a swarm of bees, the fear lest an animal, which he wished to procure, might escape before a gun could be brought to shoot it, and similar causes. Various remedies were of course tried for the relief of his sufferings, but with scarcely any effect; and, amongst other means, he was advised to try the waters at Tunbridge. Thither he accordingly went in August; but after a fortnight's trial, finding himself rather worse, he resolved on repairing to Bath, where he had formerly derived much benefit. He arrived at Bath early in September, and in the following letter we find Mrs. Hunter communicating to Jenner the presence of his friend in his neighbourhood.

"Dear Sir, *Bath, Sept.* 13, 1785.

"I take it for granted you will not be sorry to hear Mr. Hunter is so near you, though you will lament that want of health is the occasion. He has been tormented with a flying gout since last March, and we are come here in hope of some favourable crisis before the winter. He has been inquiring for the post to Berkeley, and I find within this hour that it goes off this evening: as he is now asleep after dinner, I rather write myself than disturb his nap, to inform you of our being in your neighbourhood, and that Mr. Hunter will be glad to hear from you. I am, dear Sir, your obedient Servant,

"*No.* 12, *South Parade.* A. Hunter."

Hunter remained in Bath about five or six weeks, and derived some little amelioration of his sufferings. At the end of that time he returned to London, and resumed his occupations.

During the whole of this illness, and of his absence from home, his brother-in-law, Mr. Home, was intrusted with the care of his practice. This gentleman therefore necessarily became an inmate of his house, and as Hunter's state of health, even after his sojourn at Bath, was too infirm to allow him to dispense with the presence of an able assistant during the performance of important operations, and to attend to night calls, Mr. Home continued to act in this capacity up to the time of Hunter's death.

Hunter's continued ill health had prevented his contributing as

largely as usual to the Transactions of the Royal Society. The only communication which he made this year was an appendix to a paper of Mr. Home's on the Double-coned Terebella, an animal which he had brought with him from the West Indies. The infirmity of his body had not, however, abated his ardour for the improvement of his profession, and it was in December of the present year that he planned, and carried into execution, his famous operation for the cure of aneurism; that of tying the artery at a distance from the tumour, and between it and the heart, instead of laying open and emptying the sac, and then seeking for the orifices of the vessel, according to the old operation. He was led to propose this improved method in consequence of the frequent failure of the operation by the old mode, and thus introduced into surgery an improvement which has been more fruitful in important results than any since Paré's invention of the ligature for divided arteries.

Our Gallic brethren have stroven hard to dispossess Hunter of the honour of this invention, and have adjudged the whole merit to their own countrymen. This of course. Three candidates, Guillemeau, Anel, and Desault, have accordingly been brought forward, to each of whom they have decreed a certain portion of the honour, and whose united services, as they assert, entirely forestalled those which it has been generally thought that Hunter rendered to surgery by his successful operations. The following are the grounds on which these pretensions rest. Guillemeau, a pupil of Paré, in a case of aneurism of the brachial artery, caused by a puncture in bleeding, tied the vessel immediately above the tumour, then opened and emptied the sac, and healed it from the bottom. Anel, about a century after, in a similar case, tied the artery as Guillemeau had done, but left the sac unopened. Desault, a few months before Hunter's operation, placed a ligature on the artery in the ham, above the tumour, in a case of popliteal aneurism: the sac inflamed, suppurated, and discharged its contents; a fistulous sore remained, and the man died at the end of seven or eight months.

Now, of these three operations, that of Guillemeau appears to be absolutely devoid of any shadow of claim to be considered as even a first step towards Hunter's. It was simply the old operation reversed; instead of first opening the sac and then tying the artery, he tied the artery first, and opened the sac afterwards. Anel's operation undoubtedly merits more consideration, and it must be admitted that he first demonstrated the truth of one of the important principles on which Hunter's operation is founded, namely, that *the impulse of the blood into the aneurism being restrained by a ligature placed on the artery above the tumour, the further progress of the disease will be checked*, without the necessity for a ligature being also placed on the artery below the tumour. Two other principles however remained to be proved. First, *That the powers of absorption would suffice for the removal of the coagula in the sac*, and the necessity for opening it be thus done away with. Second, *That*

the anastomosing vessels of the limb, in their natural state, would be capable of immediately taking on such increased action as would suffice for carrying on the circulation to the parts below the point at which the main artery was tied.

With respect to the first of these two principles, Anel's operation proved nothing, for he succeeded, or thought he succeeded, in first emptying the tumour of its contents by pressure, before tying the artery. Neither did Desault's operation prove this point, for we have seen that the sac burst, and discharged its contents. It is true that the removal of the tumour, in the cases of natural cure of large aneurisms, related by Valsalva, Guattani, and others, must have depended on this power in the absorbents, but these authors were not aware of this, and attributed their dispersion to the effect of pressure, resolvents, &c. Nor was the possibility of the coagula being so removed generally admitted by later authors, until after Hunter's operation. Although it would appear, therefore, that Desault intended to trust to the action of the absorbents when he tied the artery in the ham, without opening the sac, yet it was Hunter's operation that really proved the sufficiency of this action. With regard to the third principle, I think a candid examination of the question will satisfy any one, that previously to Hunter's operation it was universally disbelieved that the anastomosing vessels, when not previously enlarged, would be equal to carrying on the circulation of a limb, after a ligature of the main artery. It was by acting in opposition to this general disbelief, and proving their sufficiency for this office, that his operation became the fruitful source of the numerous improvements in the treatment of lesions of the arteries which have since been introduced into surgery.

No doubt, both Anel's and Desault's operations required, for their success, that the circulation should be carried on by the anastomosing vessels, just as the old operation did; but that it was so carried on was accounted for by supposing that the anastomosing vessels in the neighbourhood of the tumour had undergone a gradual dilatation, in consequence of the pressure of this on the main artery. No one had hitherto generalized on the fact, and to place a ligature on the artery in the middle of the thigh, where no such dilatation of the anastomosing vessels had taken place, would have been, in the general opinion, to ensure mortification of the parts below. So deeply rooted was this opinion in men's minds, that some years after Hunter's first operation, we find Pott, in a case of popliteal aneurism, recurring to Desault's operation in the ham, rather than risk mortification by placing the ligature as Hunter had done; and his pupil, Sir James Earle, following his example as late as 1792: and even long after this, many of the French surgeons continued to employ various preliminary measures to cause a dilatation of the branches previously to operating, until repeated successes, without these precautions, had shown their uselessness. If, as it is pretended by French surgeons, Anel's operation was the prototype of Hunter's, how are we

to account for the fact, that during the three quarters of a century which intervened between them the former was never once imitated, whilst the latter was not only immediately imitated, but speedily led to other most important improvements in the operations on arteries? The truth is, neither Anel, nor any other surgeon before Hunter, conceived that it was possible to make those important modifications in the operation which the latter introduced, and which could alone render it generally applicable; modifications so important, as in fact to render it a new operation based on new principles. A convincing proof of this is afforded in the very operation of Desault which has been adduced to deprive Hunter of part of the honour which is his due. Had Desault believed in the feasibility of tying the artery in the thigh, would he, in reviving Anel's operation, have followed it so closely as to seek the artery in the ham, where the operation is more difficult, not only from the greater depth at which the vessel is placed, but from the consolidation of parts by previous inflammation? Assuredly not. Another important advantage, too, which Hunter's operation possesses over that of Desault, is the greater chance it affords of finding the artery in a sound state, a consideration so important as to have formed the principal inducement with Hunter to propose his operation.

The difference, then, between the operations of Hunter and Desault, was not, as M. Velpeau pretends, merely that of the ligature being placed two or three inches higher in the one case than in the other; they were essentially different in principle, and justice demands that we should vindicate the claim of Hunter to the entire credit of inventing an operation the importance of which was speedily estimated as it deserved, and which has led to those valuable improvements in the treatment of the lesions of arteries of which modern surgery is justly proud.

It will be seen in the account of the operation given by Sir Everard Home, that Hunter committed some errors, in the first two cases, in the mode of applying the ligatures, which he afterwards corrected. He separated the artery from its connexions to a much greater extent than was safe, and this in order that he might apply four ligatures, which were intended to afford increased security; but so far from producing this effect, did in reality greatly augment the dangers of the operation. These points, however, belong rather to the history of surgery than to a memoir like the present, and as the observations on the subject have already extended to an almost undue length, I must hasten to resume the thread of this narrative.

In 1786, in consequence of the death of Mr. Middleton, Hunter was appointed Deputy-Surgeon-General to the army. In the early part of the same year he published his work on the Venereal Disease, which had been long expected by the public, and which met with a rapid sale. On this work Hunter had bestowed great pains, and before publication he submitted every part of it to a committee

of his friends, consisting of Sir Gilbert Blane, Dr. Fordyce, Dr. David Pitcairn, and Dr. Marshall. It is said that the amendments introduced by these gentlemen were numerous; some have wished that they had been still more so, at least as regards the purely theoretical parts of the treatise. A great diversity of sentiment has prevailed as to the specific or non-specific nature of the disease. The former was decidedly the most prevalent theory at the time Hunter wrote, and he adopted it in all its latitude, and endeavoured to point out the peculiar laws by which it was regulated. Of late years the latter opinion has been gaining ground, and few would now be disposed to go the length which Hunter did when he proposed as a test whether certain diseases be or be not syphilitic, their requiring or not requiring mercury for their cure. Whatever may be thought, however, of Hunter's theory, it cannot be denied that his work contains many ingenious and striking views, and a variety of valuable observations on the various stages and forms of the disease: hence, notwithstanding some improvements which have been since introduced into the treatment of these affections, Hunter's still remains by far the best general work, and requires only the corrections of the gentleman who has undertaken this part of the subject, whose experience of these affections have been of the most extended kind, to render it the universal book of reference on this complicated and Protean disease.

Towards the end of this year he published also his work on the Animal Œconomy,* consisting chiefly of a collection of his most important papers in the Philosophical Transactions, to some of which he has made considerable additions. Besides these, the work contains his paper on the descent of the testis in the fœtus, with large additions; his account of the structure of the placenta, which the Royal Society had declined to publish; and other shorter memoirs, of minor importance. This volume is undoubtedly one of Hunter's ablest productions, consisting as it does of accurate anatomical descriptions of various parts of the animal structure, together with original and ably conducted researches and sound and striking conclusions on some of the most important questions in general physiology. It has been before remarked, that we can seldom form an adequate notion of the contents of Hunter's various papers from the titles which he gave them. This remark is fully exemplified in those contained in the Animal Œconomy, a know-

* Hunter adopted the plan of printing the first edition of this work, as he did several of his previous works, under his own eye, and indeed in his own house. His reason for doing this was, that before the Irish Union it was no unfrequent proceeding with booksellers to send a copy of the manuscript, or else the proof sheets, of any valuable work to Dublin, where a cheap edition was hastily got up and imported to England so as to be ready for sale as soon as the original work, by which means the author was deprived of the profits which would have accrued to him from a second edition being called for. This proceeding, however, gave great offence to the booksellers; and as some of them were old friends, with whom he did not wish to quarrel, he gave the publication of the second edition to Mr. Nicol, of Pall Mall, and Johnson, of St. Paul's Church-yard.

ledge of which is necessary to such as desire to become well acquainted with the Hunterian museum, or with the style and strength of his reasoning on physiological subjects. We may also easily discern, in some of his remarks, the germs of important doctrines in physiology which have been since enlarged on and given to the world as new discoveries.

The correspondence between Hunter and his friend Jenner had gradually become more infrequent; not from any decrease of their mutual esteem, but from the increasing occupations of both. The following letters, however, appear to have been written during the latter part of this year, and refer to a subject which had been frequently mentioned before, namely, Jenner's researches respecting the cuckoo.

"Dear Jenner,

"I have been long expecting a long letter from you, informing me of your method of curing ophthalmias, history of cuckoos, &c. I received your dog-fish; are you sure that the spawn or egg came from her? there were none in her: if it did, then there is a species of dog-fish oviparous. Let me hear from you soon.

"*Sept. 7th.* Ever yours, J. Hunter."

"Dear Jenner,

"I have all your letters before me, but whether I have answered any of them or not I cannot recollect. First, I thank you for your account of the cuckoo, and what further observations you can make I shall be glad to have them, or even a repetition of the former will be very acceptable. I received the bird: it is well known; but I look upon myself as equally obliged to you. I also received your cocks, which were very good. I have bought the print of Wright, viz. the Smiths, which is his best. There is one more I would have you have, I mean Sir Joshua Reynolds's print of Count Ugolino: it is most admirable, and fit only for a man of taste. We had a sale of bad pictures lately, but there were some good heads: I gave a commission for them for you, thinking they would come cheap, but unluckily there were some that saw their merit as well as I, and they sold above my commission. Pictures seem to be rising again. I will not send you yours till I hear from you.

"I am told there is the skin of a toad in Berkeley Castle that is of prodigious size. Let me know the truth of it, its dimensions, what bones are still in it, and if it can be stolen by some invisible being. I buried two toads last August was a twelvemonth; I opened the grave last October, and they were well and lively.

"Have you any queer fish? Write to me soon, and let me have all the news, &c. &c.

"Anny sends, with little John, their compliments. From yours, &c.

John Hunter."

Jenner having at length completed, as he supposed, his observations on the cuckoo, drew them up in the form of a paper, to be read before the Royal Society, and transmitted it for this purpose to Hunter, who in the following letter, states the reasons why he had not already presented it.

"Dear Jenner, [*Post-mark April* 26.]

"I received your papers, and should have presented them to the Royal Society before now, but for almost the whole of this winter we have had nothing but disputes in the Society, and giving up of Secretaryships, &c., and are not yet settled; but when we are I will give in your paper, but shall take a copy of it, that in case they should not publish it in the Transactions, it may be probably published by the Medical Society, who will make it of more use than the Trans-

actions. The person you mentioned, who was attempting to make the medicine, called on me and left his name. When you have anything new, let me hear from you.

"I pity poor Cheston, for the loss of his son. Ever yours,

"JOHN HUNTER."

Shortly after this Jenner's memoir was read, and would have been published in the Transactions for 1787, but since delivering it he had discovered the fact that the eggs and young of the hedge-sparrow are ejected from the nest by the young cuckoo, and not by the parent bird, as he had at first supposed; he was therefore allowed to withdraw the paper, in order to correct this error, and its publication was put off till the year following.

Whilst Jenner was pursuing his observations on the cuckoo, Hunter, it would seem, was busied in trying to make pearls, by introducing extraneous substances into oysters, as nuclei, for them to form on. What success he met with does not appear, and indeed the following letter of his to his friend Sir J. Banks gives us all the information we possess respecting this inquiry.

"DEAR SIR JOSEPH, 1787.

"I have these two days been draining the pond, or rather fishing for pearls, the success of which you will see by the specimens. Those I had made the experiments on were dead, but there is one recent. I have a few alive that I mean to put under experiment; but I shall open the shell and put in the extraneous body. If any other method suggests itself to you, be so good as to inform me. I would not have you make Lady Banks a present of them; I hope to get better, at least as large as my thumb. I lately got a *tall man*, but at the time could make no particular observations. I hope next summer to be able to show you him. "I am, dear Sir Joseph,

"Your much obliged, JOHN HUNTER."

Hunter presented two papers to the Royal Society in the course of this year. The first contains observations tending to show that the Wolf, Jackal, and Dog are of the same species. The second is a long and valuable treatise on the structure and economy of Whales, illustrated by a number of very excellent engravings. Hunter had pursued his researches on these animals with great diligence and success, considering his necessarily limited opportunities for making observations. In this paper he mentions a fact which shows how little he spared expense in the pursuit of his favourite studies. As he found it impossible to obtain proper subjects on which to pursue his inquiries to the extent he desired, he engaged a surgeon, at his own expense, to proceed to the North in a Greenland whaler, after having given him such anatomical instruction, and provided him with such other means as would, he supposed, enable him to obtain some valuable information respecting the Whale tribe. But his choice of a messenger proved an unfortunate one: for all that he got, in return for his trouble and expense, was a bit of whale's skin, with some barnacles stuck on it. This eagerness of his to obtain rare and valuable specimens for his museum, often led him to pay more than its worth for an object he desired to make his own, as the following account of the manner

in which he acquired the skeleton of Byrne, which heads the osteological collection, will probably be thought to prove.

Byrne, or O'Brien, the famous Irish giant, died in 1783. He had been in a declining state of health for some time previously, and Hunter, anxious to procure his skeleton, sent his man Howison to keep watch on his movements, that he might be sure of securing his body at his death. Byrne learned this, and as he had a horror of being dissected, determined to take such precautions as should ensure his not falling into the hands of the doctors: he accordingly left strict orders that his body should be watched day and night, until a leaden coffin could be made, in which it was to be inclosed, and carried out to sea and sunk. Byrne died soon after, and, in compliance with his directions, the undertaker engaged some men to watch the body alternately. Howison soon learned this, found out the house where these men went to drink when off duty, and gave information to Hunter, who forthwith proceeded thither with the view of bribing them, to allow the body to be carried off. He had an interview with one of the party at the ale-house, and began by offering him fifty pounds if he would allow the body to be kidnapped; the man agreed, provided his companions would consent, and went out to consult them. He returned shortly, saying that they must have a hundred pounds. Hunter consented to this, and thought the affair settled; but the men finding him so eager, soon came back with an increased demand, which was also agreed to; when further difficulties were found, and larger and larger demands made, until, it is said, they raised the price to five hundred pounds! The money was borrowed from Pidcock to pay them; and in the dead of night the body was removed in a hackney coach, and after having been carried through several streets, was transferred to Hunter's own carriage, and conveyed immediately to Earl's Court. Fearing lest a discovery should take place, Hunter did not choose to risk the delay which the ordinary mode of preparing a skeleton would require; accordingly, the body was cut to pieces, and the flesh separated by boiling; hence has arisen the brown colour of the bones, which in all other respects form a magnificent skeleton.

The Royal Society this year conferred on Hunter the Copley medal, as an honourable testimony to the importance of his discoveries in natural history. He also received, about the same time, another mark of the estimation in which his labours were held, by being elected a member of the American Philosophical Society.

The arrangement of Hunter's museum was now completed, and he had the gratification of opening it for the inspection of his friends and acquaintance during two months in each year; in October to the medical profession, and in May to those noblemen and gentlemen who felt an interest in such subjects.

Hunter's private practice was now so extensive, whilst his bodily health had so much diminished, that he determined on applying

to the Governors of St. George's Hospital to allow him an assistant. His colleague, Mr. Gunning, determined on making a similar application at the same time; and we accordingly find amongst the minutes of the Committee for this year the following entry:

"Mr. Gunning and Mr. Hunter present their compliments to the gentlemen of the weekly board, and beg the favour of them to summon a Special General Court for the purpose of electing two assistants, a favour which has been formerly shown to Mr. Middleton, Mr. Hawkins, and Mr. Bromfield, in consideration of their many years' services to the hospital.

"The persons whom they beg leave to recommend to this situation are Mr. Keate, Surgeon in ordinary to His Royal Highness the Prince of Wales, and Mr. Home, who has been bred up under Mr. Hunter.

"They flatter themselves the propriety of their recommendation will render this indulgence the less exceptionable."

The request was complied with, and these gentlemen elected, the Court suspending a by-law which forbade physicians or surgeons of the hospital to recommend assistants or deputies. Mr. Gunning and Mr. Hunter at the same time declared that it was far from their intention to give up the necessary attendance at the hospital.

Hunter's friends had long been desirous to engage him to sit to Sir J. Reynolds for his picture; but he had always hitherto declined to do so, not choosing that it should be done at the expense of others, and thinking the price too high for himself to pay. He was, however, at length induced to comply, chiefly to oblige Sharp, the eminent engraver, who had received much notice from Hunter, and was very anxious to be permitted to make an engraving from Sir Joshua's picture. Reynolds found Hunter a bad sitter, and had not been able to satisfy himself with the likeness, when one day, after the picture was far advanced, Hunter fell into a train of thought, in the attitude in which he is represented in the present portrait: Reynolds, without saying a word, turned the canvas upside down, made a fresh sketch, with the head between the legs of the former figure, and so proceeded to lay on over the former painting the colours of that which now graces the walls of the library at the College of Surgeons. From this portrait Sharp executed his engraving, which is admitted by the best judges to be one of the finest, if not the very finest specimen of the art ever executed. The doubt rests chiefly between this and another engraving by the same artist,* "The consultation of the Doctors on

* Poor Sharp, though a man of extraordinary talent in his art, was singularly devoid of common sense. He was a devotee, and a firm believer in the pretensions of the prophet Brothers and the aged virgin Johanna Southcote; but at the same time a man of profligate habits. Hunter was a great admirer of his talents as an artist, and possessed a large portfolio of splendid engravings by Sharp and other eminent masters in the art. Sharp always considered his engraving of Hunter as one of his happiest efforts, and was found poring over it with admiration forty years after he had executed it. Hunter took fifty copies of the engraving, at two guineas each, and the plate proved a milch-cow to the artist. One of the

the immaculateness of the Virgin," after Guido, for both are thought to be superior to the best efforts even of Raffael-Morghen or Desnoyers.

Hunter's increased professional engagements prevented his continuing to be any longer so large a contributor as formerly to the Transactions of the Royal Society. During the next five years we find but one short paper of his, namely, a Supplement, in 1789, to his Observations on the Wolf, Jackal, and Dog, given two years before. Nor do we find that he contributed anything this year to the Transactions of the Medical Society before mentioned; and for the future he generally entrusted to his brother-in-law the business of communicating an account of such improvements, or observations of a professional kind, as he thought deserved to be recorded.

We find also that his correspondence with Jenner for this year was confined to a single letter, and that principally in reply to a consultation respecting a case of disease of the urinary organs, which Jenner had under his care.

"DEAR JENNER, *May*, 1788.

"I have been going to write to you some time past, but business and a very severe indisposition for three weeks past has prevented me; but when two guineas rouse me, I cannot resist. Have you tried a bougie, to find if there is any mechanical stoppage? As there is blood in the urine, is there no stone? Would it not be right to try both? But suppose no stoppage nor no stone, then I would push the cicuta: at the same time he should be very temperate in eating, drinking, and exercise; eat no salt nor made dishes; drink no fermented liquors; but plentifully of everything else, and be very quiet.

"Your paper has been read, passed the Council, and is in print, for I had a proof sheet this day, and I have ordered fifty copies, twenty-five for you and twenty-five for myself, to give to friends. I spoke to both Sir Joseph Banks and Dr. Blagden about your wish. Sir Joseph has not the least objection, and will give us all his assistance, but he thinks the paper had better be first printed and delivered, and let the people rest a little upon it, for he says there are many who can hardly believe it wholly. This will put off the certificate till the beginning of next winter, when we shall hang you up. I have received a box, with a wapping landlady and two lizards. Mrs. Hunter's and my compliments to Mrs. Jenner.

"I am, dear Sir,

"Your most obedient Servant, JOHN HUNTER."

In December of the present year an event occurred which left to Hunter the undisputed title of the first surgeon in England; this

means by which Sharp succeeded in attaining to such perfection in his works was the following: he always kept a number of engravings in hand at the same time, in various stages of their progress; it was his practice to commence working on those parts which required least delicacy in the execution, and when he had got his hand well in, or when he felt particularly in cue, immediately to transfer his operations to those plates which were in a state to require delicate manipulation. For the engraving of Hunter, which was prefixed to the first edition of his work on Inflammation, edited by Home, Sharp received fifty guineas, a large sum at that time. It is so exact a copy of the portion of the large engraving which it represents, that it was supposed by some to have been actually a portion cut out of the original plate; there is, however, every reason to believe that this latter is still in existence.

was the death of the veteran Pott. It is true that for some years past Hunter had been in possession of a larger share of practice and of public confidence than any other member of the profession; but as Pott still lived, and, notwithstanding his advanced age, continued actively engaged in practice, the recollection of his former fame maintained to him a high degree of public esteem, and left it doubtful to which of these eminent men the priority of station should be adjudged. On the 22d of December, however, this able surgeon and excellent man expired, at the age of seventy-five, after an illness of only a few days, having retained the full use of his faculties almost to his last moment. It will be recollected that Pott was amongst the earliest of Hunter's instructors in surgery, but in after-life they gradually assumed somewhat of a hostile attitude towards each other. A great dissimilarity existed in their characters and attainments; and as, from the position which each occupied, and from other circumstances, comparisons were often instituted between them, it may not be uninteresting to endeavour briefly to show in what this dissimilarity chiefly consisted.

Pott was a man of quick natural talents and of sound sense, which had been improved and strengthened by a good classical education, and by constant assiduous attention on his own part in after-life. As a surgeon he was thoroughly versed in the history of medicine in all ages, and knew well how to bring this knowledge to bear on the practice of his profession. His correct observation enabled him to discover many of the errors of his predecessors, and his ingenuity and judgment, to correct them; and thus by the combined effects of his own and others' experience, he was the means of introducing many valuable improvements into the practical departments of surgery. He was not fond of employing physiological reasoning to guide his practice, but aimed rather at founding his treatment on immediate analogy and induction from established facts than on broader general principles; the theoretical part of our profession, therefore, he did little to improve. As an operator Pott was eminently skilled; as a lecturer, clear, energetic, and fluent; as a writer, classically correct and elegant. In society he was agreeable, witty, and abounding in anecdote, and at the same time kind and gentlemanly in his manners. Though hospitable in his mode of living, he was prudent in regard to pecuniary matters, and though he commenced his profession poor, brought up a large family liberally, and left them well provided for at his death.

The account already given of Hunter has sufficiently shown how destitute he was of many of those acquirements which added lustre to the character of Pott, and which mainly contributed to obtain for him the high esteem which he so long and deservedly enjoyed. But in spite of these deficiencies, Hunter, by the force of his own genius, which was unquestionably of a much higher order than that of Pott, and by his unwearied industry, forced his way at length to the summit of his profession; and, as Dr. Beddoes observed,

"when one heard that Hunter was at length the first surgeon in London, one felt a satisfaction like that which attends the distribution of poetical justice at the close of a well told tale."

CHAPTER VI.

1789 to 1793.

Mr. Hunter's high station in the profession at this period ;—anecdote of his early rising.—Mr. Thomas.—Sir A. Carlisle.—Mr. Lynn.—Instance of Mr. Hunter's generosity ;—stands godfather to Dr. Jenner's first child ;—his paper on intussusception ;—his paper on paralysis of the œsophagus.—Mr. Home's paper on the formation of loose cartilages.—White's New South Wales.—Mr. Hunter's illness ;—his violence of temper ;—his style of living ;—his fondness for bees ;—his Tory politics.—Funeral of Sir Joshua Reynolds. Mr. Hunter's paper on bees ;—his letter to Sir Joseph Banks on this subject ;—his surgical lectures ;—his work on the Blood and Inflammation.—Veterinary College established.—Mr. Hunter's disagreement with his colleagues at St. George's Hospital ;—his death, and character as a private man and as a philosopher ;—his will and effects ;—the purchase of his museum.—Correspondence between Lord Auckland and Sir Joseph Banks on this subject.—The terms on which this purchase was finally made.—Rebuilding of the College of Surgeons.

We have thus traced Hunter's career from the time when, as a raw and uneducated youth, he first made his appearance on the stage of his future labours and his future fame, upwards through

> "What rugged places lie between
> Adventurous virtue's early toils
> And her triumphal throne,"

to the period when, after forty years of almost unexampled industry, he had raised himself to the highest place, not only in the estimation of the public, but in the more valuable, because more discriminating, judgment of the most intelligent amongst the rising generation of professional men. By the latter he was looked up to as the author of a new æra in surgery; and his opinions were current, not only amongst those who had been his immediate pupils, but amongst all the younger members of the profession who aspired to keep themselves on a level with the advancing state of medical knowledge. Hunter's behaviour was well adapted also to secure him the regard and the homage of his junior brethren; for he was by no means backward in encouraging the advances of young men of talent who desired to cultivate his acquaintance, readily afforded any slight attentions in his power to those coming to London to finish their studies, and recommended such as had completed their education to situations in the army if he found them industrious and intelligent. It may be worth while to mention a few instances

of this sort, which, though trifling perhaps in themselves, will not be without value if they tend to illustrate the character of this eminent man.

On his arrival in London, Mr. Thomas, in company with Mr. Nicol, by whom he was to be introduced, called on Hunter: they found him dressing. "Well, young gentleman," said Hunter, when the first ceremonies of introduction were over, "so you are come to town to be a surgeon; and how long do you intend to stay?" "One year," was the reply. "Then," said he, "I'll tell you what, that won't do; I've been here a great many years, and have worked hard too,* and yet I don't know the principles of the art." After some further conversation, Mr. T. was directed to call again in an hour, which he did, and accompanied Hunter to the hospital, where he said to him, after the business was over, "Come to me to-morrow morning, young gentleman, and I will put you further in the way of things; come early in the morning, as soon after four as you can." It was summer: Mr. Thomas kept the appointment, and found Hunter, at that early hour, busily engaged in dissecting beetles. Mr. Thomas afterwards became his dresser at the hospital, and was finally recommended by him as surgeon to Lord Macartney's embassy to China, on returning from which he found that Hunter had died during his absence from England.

Sir A. Carlisle, whilst a pupil at the Westminster Hospital, was anxious to become personally acquainted with Hunter. He introduced himself by calling and requesting his acceptance of a very delicate and well-executed preparation of the internal ear. Hunter was highly delighted with it, detained him to breakfast, and in the course of conversation encouraged him by saying, "Any man who will set about a business, and do it as you have done that ear, may do anything he pleases in London." On finding that Mr. C. had not yet attended his lectures, as a reason for which he assigned his not being sufficiently advanced in professional knowledge to profit by them, "That, Sir," said Hunter, "is very complimentary, but I will give you a perpetual ticket, and shall be glad to see you whenever you will call." This invitation was not neglected, and Mr. Carlisle's anatomical skill soon made him a favourite with Hunter, to whose collection he contributed several valuable preparations.

Nor did Hunter confine himself to such minor attentions as these, but occasionally assisted young men whom he saw struggling with

* It is a not uncommon practice with great men to conceal the amount of labour bestowed by them on their works, in order to heighten the opinion of their genius. Hunter seems to have been above this artifice; he worked hard, and he cared not who knew it. His contemporaries might under-value his labours, because they could not understand their object, but he never doubted their usefulness. "Ah, John Hunter, what still hard at work!" said Dr. Garthshore, on finding his friend in the latter years of his life busy in his dissecting-room. "Yes, Doctor," said Hunter, "still hard at work; and you'll find it difficult to meet with another John Hunter when I am gone."

pecuniary difficulties at the outset of their career, by sending them valuable patients; or even extended his kind consideration still further, as the following anecdote, which is not quite correctly related by Mr. Abernethy in his Hunterian oration, will show.

Mr. Lynn, who was for many years on intimate terms with Hunter, suffered a long illness in consequence of having wounded his hand in opening the body of a man who had died from a syphilitic affection. Hunter frequently called to see him, and one day, after expressing regret at his misfortune, and the obstruction it caused to his business, offered to lend him two hundred pounds, adding, that though he was the last man in the world to be able to do such a thing, yet that he would stretch a point, in consequence of the esteem he had for Mr. Lynn. His friend had been more prudent, however, than Hunter supposed, and did not then require assistance, but said, that should he have occasion for it he would not fail to apply to him. "Nay," said Hunter, "what I offer I will do now, but what I may be able to do a week hence it is impossible for me to say." On his recovery, Mr. Lynn went to thank him for his kindness. Hunter had forgotten the circumstance; "But," said he, "if I did say so, you may depend on it I meant what I said."

But to resume the thread of my narrative. His old friend Jenner had long ere this sufficiently recovered from the effects of his first disappointment to plead his cause successfully with another lady, and he this year wrote to communicate to Hunter the news of the birth of his first child, to which he requested him to stand godfather; and as Hunter had no more intention than other godfathers of burthening himself with the performance of what he undertook, he readily acceded to the request, as will be seen in his reply.

"Dear Jenner, [*Post-mark, Jan.* 29.] 1789.
"I wish you joy: it never rains but it pours. Rather than the brat should not be a Christian I will stand godfather, for I should be unhappy if the poor little thing should go to the devil because I would not stand godfather. I hope Mrs. Jenner is well, and that you begin to look grave now you are a father.
"Yours sincerely, J. Hunter."

Two other letters of his, written in the early part of this year, to Jenner, show the diligence with which he promoted the interests of his friends; they relate to the admission of the latter into the Royal Society, of which body he was made a Fellow, in consequence of his interesting communication respecting the cuckoo. The first is as follows:

"Dear Jenner,
"You are to be balloted for next Thursday. I think there can be no fear of success. You shall have a letter from me by the Friday's post.
"Yours sincerely, John Hunter.
"I have wrote to Dr. Glass."

The second communicates the intelligence of his election.

"Dear Jenner, *London, Feb. 26th.*
"You was this evening voted into the Royal Society. You will have a letter

from the Secretary; but as that may not be sent for some days, I thought it would not be disagreable to have the earliest notice.

"I am, dear Jenner, your most obedient, JOHN HUNTER."

His own contributions had, as we have before observed, become gradually more infrequent. The only paper he communicated this year was a supplement to his observations on the Wolf, Jackal, and Dog.

To the Transactions of the Society for the Improvement of Medical and Chirurgical Knowledge he furnished a paper on intussusception, where he ingeniously explains the mode in which the several forms of the disease are produced. In the same volume is contained the account of Hunter's operation for aneurism, as before given in the Medical and Surgical Journal, and of a number of additional cases operated upon by Hunter and others. This paper was furnished by Mr. Home.

In the following year he furnished to the same society a paper on Paralysis of the Œsophagus, and pointed out the mode of nourishing the patient, now commonly used in this and some other diseases, by means of a tube passed down the œsophagus. He also provided Mr. Home with the materials for another paper, on the formation of Loose Cartilages in Joints, the presence of which he satisfactorily explains by a reference to pathological preparations.

In 1790 Mr. White, Surgeon-General to the colony of New South Wales, published a journal of his voyage to that country, to which is added an appendix by Hunter on the best mode of collecting and sending home animals, and on the nomenclature and classes of animals, as also a description of the kangaroo, and several other animals of that country.

The following letter to Jenner relates principally to the subject of the presence of hydatids in the body, a phenomenon to which this gentleman, and his biographer Dr. Baron after him, have attached much importance, as giving rise in their opinion, to the formation of many kinds of morbid growth.

"DEAR JENNER,

"I have just received the favour of yours. I have, just now, forgot the case of hydatids; but if there was anything that struck me, I dare say it was laid by. They are frequently in the kidneys; but I should doubt your oil of turpentine having any merit in bringing them away. My reason for supposing them animals is because they move after they have been extracted. I have taken them out of the head or brain of a sheep, and they have contracted in different parts of them when put into warm water. I should be glad to employ you if I knew in what, but if anything comes across my imagination I will think of you. The measly pork are hydatids.

"I am afraid of your friend Mrs. L. There is a hard tumour that almost fills the pelvis, most probably the uterus. How does Mrs. Jenner do? Do you bring her to London? What family have you got? My compliments to Mrs. Jenner; and believe me to be, dear sir,

"Your most obedient and most humble Servant,

"*Dec. 8th*, 1790. JOHN HUNTER."

Hunter's health had continued very precarious ever since his

severe attack of illness in 1785: in December 1789 he suffered under a sudden and entire loss of memory, which lasted half an hour, and then as entirely left him. The spasms about the præcordia were frequently re-produced by very slight causes, as trifling bodily exertion or mental irritation. The latter cause was the most frequent, to which the uncontrolled hastiness of his temper rendered him particularly obnoxious; and so sensible was he of the risks to which it exposed him, that he was accustomed to say that "his life was in the hands of any rascal who chose to annoy and teaze him;" a painful thought, that one possessing a mind of such intellectual vigour should, from neglecting earlier to check this infirmity of temper, at length have allowed it "so to over-master reason" as to reduce him to hold his life on such a tenure.

Notwithstanding, however, his ill state of health, Hunter continued to *enjoy* life; his constant employment prevented *ennui*, and his natural vigour and courage enabled him to bear up against attacks which would have dispirited weaker minds. He does not seem, like his contemporary Dr. Johnson, to have been oppressed with a fear of death; but neither had he, any more than the great moralist, any longing to "shuffle off this mortal coil;" and when a gentleman at his table spoke of Dr. Hunter's expressing, in his last moments, a feeling of satisfaction in dying, Hunter replied, "Ay, 'tis poor work when it comes to that." Indeed, he had sufficient reason for being anxious that his life should be prolonged. As yet he had made no provision for his family; and his museum, on which he had expended so much, and to the sale of which he chiefly looked as the source of such a provision, was as yet greatly deficient in proper catalogues, a want which could not but greatly detract from its value, and to supply which formed one of the chief objects of his attention during the remaining years of his life.

Although Hunter considered his pursuits too important to allow of his devoting much of his time to general society, yet he was hospitably disposed, and, as soon as his income allowed of it, lived in rather a handsome style, kept a carriage and footman for Mrs. Hunter, entertained his friends at dinner, and opened his house to his medical acquaintances every Sunday evening. His house at Earl's Court had been gradually improved and enlarged since his marriage, and some of the rooms had been tastily fitted up under Mrs. Hunter's direction; the drawing-room, in particular, was ornamented with moveable panels, elegantly painted in water-colours, and representing the story of Cupid and Psyche. Here he used to spend a good part of his time during the autumnal months, returning to London in the morning after breakfast, and retiring to dine and sleep with his family at Earl's Court. The grounds were, as usual, stocked with various denizens of earth and air, collected from all quarters of the world, and the garden was well furnished with wall fruit; but this was considered the sole property of his bees, several hives of which were contained in the conservatory, where he used to pursue his observations whilst at home, and leave

some of his family to mount guard during his absence. His fondness for bees was very great, from whence he derived a common but expressive metaphor, which he was in the habit of employing, that "his head was like a bee-hive."

When residing in London his establishment was very numerous, and as he had generally workmen engaged about the premises, not less than thirty persons usually sat down to dinner in his house.

In conversation he seldom displayed wit; but his remarks were often wonderfully pointed and forcible, and showed him to be an original thinker. In politics he was as strenuous a Tory as Dr. Johnson or the renowned Christopher North could have desired, and was not more lenient than they towards those who differed from him in opinion. He used to say, that "he wished all the rascals who were dissatisfied with their country would be good enough to leave it." He had a great dislike, as may be easily imagined, to taking part in any public procession or displays of any kind, and fairly wished Sir J. Reynolds and his friends at the d—l when called on to take part in the funeral of this eminent artist and delightful author.*

In 1792 Hunter contributed his last paper to the Philosophical Transactions. This contained the results of his observations on the hive bee, continued, with various interruptions, during a period of twenty years. The variety of his employments rendered it impossible that he should devote such continuous attention as some others, and especially Huber, have since done to the habits of these very interesting animals; nevertheless, his keen observation did not fail to detect several errors which preceding naturalists had fallen into, especially with regard to the formation of the wax, which he proved to be secreted, not collected, by the animal; and on the whole his paper added largely to the general stock of knowledge respecting the economy of the bee.

He had not confined his attention to the hive bee only, but intended, as will be seen by the following letter to Sir J. Banks, which accompanied his paper, to treat also of the hornet, the wasp, and

* Hunter, with Sir G. Baker and Mr. Home, attended Sir J. Reynolds in his last illness, the nature of which was very obscure, and is said not to have been understood until a fortnight before his death, when it was ascertained to depend on enlargement of the liver. The following is a copy of the *post mortem* examination, the original of which is in the possession of my friend Mr. Palmer, the great-nephew of Sir Joshua, and editor of the present edition of Hunter's works.

"In examining the body of the late Sir Joshua Reynolds, we found no marks of disease in the cavity of the breast, except only a slight adhesion of the lungs to the surrounding membrane on the left side.

"In the cavity of the belly the only diseased part was the liver, which was of a magnitude very uncommon, and at least double of what is natural: it weighed eleven pounds, and was of a consistence which is usually called scirrhous. It had lost its natural colour, and become of a pale yellow.

"We found the optic nerve of the right side shrunk, and softer than natural. There was more water in the ventricles of the brain than what is generally found at so advanced an age.

"24*th Feb.* 1792. G. Baker, John Hunter, E. Home."

several of the solitary bees; and we cannot but greatly regret that his intentions were left unfulfilled.

"*February* 21, 1792.

"Sir,—Allow me to present to you a paper on the natural history of the common bee. It contains the result of experiments and observations occasionally made in the course of the last twenty years. They have been frequently interrupted by my other pursuits, which prevented me from following this subject regularly through any one season, and consequently obliged me to renew it in others. Unforeseen accidents have considerably retarded my progress: a very sultry day melting the comb, the bees removing some eggs or maggots, or a hive dying under experiment, have destroyed the chain of my observations for a whole season.

"It was my intention to have added some remarks on the management of bees in this country, but I am induced, from the length of this paper, to reserve them for another opportunity. If you and your learned Council think them worthy the attention of the Royal Society, I shall hope to have them honoured with a place in your valuable Transactions.

"As I have gone a considerable length into the natural history of this tribe of insects, I hope next winter to give you the account of the wasp, and probably the hornet. I shall afterwards be able to give the wild or humble bee, and many of those called solitary bees, in which I have made considerable progress; and in time I hope to complete the history of the British bees.

"I am, Sir, your much obliged and most humble Servant,

"*Leicester Square*, John Hunter.

"To Sir J. Banks, Bart., P.R.S."

He this year resigned to Mr. Home the office of delivering his surgical lectures, and for this purpose passed over to him all his manuscripts, the greater part of which have unfortunately been either lost or destroyed. On the fly-leaf of each of these lectures were inscribed references to the different preparations which he employed for the illustration of his opinions, which, did they exist, would manifestly afford great aid in determining the specific object of many of these preparations. The loss of these lectures has been lately remedied in part by the publication of the late Mr. Parkinson's notes of them by his son, under the title of "Reminiscences of John Hunter;" and Mr. Palmer will be able, in the present edition, still further to repair the loss, by collating a number of copies, of different dates and by different hands, with each other. To this foundation furnished by Hunter, Mr. Home added a number of new lectures on particular diseases, and on the operations of surgery, which he continued to deliver for a few years, but was never a very popular or diligent lecturer.

Mr. Hunter's chief reason for declining his lectureship at this time was, that he might have more leisure to devote to the completion of his work on Inflammation, which, in justice to himself, he felt it was now time he should make public. As it happened, he did not live to see the entire work through the press, a portion of it still remaining at the time that he died, the office of correcting which devolved on Mr. Home and Dr. Baillie. It was published in 1793, together with a life of the author by Mr. Home.

This work is one on which, above all his other writings, Hunter's fame has hitherto rested; perhaps too exclusively so, since it has

arisen from the circumstance that, with the exception of the treatise on syphilis, his other works have been less generally read than they deserve, in consequence of their having been published either in an expensive form or in detached treatises, scattered through the volumes of the Philosophical Transactions, or of the Medical and Chirurgical Society. There are not, however, any of his writings which do not well deserve the attentive perusal of professional men, not only for the information they furnish, but as models of bold and sagacious reasoning; and hence the present edition, which places within the reach of every professional man the whole of his works, heightened, too, in value by the commentaries of the able men to whose revision they have been severally entrusted, cannot fail to be viewed as a tribute justly due to the merits of Hunter, and as a highly important accession to our medical literature.

The Treatise on Inflammation and Gunshot Wounds must be considered as comprising the results of forty years' assiduous attention to the subject, since, from his Introduction, we learn, that the doctrines it unfolds first suggested themselves to his mind at the time he was a student in the London hospitals, and were based on observations collected during that period. These doctrines he continued during his whole professional career to submit to the test of his own increasing experience and the experience of others, to whom he taught them in his lectures, ever carefully and candidly correcting them where more accurate observations proved them to be faulty, and extending them where fresh information showed them to be deficient; and having thus brought them to as high a degree of perfection as his abilities and opportunities would permit, he at length submitted them to the test of public opinion in the condensed and systematic form in which we now possess them.

Notwithstanding the time and attention he had devoted to the completion of a work on which his future fame was mainly to depend, he was himself fully sensible of its still possessing many defects, and rather desired it to be considered "as a new figure composed from rough materials, in which process little or no assistance could be had from any quarter," than as a perfect work which no further experience could have amended. It must indeed be acknowledged that it does, in many parts, exhibit imperfections of style and diction, as well as repetitions, which not unfrequently obscure the author's meaning; and illogical errors, such as that of confounding proximate and final causes, or employing such imaginary causes as the "stimulus of necessity," "the stimulus of death," "the force of a negative impression," &c., to account for certain effects; phrases which cheat the ear with a seeming explanation, but leave the mind no whit the wiser as to the real causes of the phenomena to be accounted for. These defects, though they do unquestionably detract somewhat from its value, are, however, trifling in comparison with the great and varied excellence of this work, which, for the originality and variety of its experiments, the accuracy of its observations, and the importance of its deductions,

can with difficulty be paralleled in the whole range of medical literature.

About this period the London Veterinary College was first projected, and being liberally supported by several influential noblemen, was speedily established. Hunter felt much interest in its formation, and, with several other gentlemen, took shares in it to the amount of two hundred pounds, and, furthermore, granted to the pupils attending there a free admission to his lectures.

In addition to the honorary distinctions which he before enjoyed, Hunter had this year conferred on him the title of Member of the Irish College of Surgeons, and of the Chirurgo-Physical Society of Edinburgh; but neither these nor any others did he ever append to his name, preferring the simple appellation of John Hunter, which he was fully conscious was better able to confer honour on most Societies than their initials to add importance to it.

We have now arrived at that period when it becomes necessary to notice the unhappy disagreements which had for some time past existed between Hunter and his colleagues at the Hospital, and which now broke out into more decided measures of hostility. It would have been more agreeable, had it been proper, to have passed over these without notice, since they reflect little credit on either of the contending parties; but they are so intimately connected with the fatal event which terminated Hunter's life and labours, that it seemed absolutely necessary, in the present narrative, to notice them somewhat more fully than his former biographers have done.

Mention has already been made of the blunt and overbearing, manner which Hunter not unfrequently displayed towards men of his own standing in the profession. Devoted as he was to physiological pursuits, and firmly persuaded that without an improved knowledge of physiology it would be impossible to attain to correct general principles in surgery, which he looked on as still in its infancy, he viewed with contempt those who were content to guide their practice by past experience alone, or by the erroneous theories of their ancestors. On the other hand, the majority of Hunter's contemporaries considered his pursuits to have little connexion with practice, charged him with attending to physiology more than surgery, and looked on him as little better than an innovator and an enthusiast. There could be little harmony between such discordant elements, and as it was with his colleagues at the hospital that Hunter most frequently came into collison, it was between him and them that mutual want of respect most easily and surely ripened into animosity.

At the commencement of 1792, Hunter's colleagues at the hospital were, Gunning, who was his senior, a man of good talents and high spirit, and leader of the opposition against him; Walker; and Charles Hawkins, the son of Sir Cæsar, and a remarkably dexterous operator. Early in the year Hawkins resigned his situation, and a contest for the vacancy ensued between Keate and Home.

The latter was of course supported by Mr. Hunter, whilst all the remaining medical officers, with the exception of Dr. Baillie, lent their interest to his opponent. The contest was perhaps the warmest in the annals of hospital electioneering, and several of the Royal Dukes attended in person to vote for Mr. Keate, who was chosen by a majority of 134 against 102.

A contest like this, however it might have ended, could scarcely fail to heighten existing animosities; and soon after, Hunter, actuated far more by a spirit of hostility to his opponents than by any desire of pecuniary benefit to himself, announced to them his intention to discontinue the practice of dividing equally amongst the surgeons the admission fees of all the pupils attending the hospital, and for the future to retain for himself the money of those who should enter under his name as pupils; a preference which is determined by various circumstances, and which has never been regarded in any other light than as a compliment. As a reason for this step, he alleges his wish to stimulate the other surgeons to pay some attention to the education of the pupils, which, as he asserts, they were far from doing, but on the contrary had brought disgrace on the hospital by their neglect.

This measure his colleagues resolved to resist, and determined to submit the matter to the decision of the Governors, a step which seems, from the following letter, to have met with Hunter's full concurrence.

"GENTLEMEN,

"As the time approaches when you propose referring to the Governors of St. George's Hospital my determination respecting the money arising from the surgeons' pupils, I beg leave to acquaint you that I entirely agree with you in the mode that you have proposed, a mode I did not myself adopt, as it took from you the power of acceding to my proposal, and made me appear to the Governors as an accuser. But when you bring it before them I shall meet it fairly and very willingly. "I am, gentlemen, your most obedient servant,

"*Leicester Square*, *Feb.* 8, 1793. JOHN HUNTER."

"Messrs. Gunning, Walker, and Keate.

A Special Court was accordingly summoned to meet in March following. Before the day of meeting, Hunter forwarded to each subscriber, for his information, a pretty long printed letter, explanatory of his reasons for the alteration which he had determined to make. In this communication, which is certainly not remarkable either for its liberality or modesty, he gives an account of the various efforts he had made, since his connexion with the hospital, to induce his colleagues to improve the system of instruction; efforts which, he says, all proved ineffectual: one man "did not choose to hazard his reputation by giving lectures," and another "did not see where the art could be improved." Disgusted at his want of success, and resolving not to encourage the indolence of others, he had consequently slackened in his attention to the pupils, and an immediate and constant falling off in their numbers had been the result. He shows how large a majority of the whole number of

students had always entered as his pupils, argues on the propriety of each surgeon profiting according to his labours, and therefore justifies his present intention, which cannot justly be ascribed to any avaricious feeling, seeing that the whole number of those entering at the hospital is now so small. Finally, he deprecates the considering this as a party question, affirms that he is actuated by the most disinterested feelings, and expresses his readiness to submit to the decision of the Court.

To this letter the hostile triumvirate replied, by denying the correctness of Hunter's account. The increase of pupils after his accession to the hospital, they attribute to the breaking out of a war, and not to his presence; the subsequent decrease they state was caused by the establishment of medical schools at the other hospitals, and not by Mr. Hunter's neglect. They admit that the number of pupils entering with him has been larger than with either of themselves; but this has been owing to his connexion with the anatomical school in Windmill-street, and his power of conferring posts in the army, and not to his superior attention to the pupils. To the charge of neglecting their duty, brought against them, they reply by stating that they have continued the usual plan of instruction long followed in the hospital. That if the students have neglected their duties there to follow physiological researches, it was not their fault. A proposal they state had been formerly made, that each of the surgeons should give six lectures at the hospital, for which extra instruction the admission fee was to be raised from twenty to five-and-twenty guineas, but for the following rather curious reasons the plan was not put into execution. 1st, Because they thought the old plan of instruction best for surgeons. 2dly, Because copies of the lectures might be taken by the pupils, and might get abroad! 3dly, Because, though the pupils might be pleased for a course or two, the lectures would lose their effect ultimately, and might, from the number being lessened, in consequence of the rise of price, in the end prove disadvantageous. They then go on to show, that a manifest disadvantage to the pupils would arise from the proposed measure; for whereas they had hitherto enjoyed the benefit of instruction from all the surgeons, they would for the future be limited to the instruction afforded by the surgeon alone under whom they entered, should Mr. Hunter's intention be carried into effect.

The decision of the Governors was given against Mr. Hunter; for though his opponents neither fully disproved his statement, that he had been the means of increasing the number of pupils at the hospital, nor could deny that he had done more towards their instruction than any of themselves, yet the disadvantage of the plan he proposed was so obvious, as pointed out by his opponents, that nothing but confusion and discord could have been expected from its adoption. A Committee was subsequently appointed to draw up a code of rules for regulating the admission and instruction of pupils; and a set of proposals was submitted to them by Mr.

Hunter's colleagues, which was agreed to without his having been even consulted on the occasion! Many of the regulations adopted continue in force to the present day; others, and especially those relating to the better instruction of the pupils, soon fell into disuse; and some seem to have been especially directed against Mr. Hunter. Amongst these latter was one which determined that for the future no person should be admitted as a student of the hospital without bringing certificates that he had been educated to the profession; a regulation which was probably designed to exclude Mr. Hunter's countrymen, who sometimes came up to town recommended to him, and entered as his pupils at the hospital, without having had any previous medical instruction. Nor was this clause long in taking effect: for in the autumn, two young men, who had come up to town ignorant of this new regulation, applied to Hunter to be admitted under him at the hospital. He informed them of the law which had been passed, but undertook to press for their admission at the next Board-day, and directed them to furnish him with a statement of their case in writing. On the 16th of October the Board was to meet, and Hunter prepared to fulfil his promise, though he was so well aware of the risk he incurred, in undertaking a task which he felt would agitate him, that in mentioning the circumstance to a friend who called on him in the morning, he expressed his apprehension lest some unpleasant dispute might occur, and his conviction that if it did it would certainly prove fatal to him. At his accustomed hour he left his house to commence his morning rounds, and by accident forgot to take with him his list of appointments; he had left the house but a few moments when it was discovered, and Mr. Clift, who was then residing in his house, hastened with it to York-street, St. James's, the first place on the list, where he found the carriage waiting. Hunter soon made his appearance, took the list, and in an animated tone called to the coachman to drive to St. George's. Arrived at the hospital, he found the Board already assembled, and entering the room, presented the memorial of the young men, and proceeded to urge the propriety of their being admitted. In the course of his remarks he made some observations which one of his colleagues thought it necessary instantly and flatly to contradict. Hunter immediately ceased speaking, retired from the table, and struggling to suppress the tumult of his passion, hurried into the adjoining room, which he had scarcely reached when, with a deep groan, he fell lifeless into the arms of Dr. Robertson, one of the physicians of the hospital, who chanced to be present. Dr. Baillie had immediately followed him from the Board-room, and Mr. Home, who was in the house, was also summoned to his assistance. Various attempts were made for upwards of an hour to restore animation, under the hope that the attack might prove to be a fainting fit, such as he had before experienced, but in vain; life had fled; and all their efforts proving useless, his body was placed in a sedan chair and conveyed to Leicester-square, followed by his now vacant carriage.

This most distressing event of course put an end to the business of the meeting; the Board broke up, and the only notice to be found on the books of that day's proceeding is the following minute:

"Resolved,—That Mr. Hunter's letter to this Board relating to two of the surgeons' pupils, which was received this day, be preserved for future consideration."

The body was examined after death,* when the viscera of the belly and head were found loaded with blood, but otherwise nearly in a natural state, with the exception of the carotid arteries and their branches within the skull, which were in parts thickened and ossified. In the chest, the left lung had become attached to the costal pleura by old and firm adhesions; but the heart was found to be the chief seat of disease. The pericardium was unusually thickened, but did not contain much fluid. The heart itself was small, appearing too little for the cavity in which it was contained, its diminished size being the result of wasting, and not of strong contraction of its fibres. Two opake white spots were seen on the left auricle and ventricle. The muscular structure of the organ was pale, and loose in its texture. The coronary arteries had their branches which ramify through the heart converted into long tubes, with difficulty divisible by the knife. The mitral valves were much ossified. The aorta was somewhat dilated, its valves thickened and wanting pliancy, and the inner surface of the artery was studded with opake and elevated white spots.

Hunter's body was interred in a private manner, in the church of St. Martin-in-the-Fields, accompanied only by a few of his medical friends.

Some time after his death Mrs. Hunter felt anxious to erect a monument to his memory in Westminster Abbey; but the fees demanded for a permission to occupy a niche within that venerable fane were too great for her reduced fortunes, and she therefore abandoned her intention. It may be thought that the author of the Hunterian museum needs no other memorial of his worth than the proud one he has himself erected; nor does he, to perpetuate his fame: still it would be a fitting act of respect to his memory, from those who enjoy the benefits of this rich legacy of his genius, to enrol his name amongst those of the other gifted men whose worth stands recorded in Westminster Abbey.

Thus, in his sixty-fifth year, died John Hunter, celebrated alike as a surgeon and as a naturalist; in either of which capacities has he had many equals,—in his combined character, none.

In person he was about the middle stature of a vigorous and

* It has been supposed by some that Hunter had the same antipathy to the scalpel of the anatomist as was felt by his brother; but this was by no means the case; on the contrary, he always spoke of it as a matter of course, and used, in the strongest language, to express his condemnation of those who should neglect to examine his body and preserve his heart. It is to be regretted that no relic of this sort has been preserved.

robust frame, and free from corpulency; his shoulders were high, and his neck short. His features were rather lage, and strongly marked; his eyebrow projecting, his eyes of a light colour, his cheeks high, and his mouth somewhat under-hung. In dress he was plain and gentlemanlike; and his hair, which in youth was of a reddish yellow, and in his latter years white, he wore curled behind.

On considering what was the distinguishing character of Hunter's mind, we perceive that it was rather that of general strength and vigour than of marked predominance of any one faculty, especially adapting it for excellence in some particular kind of pursuit. Johnson says "a true genius is a mind of large general powers, accidentally determined to some particular direction;" a definition which, though certainly not universally true, seems thoroughly descriptive of Hunter's mind. To talents for observation naturally acute, and heightened to an extraordinary degree by constant practice, Hunter added strong reasoning powers, a sound judgment, and an imagination which, though not brilliant, was sufficiently active to aid him in his researches, whilst it rarely drew him far aside from the sure paths of induction into the regions of hypothesis. Hence, though it might be difficult to name any employments better fitted to call the faculties of his mind into full action than those in which he was engaged, yet it cannot he doubted that there were many in which those faculties, aided by his extraordinary powers of application, would have as certainly raised him to a pre-eminence above other competitors as they did in medical science and natural philosophy.

With regard to Hunter's moral character, though it was adorned with many noble features,—as undeviating honesty, an eminent love of truth and candour, and a humane and generous spirit,*—and though as a friend he was warm and disinterested, and as a husband and a parent kind and affectionate, yet his character was defective for want of that control over his passions and his temper, the possession of which is absolutely necessary to the attainment of moral excellence and true happiness.

It is related of Mr. Pitt, that when asked in his last illness by the Bishop of Lincoln if he had any objection to receive the sacrament, he replied, "None whatever. I will take it readily, if you wish; but, my dear Lord," he added, "the whole of my life has been devoted to Politics; and as I have had no time to attend to religion, I must now trust to the mercies of God." As regards his attention to the all-important subject of Religion, it is to be feared that a

* In regard to fees Hunter was extremely liberal. He used generally to reply, when asked to say what was due to him, "Why, that you must determine yourself; you are the best judge of your own circumstances, and it is far from my wish to deprive you of the comforts of life." He never allowed himself to accept any remuneration from non-beneficed clergymen, professional authors, or artists of any sort, and sometimes returned large fees when he found that the parties were in embarrassed circumstances.

similar answer must have been given to a like question by Hunter, whose mind had been directed with no less intensity and devotedness to his peculiar pursuits than had that of the great statesman before mentioned.

In forming an estimate of Hunter's professional character, and of the influence which his labours have had on the improvement of surgery, we are not, as with ordinary minds, simply to enumerate the various practical amendments of which he was the immediate author. His claims are of a far higher nature; and in as much as he was the first who taught us to bring the lights of physiology to bear upon the practice of our art, and by his writings, his teaching, and his example stimulated the minds of numerous able followers to pursue the track he had pointed out, he justly merits to be considered as the author of a new æra in the history of our profession.

In the character of a naturalist it is impossible for us to form a full estimate of Hunter's labours, either from his published works, or from his incomparable Museum as it at present stands. In the course of the numberless dissections, which he prosecuted during thirty years of unwearied diligence, he necessarily made a great variety of isolated observations, which, though not immediately applicable to the objects he had in view, would doubtless have constituted important contributions to the general stock of knowledge in comparative anatomy. Such observations he always recorded carefully in appropriate volumes; but by Sir Everard Home's extraordinary destruction of his manuscripts science has been deprived of these fruits of his industry, of which scarcely the smallest portion now remains in existence. But even in cases where the records of his researches have been preserved, either in the form of preparations or by means of drawings forming part of his museum, the want of proper descriptive catalogues has often caused them to be overlooked, whilst more modern naturalists have been reaping the honour of discoveries which were due in the first place to Hunter.

Nevertheless, though we cannot estimate the full extent of his labours, enough remains to entitle him to a place in the highest rank as a natural philosopher.* His various papers in the Philosophical Transactions and elsewhere give sufficient evidence of the original and masterly manner in which he handled every subject of

* The following extract from the obituary of Hunter, in the Gentleman's Magazine, is much more flattering to the author, and affords a curious specimen of the *stuff* which these memorials often consist of:—" . . . . As a man of letters, independently of his profound scientific studies, he had traced the practice of surgery to the earliest ages. He was well acquainted with every practitioner mentioned by Pliny, with all the Greek and Roman authors who had written on the subject, as well as with every modern one who had contributed to the perfection of the art. . . . . As a man well versed in ancient history, the Egyptian chronology was familiar to him, as far as related to the antiquity of anatomy; as a scholar, distinguishably classic, he knew that Homer was an anatomist, at least had ideas of anatomy, as well as an epic poet," &c.—One would imagine that the biographer had purposely selected the weak points of Hunter's character, in order to parody them.

inquiry; and the arrangement of some departments of his museum shows, that whilst his great contemporary Linnæus was extending and perfecting his beautiful but artificial arrangement of living objects, Hunter had made considerable advances towards that natural classification of the animal world which Cuvier has so admirably effected in modern times.

By his will, of which Dr. Baillie and Mr. Home were the executors, Hunter bequeathed the estate of Kilbride to his son. Earl's Court he directed to be sold; and the proceeds, after payment of his debts, to be divided equally between his widow and two children. His Museum he ordered to be offered, in the first instance, to the British Government (therein following the example of his elder brother), and on such terms as might be considered reasonable; and in case of their refusing it, he directed it to be sold either to some foreign state, or in one lot, in such manner as his executors might think proper.

On examining, however, into the state of his affairs, it was found that his property, exclusive of the Museum, would scarcely suffice to pay his debts; and it was accordingly to the produce of the sale of this that his family had to look for their future support. The disposal of it to the British Government was on all accounts most eligible; but it was no easy task to bring this about. The attention of Parliament and the nation was wholly directed to the events of the French Revolution, and there was a great unwillingness to expend money on any objects not essential to the conduct of the war. When Mr. Pitt was applied to on the subject, his reply was, "What! buy preparations! Why I have not money enough to purchase gunpowder." And it was not until three years after that Parliament could be induced even to institute an inquiry into the value of the Museum, with a view to deciding how far it might be desirable to make it national property. In the mean time Hunter's family were in very straitened circumstances. Through the kind interposition of Lord Auckland, Mr. Pitt was prevailed on to bestow a portion of His Majesty's bounty on Mrs. Hunter during the first two years of her widowhood; but the Act of Parliament forbade its being given a third year. The greater part of Hunter's household goods were therefore sold to meet the current expenses of his family and pay for the conservation of the Museum;* and

* Amongst these were a variety of valuable objects of *virtù* which Hunter had collected from various quarters; ancient coats of mail, weapons of various dates and nations; and a very beautiful turning lathe, which had belonged to the Duke of Cumberland. With such articles as these Mr. Christie, the fashionable auctioneer of the day, who presided at the sale, found himself quite at home; but when he came to dispose of a curious mask, which Hunter had constructed to protect his face whilst making his observations on bees, the renowned auctioneer was completely non-plused. At length, after turning it round and round, and surveying it on all sides, he said, "This, ladies and gentlemen, is a covering for the face, used by the *South Sea islanders* when travelling, to protect them against the *snow storms*."! It would appear from a sale catalogue (in the possession of Mr. Upcott), dated July 31, 1794, to which the prices are affixed, that the produce of this sale could not have been considerable.

it is to be regretted that amongst these were included his library,* and a valuable collection of crystallizations, both of regular and irregular forms, which he was accustomed to use in his lectures to exemplify the difference between the laws which regulate the growth of organic and the increase of inorganic bodies. Whilst, however, we must regret that these objects were irretrievably dispersed, we must entirely exempt his executors from the blame which has been sometimes attached to them for allowing this to take place. Neither of them were in circumstances to defray from their own resources the expenses necessary for the maintenance of his widow and children; and as there seemed little prospect of soon disposing of his collection, they were obliged to have recourse to the sale of objects which, under other circumstances, they would have gladly held sacred.†

In 1796, all the personal efforts of Hunter's executors having failed to induce the House of Commons to think of purchasing the Museum, Lord Auckland kindly undertook to interest himself in the affair, and accordingly applied, in the following letter to Sir J. Banks, to know how far he would be disposed to lend his assistance in calling public attention to the subject:

* It has already been observed that Hunter found he could employ his time more profitably in studying nature than in reading books, whence it arose that his library was small, and consisted principally of presentation copies. Its dispersion would not of itself have been a subject of regret, if it were not that Mr. Hunter was in the habit of annotating largely in the margins of those books which he read. He has made references to Borelli, Hamberger, Goddard, Glisson, Swammerdam, &c., in his Croonian Lectures, which he would probably not have done if he had not carefully consulted these authors.

† These difficulties were entirely removed, after some years, through Dr. Garthshore's kind interference. He engaged Mrs. Hunter, whose exemplary conduct during her widowhood had gained her the esteem of all parties, to reside in the house of two young ladies of large fortune, who were wards of his, where she continued until her death in the receipt of a very handsome salary. During this time she published a volume of poems, which possess considerable merit as light compositions. In 1804 she composed the following Epitaph, with the design of having it inscribed on a marble tablet to be placed over the remains of her late husband in St. Martin's church; a design, however, which it was intimated to her by Dr. Hamilton, the rector, was contrary to the rules of the church:

"Here rests in awful silence, cold and still,
One whom no common sparks of genius fired;
Whose reach of thought Nature alone could fill,
Whose deep research the love of Truth inspired.

"Hunter! if years of toil and watchful care,
If the vast labours of a powerful mind
To soothe the ills humanity must share,
Deserve the grateful plaudits of mankind,—

"Then be each human weakness buried here
Envy would raise to dim a name so bright:
Those specks which in the orb of day appear,
Take nothing from his warm and welcome light.

"Anne Hunter."

"*Eden Farm, near Bromley, Kent, Jan.* 25, 1796.

"My dear Sir,

"I wish, in the fewest words possible, to engage your attention to a subject interesting both to friendship and philosophy. I know that the pleadings of two such advocates will be most congenial to your feelings.

"Our late friend John Hunter left *nothing* for the support of his widow and children, after the payment of his debts, but his collection of comparative preparations. From respect for his memory, and from regard for Mrs. Hunter, whose conduct in such a position has been highly becoming, I have concurred with the Chief Baron during two years in obtaining for her, through Mr. Pitt, the aid of His Majesty's bounty; and I have been of some use to her in other respects. But the Act of Parliament does not allow the King's bounty to be given a third year. In the mean time the Trustees of the Collection (Mr. Home and Dr. Baillie) have not been able to induce the House of Commons to purchase it, or even to consider the subject. In truth, the agitations of their minds amidst the great scenes which are going forward, as well as a general impression that all avoidable expenses not essential to the purposes of the war should be postponed, have combined to make it difficult to recommend the purchase to the public. The delay is most distressing to the family, who have no other resource: the mere expense of keeping the collection is an overwhelming weight to those who have nothing.

"I do not pretend to be able to form any adequate idea of the value and importance of the collection to science; it is quite out of my line of observation. But I have always understood that you scientific leaders concur in thinking it highly curious, and well calculated to do service in the school both of medicine and of natural philosophy in general.

"I trust that as the worthy President of the Royal Society, as an old and respected friend of a distinguished person whose family is left destitute, and, in short, as a man of science and of benevolence, you will turn this subject in your thoughts. If the purchase could be properly and effectually recommended, with the King's approbation, to the House of Commons and to the Minister at the head of the Treasury, it would be the best result.

"If you would like to have a consultation at your house of any number of Mrs. Hunter's friends, and of persons of other descriptions, I shall be glad as an individual to attend your commands in Soho-square. I propose to return to town about the middle of next week.

"I wish you would re-settle the seasons, which seem to be under a revolutionary government. I do not remember an instance of so long a prevalence of southern gales in the depth of winter.

"Believe me, my dear Sir, most sincerely yours,

"Auckland."

In his reply to this application Sir J. Banks, as will be seen, expresses his willingness to take part in endeavouring to bring about the desired purchase of the Museum; but at the same time seems to intimate that the College of Surgeons had been backward in interesting themselves on the subject, although they were the parties to whom it would prove most serviceable.

"My dear Lord,

"Had I thought my friend John Hunter's collection an object of importance to the general study of natural history, or indeed to any branch of science except to that of medicine, I hope that two years would not have elapsed without my having taken an active part in recommending to the public the measure of purchasing it. I was consulted in the first instance by the gentlemen concerned, who, if I rightly understood them, agreed with me in thinking that the history of diseases was the only interesting and valuable part, and the natural history was not of consequence sufficient to be brought forward as an object of public purchase.

"Concluding that the history of diseases arranged itself naturally under the protection of the College of Surgeons, and knowing that the corporate mansion of that learned body was roomy enough to receive the collection; being well aware that the matters of abstract medicine did not come within the province of the Royal Society, knowing that the apartments of that body are scarce able to contain the property they already possess, and thinking the museum, to which, from the nature of its institution, students could not have a convenient access, an improper deposit, I declined with the full approbation, as I thought, of the parties concerned, taking any lead in the matter.

"Regard for my deceased friend, however, has always made me desirous of doing all I could do, without interfering too much in a business evidently out of my province; I offered, therefore, at that time all the secondary assistance in my power. I shall be happy, therefore, whenever your Lordship or the Chief Baron, who have hitherto taken the lead in this business, do me the honour to think I can be of use, to obey either of your summons, and meet you when and wherever either of you shall choose to appoint." . . . . . .

Soon after this the question was at length properly brought before the House, when a Committee was appointed to take the petition of Dr. Baillie and Mr. Home into consideration, and to inquire into the value and probable expense of keeping up the Museum. Several of the most eminent physicians and surgeons, as well as other scientific men, were examined, who strongly recommended the purchase of the collection, which they estimated at a much higher value than 15,000*l.*, the sum named for it. The Committee having satisfied themselves on this point, and made a report to the House, the above sum was voted by Parliament on the 13th June 1796. Instead, however, of being immediately transferred to the Corporation of Surgeons, it is reported that an offer of the collection was first made to the College of Physicians,* who, foreseeing the expense of maintaining so large a number of preparations, demurred to accept it, unless accompanied with such additional grants of money and lands as should be adequate to its support. The disinclination which was thus manifested by the College of Physicians to become the guardians of this noble collection, and to incur those public and private liabilities which were necessarily incident to the charge, might equally have been justified on the part of the Surgeons. The funds of the Corporation of Surgeons at this period were in an extremely low state; nor were the fame and public reputation of this body in a much more flourishing condition. It is therefore greatly to the credit of the Council of this Body that they came to the *unanimous* vote, on Dec. 23, 1799, to accept the Museum on the terms proposed by the Government, especially when we reflect that the costs for maintaining and augmenting the Collection, up to August 1833, amounted to not less than 36,000*l.* It would manifestly, however, have been in the highest degree improvident in the Surgeons to have acceded to the offer of Government, with the conditions annexed, if they had not foreseen some method of replenishing their finances. This method consisted

* It would appear also, from a letter addressed by Dr. Baillie and Mr. Home (Nov. 1799) to the Lords of the Treasury, that thoughts were afterwards entertained of making it a part of the British Museum.

in obtaining a new charter from the Crown, which should entitle them a Royal College, with permission to examine for diplomas; and in this hope they were not disappointed. In the course of the ensuing year a charter was obtained; and although the applicants for diplomas during the first two years did not amount to more than 300, yet this number had increased to 770 in the two years ending August 1833; and the average receipts to the College derived from this source alone, during this latter period, did not amount to less than 11,116*l.* per annum. This increase of public reputation, and consequent wealth, must no doubt mainly be attributed to the celebrity which necessarily accrued to the College from possessing a new charter, and from being appointed the public guardians of the Hunterian Collection. It would be unjust, however, not to say that these circumstances alone would have been insufficient to attain the objects in view, if they had not been strongly supported by the zeal and talents of several members of the Council, who more particularly interested themselves in the management of the affairs of the College at that period.

This valuable collection was not entrusted to the Corporation of Surgeons unfettered by conditions; and that these conditions might be duly performed, a Board of Trustees was appointed, whose duty it was to supervise the general management of the collection.

The principal of these conditions were,—

"1. It was incumbent on the College to preserve the collection in the best possible state at their own expense.

"2. That the collection should be open to the inspection of the Fellows of the College of Physicians and the Members of the Company of Surgeons, and persons properly introduced by them, four hours in the forenoon two days every week.

"3. That a catalogue should be made of the preparations, and a person appointed whose business it should be to explain it to such persons as visited the collection.

"4. That a course of twenty-four lectures on comparative anatomy, &c., should be delivered annually at the College."

The admirable manner in which the first and last of these conditions have been complied with will not be questioned by any one who has visited the Museum or attended the lectures. As for the second and third, as it is impossible to offer praise, so it may be more prudent to refrain from animadversion. The parties who were most to blame in this business have long since gone to another tribunal, and any comment upon this subject would be useless.

CHAPTER VII.

THE HUNTERIAN MUSEUM.

The museum of Hunter having been entrusted by Government to the care of the College of Surgeons, the Council, in July 1800, appointed from their body a Board of Curators, consisting of seven members, to whom was given the charge of superintending the preparation of catalogues of the objects in the collection, and of drawing up regulations for its management.

During the first six years the collection remained in the gallery in Castle-street, which had been built by Hunter for its reception; but in 1806, the lease of the premises having expired, it was resolved by the Board of Curators to deposit it temporarily in a house in Lincoln's-inn-fields, adjoining the College of Surgeons, the Council having at the same time come to a resolution to erect an appropriate building for its reception, and to apply to Parliament for assistance in accomplishing the work. Plans were accordingly drawn up, and the expenses of the undertaking were estimated at 15,000*l.* This sum was liberally granted by Parliament, and the building was commenced in the course of the following summer. The work does not, however, appear to have proceeded very rapidly; the real cost of the structure, it was found, would be treble that of the estimated expense; and a second application to the legislature was resolved on. This elicited a second grant of 12,500*l.*, and the remaining deficiency (equal in amount to the sums voted by Parliament,) was made up out of the funds of the College. At length, in the year 1813, the edifice being completed, and the necessary arrangements made, the museum was opened to the inspection of visitors.*

In the year 1806, in compliance with the conditions of agreement under which the Hunterian museum was entrusted to the College of Surgeons by Parliament, the Council took the necessary steps for instituting two annual courses of lectures, the one on surgery, the other on anatomy. These were delivered for the first time in the spring of the following year, and have been continued annually ever since. The number of lectures in each course amounted to

* During the time that the museum continued in Castle-street, it was open, under certain limitations, to the inspection of the public, and during the short peace was visited by many eminent scientific foreigners; amongst whom were MM. Du Fresne, Parmentier, Abbé Gregoire, Jean Baptiste Huzard, Dr. Gärtner, Dr. Stöll, Professor Aldini, and Dr. Frank. The first of these gentlemen was highly delighted, and expressed his satisfaction in a paper in the first volume of the *Annales du Muséum*. In 1813 Cuvier visited England, and for the first time saw the Hunterian museum, to which he paid the greatest attention, and had thirty or forty drawings made of different preparations by a gentleman who accompanied him.

fifteen; and as the chief object aimed at in their institution was the elucidation of various parts of the museum, it has been customary to select from thence most of the preparations introduced by the Professors in illustration of their doctrines.

In 1813 Dr. Baillie and Sir Everard Home, the trustees of Mr. Hunter, provided for the delivery of an annual oration on his birth-day. By this an opportunity has been yearly afforded of paying a tribute of respect to the memory of those practitioners of surgery who have contributed during their lives to the advancement of our profession.*

To these lectures all the Members of the College have of course a right of entry; and the senior pupils attending the London Hospitals are by courtesy allowed to be present.

From the time when the museum first became the property of the College up to the present day, valuable additions have been continually made to its contents. These have accrued chiefly from two sources: on the one hand, from the purchase of appropriate objects contained in other collections, as the British Museum, the Leverian Museum, and the collection of the late Mr. Brookes; on the other, and this has proved by far the most copious source, from the liberal donations of public bodies and private individuals, amongst which those presented by some of the leading members of the Council hold a conspicuous place. Many valuable preparations have also been added by the diligence of the Conservator and of the Assistant-Conservator. The additions from these and other sources amount at present to nearly one third of the whole collection.

It is intended in the present chapter to give some account of the contents of this noble monument of the genius of Hunter; a work which stands unrivalled in its kind,† and the contemplation of which must ever call forth the highest respect for the indefatigable industry and extraordinary talents of its founder.

The original design of Hunter, in the formation of his museum,

* It may be worthy of consideration whether it would not be better that these orations should occur less frequently. It is a hopeless task to seek for something new every year on so limited a subject. Mr. Lawrence's late able oration might seem to contradict this remark; but it will be observed that he wisely quitted the accustomed track, and sought for interesting matter in other countries and in the collateral field of natural history.

† This opinion is not only that of Englishmen, who have had an opportunity of comparing the admirable manner in which the preparations are displayed in the Hunterian museum with that of some of the most famous on the Continent, and, amongst others, of the Jardin des Plantes, but of foreigners also. Soon after the conclusion of the late war, the Emperor of Russia sent a body of scientific men to make the tour of Europe in pursuit of science. Those who came to England had previously visited the collections on the Continent. Their patience was inexhaustible; and of the many individuals who have visited the Hunterian museum, none ever examined it with so much care, or brought a larger share of previous information to the work, than they did. When they had concluded their inquiries, they unhesitatingly declared that this collection far excelled any other in Europe.

was to furnish an ample illustration of the phenomena of life exhibited throughout the vast chain of organized beings, by a display of the various structures in which the functions of life are carried on. His collection, therefore, at its commencement, was strictly physiological in its character; and though in the course of time various other departments were added to the original one, they were all in a manner subservient to this primary design.

Amongst these accessory departments we may mention, first, the collections of dried preparations in comparative anatomy, and the collection of comparative osteology, as being both nearly allied to the subject of general physiology. Next to these may be placed the collection of monsters and malformations, which is not less so. To the subject which the latter is designed to illustrate much attention has of late years been deservedly directed, since the study of abnormal productions not only leads to a knowledge of the fact that nature is subjected to certain laws, even in her most striking deviations from the usual order of things, but also helps to throw much light on the laws of normal or natural formation.

In addition to the above, the museum contains a large collection of specimens in natural history, of which the greater number are preserved in spirits, and others are stuffed; whilst those animals, or parts of animals, which require no such preparation, as shells, zoophytes, and insects, form separate departments. Nor did Hunter confine his attention to the animal forms now in existence, but, not long before his death, collected a large number of valuable fossils, illustrating the structure and form of animals of a former age. Another highly valuable portion of the museum illustrates the actions of living parts when in a state of disease. This portion contains two large collections of pathological preparations, the one containing specimens of diseased parts preserved in spirits, the other specimens in a dry state; and a collection of the inorganic products of diseased action, as calculi, concretions, &c. A numerous assortment of valuable drawings, oil paintings, and casts, completes the whole; of these the former are the most valuable, since, from the excellent style in which most of them are executed, an accurate notion is afforded of the recent appearance of parts, when this has been destroyed in the original subjects, either by time or by the action of the spirits in which they are preserved.

In describing more in detail the various parts of the museum, each department will be successively treated of in the order in which they have been mentioned above. Before proceeding, however, to this description, it will be requisite to say a few words respecting the work on which Hunter was engaged at the time of his death, and which he designed as an exposition of the contents of his museum; and also to make some remarks on the formation of the Catalogues which are now in the course of publication by the Council of the College of Surgeons, and from which the summary I am about to give will be principally derived.

It would seem that for many years Hunter was accustomed to

trust chiefly to his own memory for a history of the specimens contained in his museum; but when his health and faculties began to fail, under repeated attacks of disease, he became exceedingly anxious to complete the arrangement of its various parts, and to commit to writing an exposition of the whole. The reflection that he should probably die before this labour was completed, and leave his collection, the sole provision he had made for his family, in a condition which would greatly detract from its value, was a source of painful anxiety during the last years of his life.

It would appear to have been Hunter's intention, had he lived, not simply to form a catalogue of the numerous preparations contained in his museum, but to record, in one comprehensive work, the results of his labours and observations in each department, together with such general reflections as he had been able to deduce from them. In this work would have been included the anatomy of the whole animal kingdom, as far as he had investigated it, and there is sufficient evidence that few forms of animated nature had escaped his notice. He would have stated at large his views on the nature of animal life, on the particular uses of the several organs, and on their relations to one another. The laws of abnormal formations, as far as he was acquainted with them, would also have been unfolded; and from these various data would have been deduced a classification of animals according to their natural affinities. The fossil remains of past ages had also occupied much of his attention, and his opinions respecting them would have filled an important place in his purposed work. It was his intention also to have entered into a full account of the several sections of his museum which are more directly connected with the practice of surgery, those, namely, which contain the pathological preparations; and it must ever be regretted that we have been deprived of his exposition of these departments, in which would have been combined enlarged and scientific views of the nature of disease, with the sound practical information which his great experience and acute observation would no doubt have furnished.

Such was the work in which Hunter designed to embody the knowledge acquired during five-and-forty years spent in the diligent investigation of nature; and let it not be thought that the above sketch figures forth an undertaking which it would have been beyond the power of any single man to complete; an immense body of materials had already been prepared for different parts of it, and the regularity and rapidity with which he pursued his labours would almost certainly have insured its completion within a few years. Had he completed it, "this work," to use the language of one who has had ample means of knowing what were the intentions of Hunter, and of estimating the extent of his labours,* "would have reflected equal honour on its author and on the country and age in which he flourished."

* Mr. Owen.

Hunter died, however, before this his last undertaking could be completed, but not before enough had been accomplished to furnish us with means from which to form some judgment of what the whole would have been.

Of his labours in the field of comparative anatomy, which for variety and extent have probably never been excelled, he kept accurate and full minutes. These alone extended to ten folio volumes of MSS.;* and besides these there were catalogues of certain portions of the physiological department, with interesting general observations of his own prefixed to each series. To the account of the pathological preparations of the bones, Hunter had also devoted especial attention, as he proposed (according to the late Mr. Cline), to publish a work on the diseases of these parts, and had collected an immense number of drawings in pursuance of this intention.

The whole of the above valuable documents passed into the hands of the College along with the preparations to which they referred; and it was the intention of the Council, with the aid which they afforded, to have prepared a descriptive catalogue of the whole museum. Before this work was far advanced, however, the ten volumes of minutes of dissections, along with many other valuable papers, were taken from the museum by Sir Everard Home,† without any previous permission from the Trustees, but with the alleged intention ef employing them in preparing a catalogue, which he undertook to do gratuitously. Time, however, passed on, and no catalogue was forthcoming; repeated applications were made by the Council to have the MSS. restored, but were as often evaded, and at length, to the astonishment of all, it was ascertained that Sir Everard Home had actually committed them to the flames!

The announcement of such a proceeding of course drew upon him the bitter reproaches of the Trustees and of the Council, against which he defended himself by maintaining his legal right to the papers, which he asserted formed no part of the museum, as no mention was made of them in Hunter's will; and he added further, that in burning the papers he had acted in accordance with the directions of his late brother-in-law. The first of these statements it was of course not worth while legally to contest, seeing that the objects in dispute were now no longer in existence. To give credence to the latter was somewhat difficult for those who knew how high a value Hunter had set on these papers. To such it seemed

* Nine of these were on animal, and one on vegetable anatomy. They were written by Mr. Hunter's assistants, at his dictation, and contained the result of his observations upon whatever was new and interesting in the course of his individual dissections. It may be looked upon as a proof of the value which Hunter set on these, that he had them introduced into his portrait by Sir Joshua Reynolds. His cases of surgery and dissections, of which the College possesses four or five manuscript volumes, presented by Sir Everard Home, were recorded with equal accuracy.

† This was in 1812, when the collection was placed in the new building.

incredible that he should have ever seriously meditated the sacrifice of these memorials of the labours of his life; and it was justly urged, that if he had ever, in a moment of irritation, given expression to such a wish, Sir Everard Home should have felt that he would not only be justified in neglecting to fulfil it, but was bound to do so, for the honour of his patron and preceptor, and for the interests of science. Was it not also somewhat strange, it was asked, if such a direction was given, that Sir Everard Home should have neglected to execute it during the time the papers remained in his hands previously to the purchase of the collection by Parliament, and should have delayed its accomplishment until every one else supposed that these documents had, to all intents and purposes, become the property of the College? Rumour, as usual, assigned reasons for this act beyond the one alleged, and it was broadly asserted, that if the MSS. could be recovered, they would be found to have furnished the substance of many of Sir Everard Home's numerous papers in the Philosophical Transactions.*

Whatever may have been the cause of this extraordinary proceeding, the effects are irreparable. The difficulties experienced in the formation of a catalogue were so much increased by the loss of these papers, that those whose duty it was to superintend the work seem thenceforward to have despaired of ever carrying it into effect. At least such is the conclusion we must come to, when we recollect that nearly thirty years were allowed to elapse from the time the museum became the property of the College before the Council took effectual steps to supply such a catalogue. Whether this state of hopeless inactivity was excusable may well be doubted, when we see how satisfactorily the work will, in all likelihood, be completed, now that it has been resolutely undertaken. For though there can be no doubt that the establishment of the Zoological Society, and the liberal manner in which they have granted the bodies of the animals dying in their collection for the use of the College, have greatly facilitated the execution of some parts of the catalogue, it will yet scarcely be credited that the Council, had they been in earnest, could not have found individuals long ago willing to undertake the task, and able to have executed it, if not as well as it will now be executed, yet in a manner which would have greatly increased the value of the collection to the profession at large. As it is, they will hardly free themselves from the imputation of want of zeal in discharge of their trust, and of having shown a culpable indifference to the honour of their great master and to the cause of science in this country.

Happily, the Council were at length induced to take active measures for supplying the deficiency so long and justly complained of, and two gentlemen were appointed to assist the conservator, Mr. Clift, in preparing complete catalogues of the museum. These

* Sir Everard Home contributed more papers to the Royal Society than any other single Member of that distinguished Body since its foundation.

were the late Mr. Home Clift, the son of the conservator, and Mr. Richard Owen,* who is well known as one of the first comparative anatomists in this country. Certain departments were allotted to each of these gentlemen, of which they were directed to draw out catalogues as speedily as might be consistent with correctness. The first of these was published in 1830, since which time five more numbers of the general catalogue, and two numbers of a descriptive catalogue, on a more extended scale, have appeared. It is understood that we are indebted to the respected conservator, Mr. Clift, for the first and second parts of the general catalogue, containing an account of the pathological preparations in spirit and in a dry state. To Mr. Home Clift, his son, whose untimely death was lamented by all who knew him, we owe the third, fifth, and sixth parts, containing catalogues of the human and comparative osteology, of monsters and malformations, and of the vascular and miscellaneous preparations in a dried state. To Mr. Owen was allotted the task of preparing the fourth part of the general catalogue, which furnishes an account of the preparations of natural history in spirit, and the still more important and difficult duty of forming a descriptive catalogue of the first two divisions of the physiological gallery. The whole work, as far as it has yet appeared, reflects credit on the Council, under whose auspices it has been published, and by whom the above appointments were made, and on the gentlemen to whom the business of preparing the catalogues was intrusted, for the talent displayed in the performance of the several parts. It is, however, to be regretted that a fuller account of the pathological preparations was not given, since the want of a history of the cases often deprives them of more than half their value. It is understood, however, that the Council have it in contemplation to publish descriptive catalogues of the whole museum, which will probably extend to twenty volumes, and no doubt the present deficiency will then be amply supplied.† With regard to that portion of the descriptive catalogue which is already before the world, too much praise cannot be given to Mr. Owen for the very able manner in which he has performed the difficult task of preparing it. When it is recollected that a great many of the preparations in this department had not even a tittle attached to them, and afforded no clue beyond their situation in the collection, and their general appearance, for ascertaining what they really were or whence derived, and consequently that a search was to be instituted for their likeness in the great book of nature, it will be readily granted that no little talent and diligence were required in overcoming this first difficulty. But, in addition to this, the object which Hunter had chiefly in view,

* Mr. Owen was appointed in 1827.

† The conservator has long been engaged in the preparation of such a catalogue, which at the present time extends to five times the length of that published by the Council. The urgency of the demand for a catalogue on the part of the public and the Board of Trustees, was the only reason why the Council confined themselves to the fulfilment of their *literal* engagements.

in the formation of several of the series, was to be sought amongst his various publications, or, where these did not furnish the requisite information, to be deduced from the writings of others, or from the observations of Mr. Owen himself; and from each of these sources have been drawn the valuable observations prefixed to several of the subdivisions. That Mr. Owen has been successful in overcoming these difficulties, the catalogue itself affords sufficient evidence, and the students of natural science will owe him a debt of gratitude should he succeed in that portion of his work which is yet unfinished as ably as he has done in the part which has already been published.

Having thus given a general account of the museum up to the formation of the catalogues, I shall now endeavour to furnish as accurate an account of its contents as the means in my power and the nature of the present work will admit.

The first and fundamental department of the museum, that, namely, which is contained in the gallery of the present building, is, as has been said, devoted to the illustration of the science of life itself.

"It consists of dissections of plants and animals, in which the structures subservient to the different functions are skilfully and intelligibly displayed.

"These structures are taken from every class of organized matter, and are arranged in series, according to the function, in the order of their complexity, beginning with the simplest form, and exhibiting the successive gradations of organization to the most complex.

"The series are disposed in two divisions: first, those illustrative of the functions which minister to the necessities of the individual; and secondly, those which provide for the continuance of the species.

"The first division commences with a few examples of the component structures of organic bodies, and then extends into a series embracing the active and passive apparatus for progressive motion. It is succeeded by analogous series, illustrative of the functions of digestion, nutrition, circulation, respiration, and excretion,—or the functions immediately connected with the internal economy of an organic being. Then follow the organs which bring the animal into relation with the external world, viz. the nervous system and organs of sense, which are the peculiar characteristics of the animal kingdom. After these come the parts which complete the system of an animal body, such as the connecting and adipose tissues, and the various modifications of external covering; and lastly, those instruments which, not being immediately related to any of the vital and animal functions, constitute peculiarities in the economy of particular species.

The second division commences with a series of the generative organs of plants and animals in the passive and unimpregnated state: first, of such as complete the function of generation by the

simplest kind of hermaphroditism; second, of those in which a necessity for reciprocal impregnation co-exists with the possession of both the sexual systems in the same body; and lastly, of the male and female organs, as they are exhibited separately in distinct individuals.

"The next subdivision contains the female organs in a state of fructification or impregnation; it exhibits the generated organism in its different stages towards mature development, together with the various temporary structures destined for its support during fœtal existence; and lastly, the organs in the parent which supply the young with food, or afford it shelter during the helpless period of its existence."*

Such is a brief summary of the contents of this part of the museum which consists of 3745 anatomical specimens, of great delicacy and beauty, and for the most part in an admirable state of preservation.

FIRST DIVISION OF THE GALLERY,

ILLUSTRATIVE OF THE FUNCTIONS WHICH MINISTER TO THE NECESSITIES OF THE INDIVIDUAL.

That portion of the descriptive catalogue which has been published furnishes an account of 841 of these preparations, which form the two first subdivisions of the first division, and are designed to illustrate the functions of locomotion and digestion.

THE FIRST SUBDIVISION

ILLUSTRATES THE SUBJECT OF LOCOMOTION.

To the elucidation of this subject thirteen series are devoted, of which the first exhibits the component parts of vegetables and animals, as bark, wood, blood, tendon, elastic ligament, cartilage, bone, &c., &c.

To these succeed examples of different kinds of sap and blood, the former arranged according to their degree of vitality, as shown by their tendency to coagulate: from these we ascend to the colourless blood of crustaceous animals, the cold blood of reptiles and fishes, and lastly, the warm blood of the mammalia.

With the third series, we enter on those parts of vegetables and animals which possess evident motion. Motion in vegetables Hunter considered to depend on a property analogous to irritability in animals: it may be caused either by the irritability being excited, as in the mimosa and other sensitive plants; or by the cessation of

* Introduction to the Descriptive and Illustrated Catalogue of the Physiological Series: 1833. By Mr. Owen.

irritation allowing an antagonist force to take effect, as in the sleep of plants.

The fourth series contains preparations of the muscular fibre, which, says Hunter, "is one of the simplest forms of an active solid." The various modes in which these fibres are arranged in various muscles are shown; and to these succeed several preparations illustrative of the application of muscles, and the manner in which certain parts of the body, as we ascend in the scale of animals, come to be specially devoted to the production of motion, either actively, as in the case of muscles, or passively, as in that of the skin of worms and of the larvæ of insects; of the hard covering of crustaceous animals; of this combined with an internal skeleton in the testudines; or of the latter alone in fishes, birds, and mammalia.

The application of elastic powers in the animal frame is next illustrated. These act either in opposition to muscular force, as in the hinge of bivalves, or in aid of it, as in the ligamentum nuchæ of various mammalia.

The five succeeding series illustrate the particular properties of the organs of passive motion. These organs, as is here shown, may be formed either of membrane, horn, cartilage, calcareous earth, or of various combinations of these. The growth and composition of shells are next illustrated, for though shells for the most part serve as organs of defence, "they are in many cases used as levers for the muscles to act on." Most of the preparations illustrating this subject have been added of late years, and the varieties they exhibit in chemical composition, &c., are explained in the Catalogue, by extracts from Mr. Hatchett's papers on the composition of bone and shells. The structure and growth of bone is next unfolded. The differences which bones exhibit in consistence and composition in different classes of animals, the mode in which ossification commences, and the superior vascularity of growing bone, are amply developed. Next follow twenty-four preparations, exhibiting the growth, perfection, and casting of the horns of deer. And lastly, the increase of size in bones is shown to take place, not by the insertion of new particles amongst the old, as Duhamel supposed, but by the addition of new parts to the extremities and circumference of bones, whilst the form of the bone is preserved by the removal of superabundant parts by the absorbents. The former fact is shown by preparations of the leg-bones of fowls, into which shot had been inserted at given distances from each other whilst the bones were growing, which distances were found not to have varied when the bones had much increased in length. A fuller illustration of both facts is afforded by feeding young animals on madder, which tinges all fresh deposits of bone, and thus points out exactly where and to what extent these have been laid down. There are several preparations which originally *exhibited* these points very clearly, but as the spirit has destroyed the colour, the assistance of Mr. Bell's drawings is required for their explana-

tion, and engravings of these have been accordingly given in the Catalogue. After the growth of bone, are displayed the various positions of the skeleton in various animals; and the last of the five series illustrates the composition of the skeleton. This may be formed of one piece, as in the cuttle-fish; of several unattached pieces, as in the pennatula and other zoophytes; or the several pieces may be connected by elastic joints, as in the spine of cartilaginous fishes; by ligamentous fibres attached to the whole articulating surface, as in the lower jaw of the whale; by capsular ligaments; by capsular and inter-articular ligaments, as in the hip-joint or with inter-articular cartilages, as in the joint of the lower jaw; or by the three combined, as in the human knee-joint.

The various mechanical contrivances by which the power of muscles is augmented, so as to combine neatness, which, as Hunter observes, "is often a principal object in the formation of a limb," with the requisite degree of power, form the twelfth series.

The thirteenth and last series of this subdivision shows the form and arrangement of parts in the various organs adapted for progressive motion; for swimming; for flying; for creeping, as serpents, in which animals the progressive motion is effected by means of the ribs, which have strong muscles attached, and are moved much in the same way as the centipede moves its legs; for burrowing; for climbing; for leaping; for walking or running; and lastly, for tearing the prey of the animal.

THE SECOND SUBDIVISION

ILLUSTRATES THE FUNCTION OF DIGESTION.

Teeth.—Of the organs which minister to this function the teeth are first treated of. The series in which the nature and offices of these organs are shown consists of 170 preparations, derived from all parts of the animal kingdom, the account of which in the Catalogue is preceded by some general observations by Mr. Hunter on their nature; on their analogy to the beaks of birds; and on the varieties they exhibit in number, form, structure, and situation, according to the food of the animal; as also on the mode of their formation and growth; on the manner in which the place of those which are lost is supplied; and on their relation to the stomach. These several points are illustrated in a number of subseries, of which the three first exhibit the structure and growth of parts analogous to teeth in various tribes of animals, as the calcareous teeth of some mollusca, the bills of birds, and the whalebone in whales. The fourth subseries exhibits the mode of growth of various teeth. 1st, Of such as are limited in their growth, and which, when lost, require to have their places supplied by new teeth; and this is effected in a variety of ways. 2d, Of such as are continuous in their growth, as the incisors of rodentia and the

tusks of boars. The amount of animal matter contained in various descriptions of teeth is shown in a set of preparations, in which the calcareous part has been removed by the use of dilute acids. The manner in which the teeth are shed, and their places supplied by new ones, in different orders of animals, is next shown. In some the teeth are shed but once, and those of the new set are formed on distinct pulps, as in most mammalia; in others, as in the shark, teeth are successively formed at the back part of the mouth, and brought forward by the absorption of the fore part of the jaw. In the crocodile there is a constant succession of new teeth, which are formed on the same conical projecting pulp which the former occupied: in many kinds of fish the new ones are formed in rows of distinct pulps, and these may be situated either within or without the rows in use, but in either case are brought into action by the absorption of the opposite side of the jaw.

The last subseries displays the varieties in the situation of the teeth, which may be placed either on the jaws, the tongue, the palate, or in the stomach.

We next come to the principal organ of digestion.

Stomach.—This organ Hunter considers to be the essential part of every animal. In its simplest form it is a mere bag, secreting a liquid capable of dissolving and animalizing its contents, and possessing the power of absorbing the nutritious parts of the food, and rejecting that which is indigestible. In many cases such a bag constitutes the whole animal, as in the hydatid; but in most animals other parts are superadded to assist in the process of digestion. These parts vary exceedingly in different tribes, and "would serve as a ground for the classification of them." A copious illustration of the above facts is furnished by a number of preparations selected from the various orders of animals, commencing with the most simple, in which the stomach has but one orifice for the reception and rejection of foreign matter; and ascending through the radiated animals, where two orifices are found, and the digestive cavity is divided into stomach and intestines; to the insect tribe, where, in addition, a crop is sometimes found, for retaining the food previously to its undergoing digestion; or, in the case of the bee, to its being deposited in the hive. To these succeed the stomachs of mollusca, ascending from the ascidians, or soft-shelled mollusks* as Hunter aptly called them, through the acephalous tribe to the gasteropoda and cephalopoda of Cuvier.

The stomach of fishes is next displayed, which is for the most part a simple capacious bag, between which and the large and muscular œsophagus there is often scarcely any distinguishable separation. In some fishes, as in the Gillaroo trout and mullet, the

* Hunter had paid great attention to the anatomy of these animals, as also to that of the cirripeds, on both of which Cuvier has also published memoirs. The beautiful engravings attached to this portion of the Catalogue show how accurately and fully Hunter had unfolded the structure of the various organs, and how correctly, for the most part, he had made out their several offices.

stomach is a strong muscular organ, fitted in the former for breaking the shells of testaceous animals, on which it feeds; and in the latter, to grind down with sand the vegetable substances of which its nutriment consists.

In reptiles we find great diversities in the form of the stomach. In the ophidians, both this and the œsophagus are capable of great distension, for the reception of bulky animals, on which they prey. In the chelonians it is broad and flat, like the body; whilst in the crocodile it is divided into two cavities, a cardiac and a pyloric, much as we find it in some of the carnivorous birds.

Birds are furnished with a proventriculus, or glandular cavity, which receives the food before it passes into the stomach, or gizzard; and in the crane tribe we find a pyloric cavity between the gizzard and duodenum, as in the crocodile. The gizzard varies much in the strength of its muscular coat: this in carnivorous birds is much weaker than in granivorous; but if a bird of the former kind be fed on grain, the gizzard will become gradually more developed, as is shown by the preparation of a gull's stomach which had been so fed.

To the stomachs of birds succeed those of mammalia. In many of these the stomach consists of a simple cavity, which in the ornithorhynchus takes the general form of a gizzard, the cardiac and pyloric orifices being close to each other, as in birds.

In the porcupine, the stomach is partially divided into three cavities; in the peccary the division becomes more complete, the œsophagus opening into the middle one, whilst the cavity of the fundus takes a bifurcated form. In ruminating animals, however, a still greater degree of complexity exists: in these we find four cavities, the first two of which receive the food prior to rumination; but after rumination the food is prevented by a peculiar sensibility of the sphincter, which closes their orifices, from re-entering them, and is passed on by a sort of canal to the psalterium, or third cavity, and from thence to the abomasus, or fourth cavity.

In the llama and camel the muscular fibres of the first two cavities are disposed reticularly, and the mucous membrane forms sacculi between the meshes: into the sacculi of the second cavity water is received, and is preserved there for a long time in a pure state. In the whale tribe we find the stomach assuming a loculated form, and consisting of from four to seven cells, disposed in a row one after the other.

In this series are also deposited several preparations illustrative of the digestion of the coats of the stomach after death; a fact which Hunter first pointed out and explained.

Intestines.—The Third Series displays the structure of the intestines in various tribes of animals, arranged in the same order as is adopted for the stomachs.

Glands.—The Fourth Series exhibits the varieties which exist in the form and composition of the glands which aid in the process of digestion.

First, of the salivary glands: these in many mollusks are found in the form of tubes, blind at one end, and opening by the other into the buccal cavity, or œsophagus, and gradually as we rise in the scale assume the form of conglomerate glands.

Next, of the pancreas; which in like manner is first seen under the form of cæcal tubes, opening into the upper part of the intestine.

The same may be said of the liver at its first appearance as a separate organ. It soon, however, as in the mollusks, assumes the form of a conglomerate gland, and is in these of a large size. In the lower animals the bile is secreted from arterial blood.

After the liver, the gall bladder and ducts are exhibited. In many of the lower animals, and in some of the higher, there is no gall bladder. In the squalus maximus, for example, twelve ducts convey the bile from the huge liver to a receptacle six feet distant, and lying in contact with the duodenum, into which it opens. This, however, is not supposed to be analogous to the gall bladder, as a similar receptacle is found in the elephant, which possesses a gall bladder.

Next follow preparations of the spleen, and other appendages of the alimentary canal, and these complete the division devoted to the function of digestion.

Absorption.—The function of absorption is the one which is next illustrated. In vegetables this function is shown to be performed by simple tubes commencing in the roots, of an equal diameter throughout, and without branches.

The first traces of the absorbent system in the animal tribes are found in certain of the medusæ, as the rhysostome, on which vessels are found opening on the fringe, like appendages of the stem. These take up nourishment from the water, and coalescing into larger trunks, empty their contents into the digestive cavity.

In the aphrodita the absorbents consist of small capillary vessels, arising from the cæcal appendages of the intestine, where they take up the chyle, and convey it to various parts of the body, without the intervention of a heart.

The next step is to the lacteals of the higher animals, which terminate in the venous system. But the absorbents are employed not only in taking up nutriment for the supply of the body, but in conveying away the effete particles; and these are termed excretory absorbents. Amongst preparations illustrative of this function is one on which Mr. Hunter set a high value, as affording demonstrative evidence that the absorbents perform the above office. This is a preparation from the head of a spermaceti whale, where the lymphatics are seen filled with this animal oil, which they were in the act of taking up.

Circulation.—The organs of the circulation are next exhibited, in an ascending order. First, in those animals in which there appears to be no heart, as the leech, where we find two sinuous ventral vessels and a small dorsal vessel, each giving off lateral branches. In the amphinome, which has external branchiæ on each ring, small

vessels convey the aërated blood from them to the dorsal artery: this gives off other branches, and, amongst others, one which courses along the upper side of the intestine, whilst the corresponding vein to which its branches pass runs along the under side, and with the other veins enters the ventral vessel, from whence lateral branches are sent off to the branchiæ.

The situation of the heart in different animals is next shown. This, as Hunter observed, depends on the situation of the organs of respiration, which it always follows.

In insects the heart is a long tube, placed in the back, and extending from head to tail.

In the lobster and other crustaceæ it consists of a single cavity, also seated in the back, and of about the same extent as the roots of the branchiæ. In bivalve mollusks it is seated in the centre of the back. In the gasteropods, in various parts of the body, following the branchiæ. In fishes, just at the lower angle of the gills, &c.

Its composition becomes more complicated as we ascend in the scale of organization, beginning with the dorsal vessel of insects, which receives the blood through valvular openings in the sides of the vessel, from the irregular venous sinuses which permeate the adipose tissue, and distributes it to the body through lateral branches, as shown in the injected preparation of a large caterpillar. In the ascidians, or soft-shelled mollusks, there is a single long ventricle, which receives the blood at one extremity and distributes it from the other end to the branchial sac and body. In bivalves we find a single ventricle, sending the blood to the branchiæ, from which it passes to the body, and is received back into two auricles, which supply the ventricle. In the snail we have one ventricle and one auricle. In the cuttle-fish we find both a systemic and a branchial ventricle, and the latter indeed is divided into two portions, one seated at the base of each of the branchiæ. Two auricles receive the blood from the branchiæ, and empty themselves into the systemic ventricle.

In fishes we find a branchial ventricle and a single auricle. In some of the cartilaginous fishes the heart is largely supplied with valves; in the lophius europæus, for instance, the veins opening into the auricle are seen to be guarded by valves: the auriculo-ventricular opening has semilunar valves, and the opening from the ventricle into the bulb at the root of the main artery is surrounded with valves. In the sturgeon there are no less than three rows of valves in the bulb.

In reptiles we find two auricles, one receiving blood from the lungs, the other from the body, and a single ventricle supplying both. The ventricle, which in frogs and other batrachians is a simple cavity with one aorta, in the ophidians, chelonians, and saurians becomes more and more divided into different cells by imperfect septa, the general effect of which is to prevent the aërated blood from mixing equally with the whole mass of circulating fluid, and to direct it rather towards certain parts, as the head and upper extremities.

In birds we attain the most perfect form of heart, consisting of two ventricles and two auricles, as exhibited in the hearts of the ostrich, emu, &c.

The same form of heart prevails in mammalia; and under this head we find preparations of the huge heart of the elephant with its three venæ cavæ, and of the far more enormous heart of the whale.

To the foregoing preparations succeed others, in which the structure of the blood-vessels is exhibited: the nature and form of their valves; the several coats of which they consist; and the varieties in these displayed in different animals. The outer of these coats may be deficient when the vessel passes through cartilage, as is shown in the cervical vertebræ of the squalus maximus.

Respiration.—The organs in which the aëration of the blood is effected are exhibited in the succeeding series. This process may be effected,

First,—by exposure to the air contained in water.

The simplest form of the organ is where a certain portion of the general mass is especially devoted to this object, as the thin edge of the disk in some kinds of medusæ. In some of the annulose animals, as the amphinome, the organ consists of a bunch of rays seated on either side of each ring. In others, as the amphitrite, the branchiæ are collected on the rings of the neck. In the lobster and other crustaceæ, the branchiæ are attached to the legs, and are covered by a lateral extension of the dorsal shell. In bivalves they form foliated appendages on either side of the body, between it and the mantle. In the gasteropod and other mollusks the branchiæ assume very various and often elegant forms, and are variously placed on the body.

In the myxena, lamprey, and other cartilaginous fishes, the gills consist of a row of sacculi, varying in number, and placed on either side of the neck, each sac having an external orifice and an opening into the œsophagus, and its internal membrane being variously laminated, to afford larger surface for the aëration of the blood. In the bony fishes the gills are supported on bony arches, and covered by an operculum; these arches differ in form, and in some instances assume a very elegant appearance, as shown in preparations of the branchiostegal bones from the devil fish of the Antilles and others.

Secondly,—For the exposure of the blood to the air in water, and to the atmosphere.

The fœtus of the squalus alopeceus is shown to be furnished with external branchiæ when first born, as well as with gills; the former drop off after a time. In the siren and proteus there are external branchiæ and lungs, and both are persistent.

Thirdly,—For the exposure of the blood to the atmosphere.

Amongst the reptile tribes, we find that snakes are furnished with a single lung, consisting of a long bag, the upper part of which has vesicular parietes, whilst the lower serves as a reservoir of air, to be employed during the time in which the animal is swallowing its

prey and its trachea is obstructed. In frogs the lungs appear like a conglomeration of transparent sacculi. In the turtle these sacculi are much smaller, and more numerous, so as to give the lungs more the appearance of those of the mammalia, which are last shown. The series is completed by twenty preparations of the tracheæ and organs of voice in birds and mammalia.

Kidneys.—The organs for the depuration of the blood, or the kidneys, are next exhibited, and some of their most remarkable differences in situation, number, form, and structure in the vertebrated animals are shown.

Brain.—To this succeeds a series, containing about ninety preparations, in which the development of the brain and spinal marrow, from the knotted cord of insects and crustacea, with a small ganglion above the œsophagus; representing the brain upwards through fishes, reptiles, and birds, to the perfect brain and spinal cord of the mammalia. This series is perhaps one of the least complete, and this has arisen from the small degree of importance which these organs obtained in Hunter's physiology compared with that attached to them in the present day.

ORGANS OF THE SENSES.

To the series illustrative of the central portions of the nervous system succeeds one consisting of not less than four hundred preparations of the several organs of the senses.

Of Feeling and Touch,—Exhibiting the cutis increasing in vascularity in proportion as its sensibility increases; the varieties in compactness, density, &c., which the cutis exhibits in different animals; the slowness with which it decays under certain circumstances, as illustrated by a preparation of the right hand of a body, said to be that of John of Gaunt, in which the cutis is perfect; lastly, its retention of marks made in it, as in the tattooed skins of South-Sea Islanders or British sailors.

Of Taste.—Exhibiting the tongues of animals, arranged according to their secondary uses; to which succeed fifteen preparations of some of the principal varieties of the mouths and fauces of different animals.

Of Smell.—In fishes the organ of smell assumes the form of laminæ, arranged in various order around the nasal cavity. In reptiles the cavity is divided by folds of the olfactory membrane, as in the higher animals; but these do not contain bony plates between their layers: the organ is exhibited in the turtle and other animals of this class. In birds the extension of the nasal cavity becomes greater, especially in birds of prey, and canals leading from it communicate with the air-cells of the head, as shown in the swan and eagle. In mammalia it becomes still more complicated.

Of Hearing.—In this collection are contained several good preparations of the ear in fishes, to which Hunter had paid much at-

tion, showing the semicircular canals, the sac in which they terminate, and its ossicles, varying in number from one to three. In most fishes the ear has no external communication; but in the ray, the squalus, and other cartilaginous fishes, a canal leads from the sac to the surface of the head, where its orifice is closed by a membrane. In reptiles, birds, and mammalia the organ becomes gradually more complicated by the development of the concha and addition of the tympanum and external ear.

Of Sight.—The structure of the eye and its appendages is developed in a hundred and fifty preparations. The peculiarity in the eye of the cuttle, which Cuvier has since pointed out, namely, that the choroid coat is placed in front of the retina, had attracted Hunter's notice, and is shown in several preparations. The structure of the eye in fishes, fitting them for seeing in a medium of high refractive power, is shown; as also the peculiar fulcrum on which the eye revolves in cartilaginous fishes. The plicated arrangement of the retina in birds, enabling them to see at vast distances; the tapetum lucidum, the membrana nictitans, and the various forms of the pupil in several mammalia, adapted to their habits of life; and lastly, the structure of the eye in man, are all exhibited in this series.

Cellular Tissue.—To the organs of the senses succeeds a series in which the various forms which the cellular tissue assumes are well shown, as also the varieties of oil and fatty matter contained within its cells in different animals.

External Coverings.—The external covering alone remains to complete the list of parts fitted for providing for the necessities of the individual, and the various forms which this assumes constitute the subject of the next series. We commence as usual with the vegetable tribes, of which the texture and appearance of the cuticle is first shown, and next of the animal tribes. The colour of the skin in the latter is seen to depend on the rete mucosum, and this in the dark varieties of mankind assumes more of a membranous character, than in the lighter varieties. The arrangement of the external covering, in the form of hair, bristles, feathers, &c., is exhibited, and the mode in which the latter are formed is developed in several excellent preparations. Several other specimens exhibit the cuticular lining of the œsophagus and stomach in various animals. In others the external cuticle is shown to become thicker where parts are exposed much to the action of external bodies, or to assume the form of scales, nails, hoofs, and spines, or of beaks, horns, or spurs, according as defensive or offensive weapons may be required.

Individual Peculiarities.—This division of the Museum is completed by a series of about one hundred and eighty preparations of some of the most distinguishing peculiarities of individual species or of classes of animals in the vegetable and animal kingdoms. Amongst the former may be noticed the elegant natural ewer of the pitcher plant, and the apparatus at the joints of the leaflets, subpe-

tioles, and petioles of the sensitive mimosa, causing these parts to collapse on the slightest touch. As examples of the peculiarities amongst animals are exhibited the casting off and regeneration of the external covering and cuticular lining of the stomach in crustaceous animals; and of the cuticular covering in serpents. The regeneration of entire members in crustacea, newts, &c. The green bones of the gar pike, or belone vulgaris of Cuvier. The dark periosteum of the African fowl. Peculiarities in the intestines, arterial system and urinary bladder in various animals. Local deposits of fat for specific purposes. The tentacula of the cuttle tribe, with the suckers which enable them to secure their prey. The termination of the elephant's proboscis. The substitution of whalebone for teeth in the whale. The ornamental appendages of the male in some species of birds. The peculiar glands of animals whether for internal uses or opening externally, as the oil-bags of birds, the odoriferous glands of the peccary, &c. The air-bladder of fishes. Feet in mammalia adapted for swimming. Fins in fishes for flying. Coralline formations. The stings of insects, and poison-teeth of serpents. The electric organs of the torpedo and electric eel, &c.

THE SECOND DIVISION OF THE GALLERY,

ILLUSTRATIVE OF THE FUNCTION OF RE-PRODUCTION,

Contains about fifteen hundred preparations, admirable alike for their delicacy and beauty as works of art, and for the accurate and extensive information they afford on this interesting department of physiology.

They are arranged, according to the Synopsis of the Museum, in ten series.

The first series, which contains preparations of the sexual organs in hermaphrodite plants and animals, commences with an elegant selection of subjects, exhibiting some of the most striking varieties in the form and arrangement of these parts in hermaphrodite flowers. To these succeed preparations of the organs in self-impregnating animals, as the asteriæ, the cirripeds; and lastly, of hermaphrodite animals, which perform a double coitus, as the snail, slug, and other gasteropod mollusks.

The second series of this division exhibits the form and structure of the male organs, commencing with the stamina of plants; then ascending to the animal kingdom, and exhibiting, first, the testes and penis in insects, as the bee, the scorpion, &c.; then in fishes, amongst which we find two distinct forms: in osseous fishes the testis, or milt, is a cellular sac, varying greatly in size at different seasons, which opens by a common orifice with the kidney, immediately behind the anus. In the ray and squalus it is a granular mass, having more of the form of the testis in the higher animals, and opens into the cloaca. Several preparations exhibit the testicle

in the toad, increasing in size in the season of coupling, and attended with an increase in the size of the tubercle of the thumb, which is employed in retaining the female. The testis and penis of snakes and lizards are next shown, the latter of which organs is seen to be double. In the crocodile and turtle it is single, and assumes the general form which it exhibits in mammalia; but the urethra, instead of forming a canal, consists of a groove only, in the dorsum penis. In birds the size of the testis varies very much at different seasons; this fact is shown in the sparrow. The urethra is a groove, as it is in reptiles, but the form of the penis varies much. In the ostrich it is straight and large; in the goose, duck, &c., it assumes a spiral form when thrust out from the sheath. The structure of these organs in mammalia, is shown in several injected preparations, and in others where the seminal tubes have been unravelled to show their great length; and the series is completed by several specimens, which exhibit the form and structure of the accessory glands, as the vesiculæ seminales, prostate, and Cowper's glands, in different animals.

The third series consists of preparations of the female organs in plants and animals. A few specimens of the pistils of plants head the series; and these are followed by the ovaries and ducts in molluscous animals; in insects; in fishes, whether bony or cartilaginous; in reptiles; in birds, where only one ovary is developed; and in the ornithorhynchus. Next follow the ovaries and uterus in animals, amongst which the latter organ is simple, or divided into two cavities, or furnished with horns. In the marsupial animals the horns are seen opening into a central or third cavity, which does not communicate directly with the vagina, but intermediately, by means of two lateral curved canals. The last eighteen preparations of this series exhibit the form of the clitoris in mammalia, and the occasional appearance of a hymen in them.

The coitus in some of the lower animals is exhibited in the ten succeeding preparations.

The development of the ovum forms the subject of the three following series. First, in plants which have no evident seeds; next, in gemmiparous animals, as the hydatid; next, in cryptogamous and phanerogamous plants; and lastly, in hermaphrodite animals, whether self-impregnating, as the asteria, the barnacle; or mutually impregnating, as snails, slugs, and other gasterapods.

The sixth series of this division contains about four hundred and fifty preparations, illustrating the various conditions in which the eggs of oviparous animals are placed for the purpose of being hatched, and of the changes which take place in the young animal during the fœtal state. The ova of some animals, as certain of the univalve mollusks, are deposited previously enclosed in a membranous nest. In others the eggs are retained in clusters, as is the case with the sepia, the ova of which resemble a bunch of grapes; or with the roes of osseous fishes. In the insect tribes the young undergo certain metamorphoses before they attain the perfect state: these changes

are exemplified in about ninety preparations of the larva and chrysalis state of different insects, and in about the same number, forming a regular series of the changes in the silk-moth. The caterpillar state of several other insects is shown, and these are followed by preparations of the nidus which many insects prepare to receive the egg and contain it during its transformation. The ova of some animals are carried in the arms of the mother until hatched; in the crustacea they are fixed to the scales beneath the tail. In osseous fishes they are clustered in masses; in the ray the eggs are deposited singly, each, as it passes through a gandular enlargement of the oviduct, having a horny shell secreted on its surface; this is shown in several very elegant preparations: in the shark the ova are hatched before they leave the oviducts. In Batrachian reptiles the young are furnished with gills, which are cast off when they leave the tadpole state. Of snakes and lizards, some are seen to have the eggs hatched in the body, and others externally. The turtle and crocodile deposit their eggs on the ground, where they are hatched by the warmth of the sun. In birds they are hatched under the mother. The formation of the egg in birds is next shown; and the series is completed by about forty preparations, exhibiting the progress of incubation in the egg. These, which were originally beautiful preparations, have, from their delicacy, been somewhat injured by time; but happily the deficiency is more than compensated by a series of exquisite drawings, made under Mr. Hunter's eye by Mr. Bell. These will be published along with the descriptive catalogue of this part of the museum; and if the engravings should be executed, as there is every reason to hope they will be, in a manner worthy of the originals, they cannot fail to excite a very high opinion of Mr. Bell's talents as an artist, as well as serve to show with what masterly skill Hunter prosecuted his researches in this branch of physiology.

The seventh series illustrates the development of the ovum and its contents in Mammalia. The changes which the ovary undergoes subsequently to impregnation are first shown, in various animals. Then the changes going on in the uterus; first, in such uteri as have horns, where the several ova are seen to occupy separate compartments; next, in uteri without horns, under which head are arranged a number of preparations of the uterus in woman, at different stages of pregnancy; and these are followed by others, showing the changes which the uterus undergoes subsequently to parturition. The series is completed by a number of preparations designed to elucidate the structure of the placenta, and its connexion with the uterus, a point which has given rise to so much discussion of late.

The eighth series shows the principal peculiarities of structure in the young animal during the fœtal state, such as the yolk-bag, and its connexion with the fœtus; the fœtal circulation in birds; the horny knob on the beak used in breaking the shell; the reception of the yolk into the stomach; the umbilical cord in Mammalia;

the open foramen ovale; the ventricles of the heart of equal thickness; the situation and descent of the testes; the membrana pupillaris, and the large thymus gland.

The ninth series illustrates the growth of the young, whether in plants or animals.

The tenth and last series shows some of the various modes in which food and protection are furnished for the young animal; as, for instance, the glandular structure in the crop of pigeons, which secretes a kind of milk; the lactiferous glands of Mammalia; the young lodged in temporary cells on the back of the mother, as in the pipa frog; or carried in a pouch, as in the marsupial animals; or preserved in nests, as in birds, insects, &c.

Having entered into so full an account of the Physiological Gallery, the remaining departments of the Museum must be treated of but briefly.

DRY PREPARATIONS.

That which comes next to be noticed is the collection of objects in Comparative Anatomy preserved in a dry state. This department contains 745 specimens, of whch 617 belonged to the original Museum as left by Hunter. These are arranged in eleven series, which successively exhibit preparations of the heart and blood-vessels; of the absorbents; of the respiratory organs; of the digestive organs; of the male urino-genital organs; of the same organs, with the lactiferous apparatus, in the female; of the nervous system; of the organs of vision; and of the cutis. The tenth series contains models, casts, &c.; and the eleventh, several mummies. Various interesting and curious preparations are comprised under these several heads: the first affords a pretty full illustration of the various modes in which the aorta and its first branches arise in different animals; the sixth consists of the admirable preparations of the nerves which accompanied Mr. Swan's prize essay on this subject; in the tenth series are three wax models by the celebrated Clementi Susini; and amongst the mummies the most remarkable is that of Martin Van Buchell's wife, which was prepared by Cruikshank according to Dr. Hunter's directions, and given many years afterwards to the College by her son.

The Catalogue of this department forms the fourth part of the General Catalogue in the course of publication.

OSTEOLOGY.

The department of Human and Comparative Osteology is that which I shall next briefly notice. To the specimens here contained, very large and valuable additions have been made since Mr. Hunter's death. The original collection consisted of 963 preparations, to which 973 have since been added. The sources whence these have been derived are very various; the most abundant has been

that of donations, but many of the rarest and most valuable skeletons were purchased by the College at the sale of Mr. Brookes's Museum. Only a fifth part of the valuable specimens contained in this department has yet been displayed, from a want of room in the present building; and upwards of 400 boxes, containing either the whole or a portion of the skeleton of various animals prepared by Mr. Hunter, remain shut up from public view. Of these, a manuscript catalogue is in the course of publication. The arrangement adopted for this department is that of Cuvier in his *Règne Animal.* At the head of the collection stands the skeleton of Charles Byrne, who measured eight feet four inches in height at his death; and as a contrast to his gigantic remains, we find here the skeleton of Mdlle. Crachami, an Italian dwarf, who, at the age of nine, when she died, measured only twenty inches in height. The order Bimana is further illustrated by a large collection of skulls, exhibiting the characters of the five great varieties of the human race, the Caucasian, Mongolian, American, Æthiopian, and Malay. The preparations from which the engravings in Hunter's work on the teeth were made are also deposited in this collection. Under the order Quadrumana we find the skeleton of the adult pongo, the chimpanze, and ourang-outang, and a few specimens from the family of lemurs.

The large order Carnivora also contains many valuable skeletons, principally from animals of the true carnivorous tribes, as the Plantigrada, Digitigrada, and Amphibia. The Cheiropterus and Insectivorous genera are but scantily illustrated.

The order Rodentia contains about a dozen skeletons, with several skulls of some of the rarer species.

In the order Edentata we find a few valuable skeletons, amongst others one of the Rufous Ornithorhynchus. There are also several specimens of the Marsupiata.

The order Pachydermata exhibits various specimens of the tusks, teeth, and skulls of elephants, as also the skeleton of Chuni, the large male elephant, whose violence necessitated his destruction some years since at Exeter 'Change; a skeleton of the hippopotamus, of the single-horned rhinoceros, and of the two-horned rhinoceros; as also the tapir, and of several of the smaller Pachydermata.

The order Ruminantia is rich in skulls and horns of the antelope tribes, and of other genera, but contains few skeletons.

There is no adult skeleton of any of the larger species of the Cetaceous tribes except one of a young whalebone-whale, and about half a dozen skeletons of the smaller animals of this race.

The class Aves, though illustrated by several valuable skeletons and a large collection of skulls, affords ample room for the donations of liberally disposed individuals.

The same remark holds good of the class Reptilia.

The class Pisces is very meagrely supplied with skeletons, which

no doubt chiefly arises from the difficulty experienced in preparing and preserving in place the bones of these animals.

The Catalogue of this department forms the third part of the General Catalogue.

MONSTERS.

The department which next claims our attention is that containing preparations of monsters and malformations. These are disposed in two divisions, according as the preparations are preserved in spirit or in a dry state, and each division comprises four series, as arranged by Hunter.

The first series contains examples of the preternatural situation of parts. The second, of the addition of parts. The third, of the deficiency of parts. The fourth, of hermaphroditism. Several curious and valuable preparations are contained in this collection; many have been added since Hunter's death. Amongst the latter are to be numbered two in the first series, which exhibit curious instances of one fœtus becoming inclosed in the belly of another. The first is that which occurred to Mr. Highmore, of Sherborne; in which the fœtus was encysted in the belly of a young man of seventeen. In the second, which occurred to Mr. G. Young, the containing child was six months old when it died. The histories of both have been published.

Under the second head we find various examples of double parts in animals; amongst others, of a double uterus and vagina in a woman, and one of the uteri containing a fœtus of seven months.

The case of deficiency of parts is exemplified by preparations of the heads of pigs and lambs, in the former of which animals malformations appear to be very common. In several of these the whole of the face which lies anterior to the ears is wanting; in others there is but one eye, in the centre of the forehead, with a proboscis from the forehead. Pigs so constructed go under the name of elephant pigs.

The fourth series contains preparations from the hermaphrodite cow, or free-martin, on the generative organs of which Hunter wrote a paper in the Philosophical Transactions; as also of the organs of generation in hermaphrodite sheep and dogs. The organs of the hen pheasant, which has taken on the plumage of the cock, are also here exhibited.

Amongst the series of dry preparations the most curious is that of a double skull, which belonged to a child of six years of age. The skulls are united by their vertices; the upper one was supplied by blood-vessels passing through the united portions; and from the account given by eye-witnesses, the upper head seems during life to have experienced sensations, and to have exhibited mental operations, distinct from those of the lower head.

These preparations are described in the fifth part of the General Catalogue.

NATURAL HISTORY.

1. *In spirit.*—The next department of the Museum contains 2098 specimens of natural history preserved in spirit, of which 1743 belonged to the Hunterian collection. As yet only a catalogue of the invertebrate animals has been published, which amount to 614 in number. "This division," says Mr. Owen, who prepared the catalogue, "originated in the preservation of natural objects transmitted to Mr. Hunter for dissection, which accumulating as the reputation of the illustrious founder increased and extended, and as the requisite leisure for their examination became abridged, at length enabled him to exhibit in a series the most remarkable differences in the outward forms of the animal kingdom. They were arranged by him in the ascending order; this order has therefore been adhered to, and best accords with the position of the several classes of animals whose structures are shown in the Physiological Gallery. With a few exceptions, the classes and orders of Cuvier and Lamarck have been adopted. The invertebrate animals are arranged in two series, one ascending through the inarticulate, the other through the articulate classes."

The Tunicata are arranged according to Mr. MacLeay's method. The Entozoa, after Rudolphi. The Cirripeds, after Dr. Leach. His genera have also been adopted for the Crustacea; but the families and the orders are arranged according to Latreille's method in Cuvier's *Règne Animal.* After the latter also the Insecta are arranged.

2. *Stuffed.*—In addition to the specimens of natural history preserved in the foregoing department, the Museum contains a small collection of stuffed animals,* and about 1000 dry specimens of insects, shells, zoophytes, &c., of which no catalogue has yet been published.

3. *Fossils.*—The collection of fossils contains 1415 specimens, of which two hundred have been added since the death of Hunter. There exists a manuscript catalogue of this department, with introductory remarks by Hunter, but this has not yet been published.

PATHOLOGY.

Having thus taken a rapid sketch of the natural history departments of the Museum, a brief notice must now be given of the department of pathological anatomy. The preparations here contained are arranged under three heads. The first contains specimens of deceased parts preserved in spirit. The second, pathological preparations in a dry state. The third, the inorganic products of disease, as calculi, concretions, &c.

1. *In Spirit.*—Under the first head are arranged 1392 specimens,

* An application is at present before the Privy Council for leave to dispose of the larger stuffed animals, which take up disproportionately the room of the Museum, while they only indirectly subserve the primary object of its formation.

of which 1084 constituted the collection as left by Hunter. They are disposed in three divisions, of which the first illustrates the actions of restoration and of disease in the various structures of the body. Examples of union by the first intention are first exhibited; to these succeed specimens of adhesive inflammation; of suppuration, under various circumstances; of ulceration, in its different forms; of granulation, as seen on different tissues; of cicatrization; of the union of fractured bones. These are followed by a series illustrative of the effects of inflammation in bone, of diseases in joints, and of dislocation of bones. Diseases arising from pressure are next exemplified; then the collection of fluids in cavities; diseases of the circulating system; tumours not encysted; and finally, encysted tumours.

In the second division the effects of specific or peculiar diseases are shown, as of scrofula, cancer, fungated ulcer, small-pox, gout, syphilis, gonorrhœa, hydrophobia.

The third division contains specimens of disease, arranged according to their locality, beginning with diseases of the œsophagus, and proceeding to those of the stomach, intestines, and anus; of the liver and gall-bladder; of the spleen, kidney, and urinary bladder; of the uterus and its appendages, in the impregnated and unimpregnated state; of the brain and its membranes; of the spinal cord and nerves; of the eye; of the gums and teeth; and lastly, of the air-passages and lungs.

2. *Dry*.—Under the second head we find a large collection of dry preparations, illustrative of the actions of disease and restoration in bones, on which subject Hunter was preparing a work for publication at the time of his death. He bestowed great pains on the arrangement of these specimens, and left behind him very complete explanatory documents relating to them; but these, it is supposed, were committed to the flames by Sir Everard Home, along with the manuscripts which have been mentioned before. Besides the above specimens, we find under this head specimens of diseases occurring in teeth; of diseases in the blood-vessels, lungs, intestines, and urinary organs; besides a variety of casts, and other miscellaneous objects.

3. *Calculi*.—The collection of calculi and concretion contains 1781 specimens, of which more than two thirds have been added since the death of Hunter. A manuscript catalogue of the whole has been completed, but the chemical composition of several of the specimens remains yet to be ascertained.

I have endeavoured in the above outline to furnish a general conception of the character and contents of the Museum of Hunter. That it conveys but a faint idea of the real merits of this noble monument of his genius I am well aware. The brevity with which I have been compelled to speak of the several parts has necessarily prevented my entering into those details which would have given interest to the account, and under any circumstances a written description could furnish but an inadequate notion of the merits of this

work. He that would fully appreciate these must not only see the collection, but must examine each part with minute attention; for in this way alone can a correct idea be acquired of the skill displayed in the execution of the several parts, and of the comprehensive genius and indefatigable industry, the combination of which alone could have enabled him to plan and to execute so great an undertaking.

Without doubt it is by this work, above all others, that Hunter has immortalized his name. In his writings we occasionally find an obscurity in the expression of his thoughts, a want of logical accuracy in his reasonings, and an incorrectness in his language, resulting from a deficient education. In this work no such failings are apparent; Nature is here made to be her own expositor, and the treasures she has poured forth come fresh to the mind from the fountains of knowledge, unimpaired by passing through the imperfect medium of language, and unimpeachably proclaiming the genius of him by whose labours they were brought to light. That Hunter should have still left this work incomplete, after so many years devoted to its construction, will not surprise those who reflect that the stores of Nature are in truth inexhaustible. He has raised a noble edifice, the magnitude and beauty of which all must admire who consider that it was the work of one mind; but there is still ample room for the labours of others in adding to or completing its various parts; and those to whose care this invaluable collection has been committed could not have better forwarded the interests of science than by devoting, as they have done, some of the ample funds at their disposal to judiciously increasing its treasures, and to making those treasures more extensively useful by publications, such as those by which they are now illustrating them.

It has long been a subject of just regret that the building in which the Museum is at present contained, does not afford room for the display of more than one half of the whole collection. The Council have therefore determined on increasing the accommodation, by the incorporation of the two adjoining houses, so as to form one uniform building, in which particular attention has been paid to ensure the complete illumination of every part, a point in regard to which the present premises are remarkably defective.*

This building is now rapidly advancing, and will probably be completed in about a twelvemonth, by which time also the remaining parts of the General Catalogue will be far advanced. In addition to this the College has provided, at an expense of upwards of

* It is perhaps to be regretted that the Council of the College should have come to the resolution of building upon their present site, where they are confessedly so much cramped for room. The accumulated and yearly funds of the College, amounting in 1832 to upwards of 66,000*l.* in hand, and 11,000*l.* per annum, might justly have warranted a more enlarged plan, commensurate with the trust reposed in their hands, and with the expectation of further increase, which they have a right to entertain. The building, however, which is now in progress will form a noble object in the metropolis, and be a great improvement upon the former one.

10,000*l.*, a magnificent library, to which valuable additions are now being made; so that when these and the before-mentioned arrangements are completed, the surgical profession in England will have reason to boast of possessing one of the noblest scientific establishments which the world can exhibit.

APPENDIX.

Chronological List of Mr. Hunter's Writings.

1762. 1. On the Descent of the Testis—Medical Commentaries, by Dr. Wm. Hunter. Part I. p. 75; and Animal Œconomy.

—— 2. On Absorption by Veins—Med. Comm. p. 42.

1766. 3. An account of an amphibious Bipes, by J. Ellis, with supplement by J. Hunter—Phil. Trans.

1771. 4. Treatise on the Natural History of the Human Teeth, Part I.

1772. 5. On the Digestion of the Stomach after death—Phil. Trans., and Animal Œconomy.

1773. 6. Anatomical Observations on the Torpedo—Phil. Trans.

1774. 7. An account of certain receptacles for air in Birds, which communicate with the lungs and Eustachian tubes, &c.—Phil. Trans., and Animal Œconomy.

—— 8. Observations on the Gillaroo Trout, commonly called in Ireland the Gizzard Trout—Phil. Trans., and Animal Œconomy.

1775. 9. An account of the Gymnotus electricus—Phil. Trans.

—— 10. Experiments on Animals and Vegetables, with respect to the power of producing heat—Phil. Trans., and Animal Œconomy.

1776. 11. Proposals for the recovery of people apparently drowned —Phil. Trans., and Animal Œconomy.

1776 to 1782. 12. Croonian Lectures on Muscular Motion (never printed).

1777. 13. On the Heat of Animals, &c.—Phil. Trans., and Animal Œconomy.

1778. 14. Treatise on the Natural History of the Human Teeth, Part II.

1779. 15. An account of the Free Martin—Phil. Trans., and Animal Œconomy.

1780. 16. Account of a Woman who had the smallpox during pregnancy, and who seemed to have communicated the same disease to the fœtus—Phil. Trans.

1780. 17. An account of an extraordinary Pheasant—Phil. Trans., and Animal Œconomy.

1782. 18. Account of the Organ of Hearing in Fishes—Phil. Trans., and Animal Œconomy.

1784. 19. Observations on the inflammation of the internal coats of veins—Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. i.

1785. 20. Description of a new Marine Animal, in a letter from Mr. Everard Home to J. Hunter, F.R.S., with a postscript by Mr. Hunter, containing anatomical remarks upon the same—Phil. Trans.

1786. 21. Treatise on the Venereal Disease.

—— 22. Observations on certain parts of the Animal Œconomy, being a republication of certain papers above mentioned, in the Phil. Trans., to which were added the nine following:

23. A description of the situation of the Testis in the Fœtus, with its descent into the scrotum.

24. Observations on the glands situated between the rectum and the bladder, called vesiculæ seminales.

25. On the Structure of the Placenta.

26. Some observations on Digestion (almost an entirely new paper).

27. On a secretion in the crop of breeding Pigeons for the nourishment of their young.

28. On the colour of the Pigmentum nigrum in different animals.

29. The use of the oblique Muscles.

30. A description of the Nerves which supply the Organ of Smelling.

31. A description of some branches of the fifth pair of Nerves.

1787. 32. Observations tending to show that the Wolf, Jackall, and Dog are all of the same species—Phil. Trans. and Animal Œconomy, 2d Edit.

—— 33. An experiment to determine the effect of extirpating one ovarium upon the number of young produced.—Phil. Trans., and Animal Œconomy, 2d Edit.

—— 34. Observations on the Structure and Œconomy of Whales. —Phil. Trans.

1789. 35. Supplement to the paper on the Wolf, Jackal, and Dog. —Phil. Trans., and Animal Œconomy, 2d Edit.

—— 36. On Introsusception.—Transactions of a Society, &c., vol. i.

—— 37. An account of Mr. Hunter's method of performing the operation for the cure of Popliteal Aneurism, by Everard Home, Esq., from materials furnished by Mr. Hunter.—Transactions of a Society, &c., vol. i. and ii.

1790. 38. A case of Paralysis of the Muscles of Deglutition cured by an artificial mode of conveying food and medicines into the stomach.—Transactions of a Society, &c., vol. i.

—— 39. Some observations on the loose cartilages found in joints, and most commonly met with in that of the knee, by Everard Home, Esq., from materials furnished by Mr. Hunter.—Transactions of a Society, &c., vol. i.

—— 40. General observations on the mode of collecting and sending home animals, and on the nomenclature and classification of animals.—Journal of a Voyage to New South Wales, by John White, Esq.

—— 41. Description of the Kangaroo.
—— 42. —————— Wha Tapoau Roo.
—— 43. —————— Dingo, or Wild Dog of Australia.
—— 44. —————— Tapoa Tafa or Tapha.
—— 45. —————— Poto Roo, or Kangaroo Rat.
—— 46. —————— Hepoona Roo.

Journal of a Voyage to New South Wales, by John White, Esq.

1791. 47. Observations on certain horny excrescences of the human body, by Everard Home, F. R. S., from materials furnished by Mr. Hunter.—Phil. Trans.

1792. 48. Observations on Bees.—Phil. Trans.

1793. 49. Some facts relative to the late Mr. J. Hunter's preparation for the Croonian Lectures, by E. Home, Esq.—Phil. Trans.

1794. 50. Observations on the Fossil Bones presented to the Royal Society, by the Margrave of Anspach, by the late Mr. J. Hunter.—Phil. Trans.

1794. 51. Treatise on the Blood, Inflammation, and Gun-shot Wounds.

—— 52. The case of a young Woman who poisoned herself in the first month of pregnancy, by Thomas Ogle; to which is added an account of the appearances after death, by the late J. Hunter.—Transactions of a Society, &c., vol. ii.

—— 53. Mr. Hunter's opinion concerning the Anatomy of the Camel's Stomach.—Natural History of Aleppo, by Alexander Russel, Esq., 2d Edit. vol. ii. p. 419.

—— 54. Notes on the Anatomy of the Jerboa, by Mr. Hunter.—*Ibid.*, vol. ii. p. 419.

1798. 55. Experiments and observations on the growth of Bones, from the papers of the late Mr. Hunter, by Everard Home, F. R. S.—Transactions of a Society, &c., vol. ii.

Some account of the Editions of Mr. Hunter's Works.

TREATISE ON THE NATURAL HISTORY OF THE HUMAN TEETH.

1st Edit. { Part I. 4to. 1771.
{ Part II. 4to. 1778.

On the occasion of the publication of Part II. a new title-page was added to Part I., and the two (being bound together) were sold as the *second* Edition.

2d Edit. 1778.—The circumstances of this Edition are explained above.

3d Edit. 4to. 1803.

A few unimportant alterations in the disposition of the prefatory parts of the work are made in this edition.—No pains seem, however, to have been taken to rectify any of the errors of the former editions.

The drawings from which the engravings were made having been marked by Mr. Hunter with the initial capital letters A, B, C, &c., instead of by the Roman numerals I. II. III., &c., the engraver mistook the I for the J, &c., and thus innumerable errors in the references arose, which rendered the explanations to several of the plates absolutely unintelligible in all the former editions.

TREATISE ON THE VENEREAL DISEASE.

1st Edit. 1786. 4to.

2d Edit. 1788. 4to.

The alterations in the Second Edition were mostly verbal. Both the First and Second Editions were printed and published at Mr. Hunter's own residence.

3d Edit. 4to. with Notes by Sir Everard Home.

This was printed by some mistake from the First, instead of from the Second Edition, and is therefore chargeable with all those errors which Mr. Hunter was at so much pains to correct. The Editor has not only added notes at the foot of the page, but has incorporated his own remarks in the body of the text, without the insertion of any marks by which they may be distinguished. He has also omitted whole paragraphs, or parts of paragraphs, in several parts of the work, without any apparent authority for so doing. The work is illustrated by the original plates.

4th Edit. 1810. 1 vol. 8vo. with Notes by Dr. Joseph Adams.

This is a pretty correct reprint from the Second Edition. Dr. Adams, however, was too enthusiastic an admirer of Hunter to admit of his seeing any defects in the works of his favourite author; and consequently his notes rarely apply themselves to the real difficulties or defects of the work, but rather manifest a determination to uphold the opinions of his *friend* at all events. The plates which illustrate this edition are reduced from the 4to plates, and cannot be commended.

5th Edit. { 1809. / 1810. } 4to. with Notes by Sir Everard Home, Bart.

Being the *Second* Edition by this Editor, in which, however, few deviations from the First are observable. A suppositious title-page, purporting to be the *Third* Edition, seems to have been added in 1810, in order to increase the sale.

OBSERVATIONS ON CERTAIN PARTS OF THE ANIMAL ŒCONOMY.

1st Edit. 1786. 4to.
2d Edit. 1792. 4to.

Both these Editions were printed and sold at Mr. Hunter's own residence. The Second Edition contains two additional papers, as well as some additional plates illustrative of the papers contained in the First Edition. The alterations are exceedingly numerous in every part of the work, and, upon the whole, considerable additions are made.

TREATISE ON THE BLOOD, INFLAMMATION, AND GUNSHOT WOUNDS.

1st Edit. 1794. 4to.

Was about one third through the press when Mr. Hunter died. It possesses no index. Its punctuation is extremely erroneous, the language often obscure, and the printing very inaccurate. These defects must be ascribed to the circumstance of Mr. Hunter's death, and the neglect which the work afterwards suffered. A Life, by Sir Everard Home, is prefixed.

2d Edit. 1812. 2 vols. 8vo.
3d Edit. 1818. 2 vols. 8vo.
4th Edit. 1828. 1 vol. 8vo.

These are merely reprints of the errors as well as of the other matters contained in the first 4to Edition. The plates are reduced from the 4to plates, and cannot be praised as specimens of the art of engraving. None of these Editions contain any Index, or Life of the author.

Mr. Hunter's Evidence on the Trial of John Donellan, *Esq., for the wilful Murder, by poison, of Sir* Theodosius Edward Allesley Boughton, *Bart., at the Assizes at Warwick, on Friday, March* 20, 1781.*

(Taken in Short Hand by J. Gurney, Esq.)

Mr. John Hunter *sworn: Examined by* Mr. Newnham.

Q. Have you heard the evidence that has been given by these gentlemen?—*A.* I have been present the whole time.

* See Life, p. 62.

Q. Did you hear Lady Boughton's evidence?—*A.* I heard the whole.

Q. Did you attend to the symptoms Her Ladyship described, as appearing upon Sir Theodosius Boughton, after the medicine was given him?—*A.* I did.

Q. Can any certain inference, upon physical or chirurgical principles, be drawn from those symptoms, or from the appearances externally or internally of the body, to enable you, in your judgment, to decide that the death was occasioned by poison?—*A.* I was in London then; a gentleman who is in Court waited upon me with a copy of the examination of Mr. Powell and Lady Boughton, and an account of the dissection, and the physical gentlemen's opinion upon that dissection.

Q. I don't wish you to go into that; I put my question in a general way.—*A.* The whole appearances upon the dissection explain nothing but putrefaction.

Q. You have been long in the habit of dissecting human subjects. I presume you have dissected more than any man in Europe?—*A.* I have dissected some thousands during these thirty-three years.

Q. Are those appearances you have heard described such, in your judgment, as are the result of putrefaction in dead subjects?—*A.* Entirely.

Q Are the symptoms that appeared after the medicine was given such as necessarily conclude that the person had taken poison?—*A.* Certainly not.

Q. If an apoplexy had come on, would not the symptoms have been nearly or somewhat similar?—*A.* Very much the same.

Q. Have you ever known or heard of a young subject dying of an apoplectic or epileptic fit?—*A.* Certainly; but with regard to the apoplexy, not so frequent; young subjects will perhaps die more frequently of epilepsies than old ones; children are dying every day from teething, which is a species of epilepsy arising from an irritation.

Q. Did you ever, in your practice, know an instance of laurel-water being given to a human subject?—*A.* No, never.

Q. Is any certain analogy to be drawn from the effects of any given species of poison upon an animal of the brute creation, to that it may have upon a human subject?—*A.* As far as my experience goes, which is not a very confined one, because I have poisoned some thousands of animals, they are very nearly the same; opium, for instance, will poison a dog similar to a man; arsenic will have very near the same effect upon a dog as it would have, I take it for granted, upon a man. I know something of the effects of them, and I believe their operations will be nearly similar.

Q. Are there not many things which will kill animals almost instantaneously, that will have no detrimental or noxious effect upon a human subject; spirits, for instance, occur to me?—*A.* I apprehend a great deal depends upon the mode of experiment; no man is fit to make one but those who have made many, and paid considerable attention to all the circumstances that relate to experiments. It is

a common experiment, which I believe seldom fails, and is in the mouth of everybody, that a little brandy will kill a cat: I have made the experiment and have killed several cats, but it is a false experiment; in all those cases where it kills the cat, it kills the cat by getting into her lungs, not into her stomach; because if you convey the same quantity of brandy, or three times as much, into the stomach, in such a way as the lungs shall not be affected, the cat will not die. Now in those experiments that are made by forcing an animal to drink, there are two operations going on; one is, a refusing the liquor by the animal, its kicking and working with its throat to refuse it; the other is, the forcing the liquor upon the animal: and there are very few operations of that kind but some of the liquor gets into the lungs; I have known it from experience.

Q. If you had been called upon to dissect a body suspected to have died of poison, should you or not have thought it necessary to have pursued your search through the guts?—*A.* Certainly.

Q. Do you not apprehend that you would have been more likely to receive information from thence than any other part of the frame?—*A.* That is the track of the poison, and I should certainly have followed that track through.

Q. You have heard of the froth issuing from Sir Theodosius's mouth a minute or two before he died: is that peculiar to a man dying of poison, or is it not very common in many other complaints?—*A.* I fancy it is a general effect of people dying in what you may call health, in an apoplexy, or epilepsy, in all sudden deaths, where the person was a moment before that in perfect health.

Q. Have you ever had an opportunity of seeing such appearances upon such subjects?—*A.* Hundreds of times.

Q. Should you consider yourself bound, by such an appearance, to impute the death of the subject to poison?—*A.* No, certainly not; I should rather suspect an apoplexy; and I wish in this case the head had been opened, to remove all doubts.

Q. If the head had been opened, do you apprehend all doubts would have been removed?—*A.* It would have been still further removed, because although the body was putrid, so that one could not tell whether it was a recent inflammation, yet an apoplexy arises from an extravasation of blood in the brain, which would have laid in a coagulum. I apprehend, although the body was putrid, that would have been much more visible than the effect any poison could have had upon the stomach or intestines.

Q. Then in your judgment, upon the appearances the gentlemen have described, no inference can be drawn from thence that Sir Theodosius Boughton died of poison?—*A.* Certainly not; it does not give the least suspicion.

Mr. John Hunter, *cross-examined by* Mr. Howorth.

Q. Having heard the account to-day that Sir Theodosius Boughton,

apparently in perfect health, had swallowed a draught which had produced the symptoms described, I ask you whether any reasonable man can entertain a doubt that that draught, whatever it was, produced those appearances?—*A.* I don't know well what answer to make to that question.

Q. Having heard the account given of the health of this young gentleman on that morning, previous to taking the draught, and the symptoms that were produced immediately upon taking the draught, I ask your opinion, as a man of judgment, whether you don't think that draught was the occasion of his death?—*A.* With regard to his being in health, that explains nothing; we frequently, and indeed generally, see the healthiest people die suddenly, therefore I shall lay little stress upon that: as to the circumstances of the draught, I own they are suspicious: every man is just as good a judge as I am.

Court.—You are to give your opinion upon the symptoms only, not upon any other evidence given.

Mr. Howorth.—Upon the symptoms immediately produced, after the swallowing of that draught, I ask whether, in your judgment and opinion, that draught did not occasion his death?—*A.* I can only say, that it is a circumstance in favour of such an opinion.

Court.—That the draught was the occasion of his death?—*A.* No: because the symptoms afterwards are those of a man dying, who was in perfect health; a man dying of epilepsy or apoplexy, the symptoms would give one those general ideas.

Court.—It is the general idea you are asked about now, from the symptoms which appeared upon Sir Theodosius Boughton immediately after he took the draught, followed by his death so very soon after; whether, upon that part of the case, you are of opinion that the draught was the occasion of his death?—*A.* If I knew the draught was poison I should say, most probably, that the symptoms arose from that; but, when I don't know that the draught was poison, when I consider that a number of other things might occasion his death, I cannot answer positively to it.

Court.—You recollect the circumstance that was mentioned of a violent heaving in the stomach?—*A.* All that is the effect of the voluntary action being lost, and nothing going on but the involuntary.

Mr. Howorth.—Then you decline giving any opinion upon the subject?—*A.* I don't form any opinion to myself; I cannot form an opinion, because I can conceive if he had taken a draught of poison, it arose from that: I can conceive it might arise from other causes.

Q. If you are not at all acquainted with the effects and operations of distilled laurel-water, whether the having swallowed a draught of that would not have produced the symptoms described?—*A.* I should suppose it would; I can only say this of the experiments I have made of laurel-water upon animals, it has not been near so quick. I have injected laurel-water directly into the blood of dogs,

and they have not died; I have thrown laurel-water, with a precaution, into the stomach, and it never produced so quick an effect with me, as described by those gentlemen.

Q. But you admit that laurel-water would have produced symptoms such as have been described?—*A.* I can conceive it might.

Mr. Newham.—Would not an apoplexy or an epilepsy, if it had seized Sir Theodosius Boughton at this time, though he had taken no physic at all, have produced similar symptoms too?—*A.* Certainly.

Q. Where a father has died of an apoplexy, is not that understood, in some measure, to be constitutional?—*A.* There is no disease whatever that becomes constitutional but what can be given to a child. There is no disease which is acquired that can be given to a child; but whatever is constitutional in the father, the father has a power of giving that to the children; by which means it becomes what is called hereditary. There is no such thing as an hereditary disease, but there is an hereditary disposition for a disease.

Mr. Howorth.—Do you call apoplexy constitutional?—*A.* We see most diseases are constitutional: the small-pox is constitutional, though it requires an immediate cause to produce the effects. The venereal disease is hereditary. I conceive apoplexy as much constitutional as any disease whatever.

Q. Is apoplexy likely to attack a thin young man who had been in a course of taking cooling medicines before?—*A.* Not so likely, surely, as another man; but I have, in my account of dissections, two young women dying of apoplexies.

Q. But in such a habit of body, particularly attended with the circumstance of having taken cooling medicines, it was very unlikely to happen?—*A.* I do not know the nature of medicine so well as to know that it would hinder an apoplexy taking effect.

Court.—Give me your opinion in the best manner you can, one way or the other, whether, upon the whole of the symptoms described, the death proceeded from that medicine or any other cause?—*A.* I do not mean to equivocate; but when I tell the sentiments of my own mind, what I feel at the time, I can give nothing decisive.

Extract from Mr. Justice Buller's *Charge.*

"For the prisoner you have had one gentleman called, who is likewise of the faculty, and a very able man. I can hardly say what his opinion is, for he does not seem to have formed any opinion at all of the matter. He, at first, said he could not form an opinion whether the death was, or was not, occasioned by the poison, because he could conceive that it might be ascribed to other

causes. I wished very much to have got a direct answer from Mr. Hunter if I could, what, upon the whole, was now the result of his attention and application to the subject, and what was his present opinion; but he says he can say nothing decisive. So that, upon this point, if you are to determine upon the evidence of the gentlemen who are skilled in the faculty only, you have the *very positive* opinion of four or five gentlemen of the faculty that the deceased did die of poison. On the other side, you have what I really cannot myself call more than the *doubt* of another; for it is agreed by Mr. Hunter, that the laurel-water would produce the symptoms which are described. He says, an epilepsy or apoplexy would produce the same symptoms; but, as to an apoplexy, it is not likely to attack so young and so thin a man as Sir Theodosius was; and, as to an epilepsy, the other witnesses tell you, they don't think the symptoms which have been spoken of do show that Sir Theodosius had any epilepsy at the time.

THE END.