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T W O
INTRODUCTORY LECTURES,
DELIVERED BY
DR. WILLIAM HUNTER,
TO HIS LAST COURSE OF
ANATOMICAL LECTURES,
AT HIS
THEATRE IN WINDMILL-STREET:

As they were left corrected for the Press by himself.

TO WHICH ARE ADDED,
Some PAPERS relating to DR. HUNTER'S INTENDED
PLAN, for establishing a MUSEUM in LONDON,
FOR THE IMPROVEMENT OF
ANATOMY, SURGERY, AND PHYSIC.

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L E C T U R E I.

ANATOMY is the art of examining animal bodies by dissection. It teaches the structure and functions of those bodies, and shews nearly on what life and health depend. When these are well understood, a great step is made towards the knowledge and cure of diseases.

The word Anatomy is originally Greek, signifying dissection or cutting: but we are not to imagine from the etymology, that Anatomy means no more than the bare management of the knife, scissars, or other cutting instruments, upon dead bodies. The ancients, indeed, meant little more by it; this being almost their only method of investigation: but in our days, it is taken in a much more comprehensive sense. Thus injecting, macerating, corroding, boiling, distilling, in a word, every operation by which we endeavour to discover the structure and use of any part of the body, is anatomical.

As every animal body is the subject of Anatomy, we divide it into the human and comparative. The first of these is confined to the human body, the last is extended to the whole animal creation. The human Anatomy is what we propose to explain: the comparative will only be introduced occasionally, where

it serves to illustrate the other, or to guide us in reasoning from analogy. The structure of some parts may be so delicate, or involved, in the human species, as to be undiscoverable; yet in another species, the structure of those very parts may be apparent. Accordingly, many things have been first discovered in comparative Anatomy, and were afterwards found out in the human body. Even monsters, and all uncommon, and all diseased animal productions, are useful in anatomical enquiries; as the mechanism, or texture, which is concealed in the ordinary fashion of parts, may be obvious in a preternatural composition. And it may be said, that nature, in thus varying and multiplying her productions, has hung out a train of lights that guide us through her labyrinth.

Anatomy, like most arts, has undergone many revolutions, having been in high credit in some ages and countries, and keenly pursued; and on the contrary, in others, it has been as much neglected or depressed. It would be preposterous to give a long detail of its history, in the beginning of a course of lectures, because a beginner in this study, will hardly be able to remember by whom, and under what circumstances this, or that discovery, or improvement, was made, when from his ignorance of the subject, he cannot be supposed to know, what such discoveries really were. Wherefore, we shall reserve most of the history, to be thrown in with the Anatomy, by saying something of the principal improvers, and writers on the several parts, as we go on. At present we shall be satisfied with a general sketch of its origin and progress.

The want of records, leaves us in the dark, with regard to the origin of this art; yet, it is reasonable to conclude, that like most other arts, it had no precise beginning. The nature
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of the thing would not admit of its lying for a time altogether concealed, and of being suddenly brought to light, either by chance, or genius, or industry.

All the studies and arts which are *necessary*, in human life, are so interesting and obvious, that man in every situation, has always by instinct and common sense turned his thoughts to them, and made some progress in the cultivation of them. To talk seriously of the invention of agriculture, building, or architecture, astronomy, navigation, mechanics, physic, surgery, or anatomy, by some particular man, or in one particular country, or at a time subsequent to some prior æra, would be to discover great ignorance of human nature. We might just as well suppose that, till a certain period of time, man was without instinctive appetites, and without observation and reflection; and that, in a happy hour, he found out the art of supporting life by taking food. All such arts, in a less or more cultivated state, were from the beginning, and ever must be found in all parts of the inhabited world.

The first men who lived, must have soon acquired some notions of the structure of their own bodies, particularly of the external parts, and of some even of the internal, such as bones, joints, and sinews, which are exposed to the examination of the senses in living bodies.

This rude knowledge must have been gradually improved, by the accidents to which the body is exposed, by the necessities of life, and by the various customs, ceremonies and superstitions of different nations. Thus, the observance of bodies killed by violence, attention to wounded men, and to many diseases, the various ways of putting criminals to death,

the funeral ceremonies, and a variety of such things, must have shewn men, every day, more and more of themselves; especially as curiosity and self-love would urge them powerfully to observation and reflection.

The brute-creation having such an affinity to man in outward form, motions, senses, and ways of life; the generation of the species, and the effect of death upon the body, being observed to be so nearly the same in both, the conclusion was not only obvious, but unavoidable, that their bodies were formed nearly upon the same model. And the opportunities of examining the bodies of brutes, were so easily procured, indeed so necessarily occurred in the common business of life, that the huntsman in making use of his prey, the priest in sacrificing, the augur in divination, and above all, the butcher, or those who might out of curiosity attend upon his operations, must have been daily adding to the little stock of anatomical knowledge. Accordingly we find, in fact, that the South-sea-landers, who have been left to their own observation and reasoning, without the assistance of letters, have yet a considerable share of rude, or wild anatomical and physiological knowledge. When *Omai* was in this Museum, with Mr. Banks, though he could not explain himself intelligibly, we plainly saw that he knew the principal parts of the body, and something likewise of their uses; and manifested a great curiosity, or desire of having the functions of the internal parts of the body explained to him; particularly the relative functions of the two sexes, which, with him, seemed to be the most interesting object of the human mind.

We may further imagine that the philosophers of the most early ages, that is, the men of curiosity, observation, experience,
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and reflection, could not overlook an instance of natural organization, which was so interesting, and at the same time so wonderful; more especially such of them as applied to the study and cure of diseases. We know that physic was a branch of philosophy till the age of Hippocrates.

Thus our art must have been circumstanced in its beginning. We shall next see from the testimony of historians and other writers, how it actually appeared as an art, from the time that writing was introduced among men; how it was improved, and conveyed down to us, through a long series of ages.

From all that is known of the Chinese history, there is no reason to imagine that any great event had ever happened, to overwhelm the inhabitants with ignorance and barbarity, after they had been enlightened with science. And therefore, from the present state of that country, even after some intercourse with Europeans for two hundred years, we may conclude, that they never went very far into any branch of philosophy. In Anatomy and physic, they seem to be *two* or *three* thousand years behind us. Their anatomical figures, as we see in Cleyer, and in a collection in my library, are as rude, as what we might suppose any common butcher would express by a drawing. And a great part of their physic seems to be an undigested system of credulity in the virtues of plants, without any sensible distinction of diseases. I have lately seen a splendid book of the Chinese plants that are most famous for medicinal virtues, which was sent over, as a valuable present, to one of our East-India Directors. The plants are delicately drawn, and pencilled in natural colours. The names, the usual places of growth and culture, and the virtues in the cure of diseases, are written under each plant,

in Chinese characters, and in English. Most of the plants are directed to be given in the form of tea, or infusion. *One* is said to be good for *inward* disorders, *another* for inward swellings; *one* for *internal* bruises, another for bruises in the limbs, and outside of the body; *one* is good for the eyes, another for deafness, another for complaints in the liver; *one* is good for *fat* people, another for those who are *thin*; and, there is a very curious plant indeed, if the translator has done justice to the original, it is good for people who are fleshy on one side and lean on the other. Probably the Chinese expression meant the Hemiplegia, or palsy, which affects one half of the body, while the other half remains in a healthful and vigorous state; yet admitting this supposition, and admitting likewise that the author might be a good botanist and ingenious artist, without being much skilled in physic, his manner of treating the subject puts us very much in mind of John Gaddefden's notions about diseases and cures, in the barbarous times, 1320, of Edward the second, which are put into so ridiculous a light by Dr. Freind, in his history of physic,

Civilization and improvements of every kind, would naturally begin in fertile countries and healthful climates, where there would be leisure for reflection, and an appetite for amusement. It seems now to be clearly made out, that *writing*, and many other useful and ornamental inventions and arts were cultivated in the eastern parts of Asia, long before the earliest times, that are treated of by the Greek, or other European writers; and that the arts and learning of those eastern people, were, in subsequent times, gradually communicated to adjacent countries, especially by the medium of traffic. In that way science seems to have travelled over our hemisphere,

hemisphere, from the East, through Persia, Medea, Chaldæa, Phœnicia, Ægypt, Æthiopia, Greece, Italy, and the whole Roman empire. - And, within less than 300 years ago, European science made a push westwards, exceeding every thing that has been recorded in the annals of time; it dared to go in search of another hemisphere, found it, and took possession of the whole. And it must be comfortable to all men of liberal minds, to think, that from the universality of the present empire of science, we might even flatter ourselves with saying, of *English science, arts, and language*, hardly any event can now overturn it, till the final catastrophe comes round.

The customs, superstitions, and climate of eastern countries, appear to have been as unfavourable to practical Anatomy, as they were inviting to the study of astronomy, geometry, poetry, and all the softer arts of peace.

With regard to astronomy, my excellent friend, Mr. Secretary Wood, as well as other travellers, informed me, that in Syria, and in the adjacent eastern countries, the air is so dry, and the sky so transparent and serene, that, for the greatest part of the year, the people sleep on the top of their houses, having nothing interposed between them and the firmament, which, from the purity of their atmosphere, is bespangled with stars, of brighter lustre than we can well conceive, from what we are accustomed to see in this country.

Under such favourable circumstances for astronomical observations, the inhabitants must have made considerable advances in astronomy, at a very early period. The fixed stars would be observed to keep a steady, unchangeable situation with respect to each other; and to have a regular diurnal motion with respect

to this earth : the moon and other planets, would be distinguished from the fixed stars, by the changes in their situation with respect to one another. All the sleepless hours of all the inhabitants, would be, of course, bestowed on the spangled firmament : so that astronomy must have been gradually improved, from the first time of those countries being inhabited.

It is just as natural to suppose, that the variety of these heavenly lights, would tempt men to distinguish them into classes, and try to ascertain their number, as well as to give distinguishing names both to the classes and to the individuals. Arithmetic would, of course, likewise become a nocturnal employment with most of the inhabitants ; and they would be striving who could count the greatest number of stars.

Mr. Wood observed further, that these peculiarities of eastern skies, convinced him of the true reason why the people of the East, have been so constantly prone to worship the hosts of heaven. He said he found himself, in the night, so struck with the beauty of the firmament, that he could hardly suppress a notion that these bright objects were animated beings of some very high order, and were shedding some important influence on this earth, and upon every living creature in it. From this effect upon himself, he was sure that at all times in those countries, the minds of men must have had a tendency to that species of superstition ; especially when sickness and disease, through long sleepless nights, would work upon their mind with the fear of being incurable by human art, of their sufferings being sent upon them by some offended divinity as a punishment ; all which would naturally direct their superstitious expiations and prayers to those heavenly lights.

In eastern countries too, but particularly in Ægypt, where the falling of rain, and subsequent swelling of rivers, happens only at one particular season, mens attention would be called to study and watch the seasons, to measure the depth of water, the extention of the inundation, the quantity of ground that would be fertilized, &c. &c. These peculiarities of their situation, would lead the inhabitants, in the earliest ages, to the study and practice of geometry.

But in those eastern countries, animal bodies run so quickly into nauseous putrefaction, that the early inhabitants must have avoided such offensive employments as anatomical enquiries, like their posterity at this day. And in fact, it does not appear, by the writings of the Grecians, or Jews, or Phœnicians, or of other eastern countries, that Anatomy was particularly cultivated, by any of those eastern nations. In tracing it backwards to its infancy, we cannot go farther into antiquity, than the times of the Grecian philosophers. As an art in the state of some cultivation, it may be said to have been brought forth and bred up among them, as a branch of natural knowledge.

The æra of philosophy, as it was called, began with Thales the Milesian being declared by a very general consent of the people, the most wise of all the Grecians, 480 years before Christ. The philosophers of his school, which was called the Ionian, cultivated principally natural knowledge. Socrates, the seventh in succession of their great teachers, introduced the study of morals; and was thence said to bring down philosophy from heaven, to make men truly wise and happy*.

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* Of his scholars, Aristippus founded the Cyrenaic sect, Euclid the Megaric Phædo the Eliac, Antisthenes the Cynic, and Plato the Academic.

His scholar and successor, Plato, spent his whole life, first in acquiring wisdom and knowledge himself, and then in teaching it to others. He carried the reputation of the Lycæum, the public school at Athens, to the highest pitch of credit. Nothing, perhaps, contributed more to incite, to polish, and to raise the minds of the Grecians, to that distinguished rank of excellence which all succeeding ages have allowed them to have possessed, than their public schools, and particularly those at Athens; where persuasive eloquence was much studied and honored, and made use of upon the most interesting occasions, for the recommendation and embellishment of all the nobler virtues. Young men had easy access to the conversations and harangues of the most eloquent, the most learned, and the most respectable men among the Athenians. It is as easy to conceive, what a wonderful effect that must have had upon young and generous minds, as the fact is unquestionable, that the Grecians excelled all mankind in elegant simplicity and in grandeur of thought; and of course, in all the fine arts.

In the writings of Plato we see, that the philosophers had carefully considered the human body, both in its organization and functions; and though they had not arrived at the knowledge of the more minute and intricate parts, which required the successive labour and attention of many ages, they had made up very noble and comprehensive ideas of the subject in general. The anatomical descriptions of Xenophon and Plato have had the honor of being quoted by Longinus, (§.xxxii.) as specimens of sublime writing; and the extract from Plato is still more remarkable for its containing the rudiments of the *circulation* of the blood. “The heart, says Plato, is the centre or knot of the blood-vessels; the spring or fountain of the blood, which is carried impetuously round; the blood is the *pabulum* or
“*food*”

“ food of the flesh ; and for the purpose of nourishment, the
 “ body is laid out into canals, like those which are drawn
 “ through gardens, that the blood may be conveyed, as from
 “ a fountain, to every part of the pervious body.”

Hippocrates was nearly contemporary with the great philosophers of whom we have been speaking, about 400 years before the Christian æra. He is said to have separated the profession of philosophy and physic, and to have been the first who applied to physic alone, as the business of his life. He is likewise generally supposed to be the first who wrote upon anatomy. We know of nothing that was written expressly upon the subject before ; and the first anatomical dissection which has been recorded, was made by his friend Democritus, of Abdera.

After the restoration of Greek learning in the fifteenth century, it was so fashionable, for two hundred years together, to extol the knowledge of the ancients in Anatomy, as in other things, that Anatomists seem to have made it a point of emulation, who should be most lavish in their praise ; some from a diffidence in themselves ; others through the love of detracting from the merit of contemporaries ; many from having laboriously studied ancient learning, and having become enthusiasts in Greek literature ; but more, perhaps, because it was the fashionable turn of the times, and was held up as the mark of good education and fine taste.

If we read the works of Hippocrates with impartiality, and apply his accounts of the parts, to what we *now* know of the human body, we must allow his descriptions to be imperfect, incorrect, sometimes extravagant, and often unintelligible, that

of the bones only excepted. He seems to have studied these with more success than the other parts, and tells us that he had an opportunity of seeing an human skeleton.

Here we may observe, that the working up of any complex science or art, so as to reduce it to a tolerable system is a more arduous task, and requires much more time, and the collected observations of a much greater number of men, even through a succession of ages, than could well be imagined by any person, who knows it only in an improved state. We might say of improved science and art, what has been frequently said of particular discoveries, when known; it appears to be so easy or obvious, that one wonders it had not been made one or two thousand years sooner.

From Hippocrates to Galen, who flourished towards the end of the second century, in the decline of the Roman empire, that is, in the space of 600 years, Anatomy was greatly improved; the philosophers still considering it as a most curious and interesting branch of natural knowledge, and the physicians as a principal foundation of their art. Both of them, in that interval of time, contributed daily to the common stock, by more accurate and extended observations, and by the lights of improving philosophy.

To trace our art, with learning in general, from the times of Hippocrates to that of Galen, we shall give a sketch of the studies at the two famous schools among the Greeks, viz. at Athens, and at Alexandria; and of the introduction of Greek literature among the Romans.

At Athens, Aristotle, the favourite pupil of Plato, gave himself up to philosophy and physic; and was appointed a public teacher at the Lycæum, at the memorable period when Grecian liberty was giving way to the power of Macedon. He was patronized by Philip, and made tutor to Alexander. He was a man of great natural acuteness, improved by very extensive and deep study; of a courtly turn for elegance and expence, and adapted as much as possible, all his philosophy to his pupil, and to the court. He was the first we know of, who collected a great library, which, with all his own compositions, he left to his favourite pupil, Theophrastus; who, at his desire, succeeded him as public teacher of philosophy in the Lycæum, with the same turn for elegance, and with the highest character for natural acuteness, and unremitting perseverance in study.

These two great men lived in the most perfect friendship; were very similar in their character, in their studies and pursuits: and as they had applied very particularly to the study of animal bodies, they not only made great improvements, especially in physiology, but raised the credit of natural knowledge, and spread it as wide as Alexander's empire.

Few of Aristotle's writings were made public in his life-time. He affected to say that they would be unintelligible to those who had not heard them explained at his lectures: and, except the use which Theophrastus made of them, they were lost to the public for above 130 years after the death of Theophrastus; and at last came out defective from bad preservation, and corrupted by men, who, without proper qualifications, presumed to correct, and to supply what was lost. For, Theophrastus left these, and his whole library, to one Neleus, of Scepis,

Scepsis, who left them to his relations. These hid them in a cave, lest their kings of Pergamus should seize them for their own library, which they were extending with emulous opposition to that which the Ptolemies were collecting with so much ambition at Alexandria. The books were at last taken out, but much damaged, by the proprietors the heirs of Theophrastus, and sold for a great sum of money to Apellico of Teium, who was buying up libraries at that time. This library soon afterwards was seized upon by Scylla, and sent to Rome.

From the time of Theophrastus, the study of natural knowledge, at Athens, was for ever on the decline; and the reputation of the Lycæum and Academy was almost confined to the studies which are subservient to oratory and public speaking.

We may easily conceive, that study in general must have been much interrupted at Athens, by the great struggle which was maintained for liberty, before that city fell under the calm and settled government of the Romans. In the times of Philip the father of Perseus, the Athenians having made an alliance with the Romans, that king attempted to surprize Athens. He failed; and being exasperated, reduced to rubbish and ruin, the Lycæum, the sacred groves, many temples, tombs, &c. and laid all the environs waste; upon which the Athenians in revenge, passed the memorable decree for destroying all the statues and inscriptions, which had been set up in honor of the Macedonian family.

At the breaking out of the Mithridatic war, about 87 years before Christ, Athens, by the contrivance of Ariston, deserted the Romans, her friends, and allies, and with most of the Greek cities, joined Mithridates. Sylla was sent into Greece: most of the other
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cities submitted, but Athens stood an obstinate siege. Archelaus defended the Piræus, and Aristeon Athens. Sylla's army was supported by the sacred treasures, taken by Lucullus from the temples of Delphi and Epidaurus. What remained of the trees in the sacred groves, was cut down to supply warlike machines for carrying on the siege. The town was at length taken, pillaged, almost destroyed, and great numbers of the inhabitants put to the sword.

After Athens had begun to flourish again, under the protection of the Romans, very unfortunately it took part against Cæsar, first with Pompey, then with Brutus and Cassius, and last of all with Marc. Anthony; for all which it felt the resentment of Augustus, and languished, till Hadrian restored it to its ancient government, and protected the schools; soon after whom, both Antoninus Pius, and Marcus Antoninus, with great partiality, encouraged studies there, and gave salaries to their professors.

So much for that famous seat of learning and elegance. The other great institution for Grecian education, was at Alexandria in Ægypt. That city, laid out, and begun to be built by Alexander himself, became, soon after his death, the metropolis of a great and rich Greek empire. The first Ptolemies, both from their love of literature, and to give true and permanent dignity to their empire, and to Alexander's favourite city, set up a grand school in the palace itself, with a museum, and a library, which we may say, has been the most famed in the world. It has been supposed to have been founded by the first Ptolemy, when he had associated his son Philadelphus in the throne of Ægypt, and to have been put under the direction of Demetrius Phalereus. The
first

first race of the Ptolemies, from their virtues, and love of learning, were daily adding to the number of books in the library, inviting and protecting men of eminence, in every branch of literature, science, or art, and adding to the splendor of the schools. This noble foundation grew to be so much the pride and boast of the empire, that Ptolemy Physcon himself, one of the most brutal and profligate of the race, was studious of patronizing learned men, and so earnest in collecting books, that, in jealousy of Eumenes, who was collecting a splendid library of the same kind at Pergamus, and the more certainly to preserve the superiority of the Alexandrian library, he prohibited the exportation of Ægyptian paper. Besides this great library in the palace, there was a second collected in the Serapion, or temple of Serapis. The first was burnt when the Alexandrians attacked and besieged Julius Cæsar in the palace. The second, which was preserved, was in a short time enriched by the addition of the rival library from Pergamus, consisting of 200,000 volumes, which Anthony brought away, and presented to Cleopatra. This last great collection of books suffered greatly in the year 390, when the temple of Serapis was destroyed by the Christian zealot, the Patriarch Theophilus, at the fall of paganism, and finally and compleatly burnt by the Saracens, when they took that city in the year 640.

After the schools were opened at Alexandria, and protected upon so noble a plan, men of learning flocked thither, both because they would be encouraged and protected; whereas, in Greece and in Asia, they were exposed to the endless horrors, oppressions, and ravages, occasioned by the contentions and wars, which were carried on among the suc-
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cessors of Alexander. In all those other extensive countries, the finer arts of peace were every day more interrupted or neglected; and at Alexandria, on the contrary, were daily rising to higher credit. In a short time this school became as much the most eminent for science, for every branch of natural knowledge, and for physic, as Athens was for oratory.

The two distinguished Anatomists at Alexandria, were Erasistratus, the pupil and friend of Theophrastus, and Herophilus. Their voluminous works are all lost; but they are quoted by Galen, almost in every page. These professors were probably the first who were authorized to dissect human bodies; a peculiarity which marks strongly the philosophical magnanimity of the first Ptolemy, and fixes a great æra in the history of Anatomy. And it was, no doubt, from this particular advantage which the Alexandrians had above all others, that their school not only gained, but for many centuries preserved, the *first* reputation for medical education. Ammianus Marcellinus, who lived about 650 years after the schools were set up, says, they were so famous in his time, that it was enough to secure credit to any physician, if he could say that he had studied at Alexandria.

Herophilus has been said to have anatomized 700 bodies. We must allow for exaggeration. Nay, it was said, that both he and Erasistratus made it a common practice to open living bodies, that they might discover the more secret springs of life. But this, no doubt, was only a vulgar opinion, rising from the prejudices of mankind; and, accordingly, without any good reason, such tales have been told of modern anatomists, and have been believed by the vulgar.

In the period of the history of our art, of learning and arts in general, which we are now considering, viz. from Aristotle to Galen, we must see how the arts of Greece were conveyed to the Romans: for, in the first part of that period the Romans were barbarians, but in the last they were polished and learned, and were become the sovereigns both of Athens and Alexandria.

Long after the Romans were become a great and formidable state, they continued to be a rough unpolished people: military glory was the great object of their ambition, and the love of their country their principal virtue. The soft arts of peace, refinement and elegance, they despised, as tending to enervate the mind, and to suppress that martial enthusiasm which they cultivated with so much ardor. And their pride, or contracted self-love, which we see operating in the same manner among modern nations, made them affect to despise in others, what they themselves had not been happy enough to attain.

But when their empire grew to be extensively respected and dreaded, the Romans became connected in alliances, disputes, and wars, with the Grecian states, their neighbours; particularly about the times of Pyrrhus, just before the *first* Punic war, when they had driven him out of Italy, and taken Tarentum, and some other Greek cities, in that part of Italy called Magna Græcia, about 274 years before Christ. This intercourse gradually inspired the Romans with some taste for the Grecian arts, and a desire of studying the language of that highly cultivated people. In a little time more, the Romans had got possession of Messana in Sicily, and took Agrigentum by siege; and about 236 years before Christ,

Christ, at the end of the first Punic war, they had possessed themselves of all Sicily, except Syracuse, which was under the dominion of Hiero.

Two hundred and twenty-six before Christ, Roman embassadors were sent to Athens and Corinth, upon the breaking out of the social war between the Ætolians, supported by Philip, and the Achæans, protected by the Romans. 207 years before Christ, they took Syracuse; upon which all Sicily having submitted became a Roman province.—189 years before Christ, a Roman army was sent into Asia, against Antiochus the Great, whose rich spoils being brought to Rome, introduced a taste for Asiatic luxury.—165 years before Christ, they had reduced Macedon to a Roman province, and from that country raised a respectable library at Rome; and their commissioners sent 1000 of the principal men of Achæa to be tried at Rome, where they were condemned, and dispersed over Italy, to different places of imprisonment.

About this time the Romans had a constant and encreasing intercourse with the Grecians, by reciprocal complaints, accusations, pleadings, &c. in one of which Carneades, the Athenian philosopher and orator, inspired the younger men, especially of the Roman senate, with the highest veneration for eloquence. The Romans every day treated the Grecians with more imperiousness, till 146 years before Christ, all Greece was made a Roman province, in consequence of Mummius defeating the Achæans; when Corinth, the seat of the finest arts, was plundered and burnt to the ground, and the much valued pictures and works in sculpture which it contained, were conveyed to Rome.

All this necessarily occasioned a constant intercourse, a mixture with the people, more intimate acquaintance with their language and manners, and a relish for their studies, their elegant arts, and works of every kind.

The most distinguished men in the Roman republic soon courted the company and the instructions of the Grecian philosophers; even entertained them constantly in their houses, for the sake of learning their language and their philosophy. Scipio Africanus, Lælius, and Furius did so, though Cato the censor, drove the Grecian rhetoricians from Rome, before their business was brought to a conclusion, for fear of their corrupting, as he called it, the Roman youth, giving them a turn for speaking rather than for acting, and diverting them from the study of the laws and customs of their forefathers. Such was *his* aversion, and that of many leading men at Rome, to Grecian manners, that a rigid edict was twice passed, to prohibit Latin rhetoricians from teaching their art.

Lucullus, the conqueror of Macedon, was particularly devoted to Grecian learning, and had always some of the most eminent orators and philosophers about him. He brought home with him to Rome, both the books and the most enlightened men of Greece; and, which was the most truly honorable part of his triumph, he made his own house their asylum. Cicero likewise, by his attention to the learned Greeks, and to their philosophy, contributed very much to give them credit at Rome.

It was the weight and influence of those great characters, which accomplished the transfusion of learning, philosophy and arts, from the Grecians to the Romans, and gave rise to the learning, the taste and elegance of the Augustan age.

But unfortunately the Romans did not adopt the Grecian manner of educating their young men in public schools at home. They either sent them to study in Greece; or had private tutors in their families from that country. From which it is evident that among the Romans, good education must have been confined to a few, in proportion to the whole; and it may be presumed, that this was one reason why they fell so far short of the Grecians as a learned and refined people. The rich alone could get the best education; and no fortune could command the acquisition of more than what continued to be taught at Athens and Alexandria, in the time of the Roman emperors. But Grecian studies, and all the ingenious and fine arts, were constantly on the decline from the time that Grecian liberty was lost.

In comparing the Romans with the Grecians, if we allow them to have had some poets, orators, philosophers, and historians, deserving to be brought into competition with those of the Greeks, to the eternal disgrace of their empire, it must be allowed, that their history is hardly embellished with the name of a single Roman, who was great in science or art, in painting, or sculpture, in physic, or in *any* branch of natural knowledge. And therefore we cannot introduce *one* Roman into the history of Anatomy; for, Pliny and Celsus were mere compilers from the Greeks.

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These historical observations prepare us for an account of Galen. He received a liberal education at Pergamus, the place of his birth; and began at 17 years of age to join the study of physic to that of philosophy. In his 21st year, A. D. 151, he went to Smyrna, where he likewise studied both; then to Corinth, to study under Numesianus, a great Anatomist of those times, and to many other parts of Greece and Asia; and then to Alexandria, when the school was at the highest credit which it had ever attained under Roman emperors. Claudius had founded and given his name to a new museum there, and appointed some new lectures. Adrian had honored the schools with his presence, and had even taken a share in the public disputations; and Antoninus Pius had also shewn particular favor to Alexandrian studies.

At the age of 28 Galen returned, much improved in the studies of his profession, from Alexandria to his native city Pergamus, where he was charged with the care of the gladiators for six or seven years. At 34 years of age, A. D. 164, he came to Rome, in the reign of Marcus Antoninus and Lucius Verus; and acquired great fame with the people for his cures and public dissections, as well as much envy and detraction from the rest of the faculty, an honor commonly enough bestowed upon distinguished eminence. At the age of 37 he went home to Pergamus, that he might avoid a great plague which then raged at Rome. Next year he was called to Aquilea by the two emperors, and then to Rome; he excused himself from following the emperor to his wars; but remained at Rome, where he spent much of his time in study and writing.

For those times his writings must be allowed to be excellent. What he principally wanted, to be truly respectable, with regard to the more obvious parts of Anatomy, was, opportunities of dissecting human bodies: for his subject was most commonly some quadrupede whose structure was supposed to come nearest to the human.

Thus Anatomy, for a long series of years, had been advancing to that degree of perfection, to which it was brought in Galen's time; and from that time, it declined again. We may observe, that when any man arrives at the reputation of having carried his art far beyond all others, it seems to throw the rest of the world into a kind of despair. Hopeless of being able to improve their art still further, they do nothing. The great man, who was at first only respectable, grows every day into higher credit; till at length he is deified, and every page of his writings becomes sacred and infallible. This was actually the fortune of Aristotle in philosophy, and of Galen in Anatomy for many ages, and such respect shewn to any man, in any age, must always be a mark of declining science.

The study of Anatomy, learning, and science in general, met with great checks, and discouragement, from the confusions and distresses which attended the decline, the division, (A. D. 364) and the final subversion of the Roman empire. With the loss of their liberty, the Grecians first, and then the Romans, gradually lost vigor in all intellectual pursuits; their taste for learning, and for every kind of excellence became weaker and depraved; specious sophistry, or unmeaning declamation

clamations took the place of good sense and sound philosophy; and where no improvement could take place, the arts were for ever on the decline. In the year 269, the Goths had possessed themselves of Athens; but they were soon driven out of Greece by Claudius II. In the year 410, Alaric took and pillaged both Athens and Rome, and destroyed their libraries. In the year 455, Genferic, the Vandal, from Africa, landed a great force at the mouth of the Tiber, sacked Rome, and revenged Carthage. He carried off the portable riches of Rome, and the invaluable works of art, which had been accumulated in the capitol and in the temples, from the spoils of the innumerable nations which had been conquered by the Romans. And the great irruption of the Goths into Italy, in the year 476, put an end to every kind of liberal study, and to the Roman empire itself in Europe.

The ignorance which came upon the whole world with the fall of the Roman empire, and kept its possession through so many gross and dismal ages, was not brought on merely by the irruptions of the northern barbarians into the west, and of the Saracens afterwards into the eastern parts of the Roman empire, which we shall presently consider. Much was owing to the unhappy contentions, and destructive zeal of religious sects, and to oppressive persecutions. The Jews entertained a rooted aversion to Greek literature, and prohibited the study of it. The first Christians were illiterate and despised human learning. It was objected to their doctrine by Celsus, and all who opposed it, that it was adopted only by low mechanics and women. And, as opposition in religion creates unguarded zeal, the reflexions thrown out against the new doctrines, by philosophers and men of learning, made

made the Christians preach up their system, as in its nature opposite to, and subversive of human learning.

In the second century the new system, in opposition to Paganism, began to prevail, and make proselytes among men of education. One side said that truth prevailed; the other, that the contagion of fanaticism was growing incoercible; the dispute grew hotter, and brought on persecution, which made the converts more warm in vilifying and proscribing all philosophy. What increased their hatred to philosophy and Greek learning was, its being supposed to be the source of all the heresies which sprang up in the church. This particularly made them declaim with violence against it. Yet many of them allowed or recommended as much learning as could be useful in the defence of their doctrine. However they were not merely ignorant in natural knowledge; they held physics to be beyond human powers; taught that morals and religion were our only objects; and ventured no farther in natural knowledge than was revealed in holy writ. When faith was thought to be all that was worth acquiring, and prayer almost our only duty, there was an end to liberal education, and to every ingenious enquiry, inasmuch that the Goths, and other barbarians from the north, instead of having introduced and established ignorance in the west, found no learning where they came, but a debased and corrupted theology, which they adopted and propagated.

About the middle of the seventh century, what little learning was still left in Asia and Ægypt was almost extinguished by the bigotted, illiterate, and barbarous Saracens, the converts to Mohammed. In the year 640, they made themselves masters of Alexandria, which had continued to be the greatest school,

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and contained in books the greatest treasures in the world, for about 900 years together. They not only put an immediate stop to all liberal studies there, but destroyed the sacred remains of all human learning, by burning the whole of that invaluable library; professing as an excuse for the horrid deed, that if the books contained only what was in the Koran, they were useless; and impious if they contained more than what the prophet had thought proper to be revealed to man.

In Mohammed's time, very few of the Arabs could read or write. He could do neither; but made use of a scribe, Warakanus, a relation of his wife, in composing the Koran; and that human erudition might not discover its weakness, he made a law, by which it was death for any Mussulman to learn the liberal arts. The Koran was a compilation from Christianity and other religions, but principally from Judaism.

In less than 100 years after Mohammed (622) became a Calif, the Saracens had conquered all the countries round Arabia, Syria, Phenicia, Palestine, Ægypt, all the Coast of Africa towards the Mediterranean, and Spain; and as they had succeeded in their attempt upon the western part of Europe, by crossing the Mediterranean from Africa, in the year 711, and seizing upon Spain, so they attempted to break in upon the eastern part of Europe, in a few years after, by coming over the Hellespont, and laying siege to Constantinople.

But here, Providence was pleased to put a stop to their successes, and to set bounds to the devastations and murders, which they were daily committing upon learning. In the year

717, they were forced to raise that siege with great loss; which event was perhaps more important for learning, than any that has happened since the days of Adam. For, as the Saracens at first extinguished all liberal studies wherever they conquered and settled; and as the Gothic tribes had already done so, over the whole of the western empire, there was only Constantinople, with the neighbouring provinces, left, where learning could live; and there it was fortunately preserved for us, though in a languishing and corrupted state, through seven long centuries, of almost universal barbarity and ignorance.

Yet, after the rage of the Saracens for conquest began to be fatiated; and when they found themselves firmly settled in their eastern acquisitions, their Califs began to be sensible of the great advantage of learning, in many branches of arts and science, and particularly in physic. The great superiority of the Christian physicians was evident, or confessed. They were therefore protected and employed about the court; and their influence grew in proportion to the supposed importance of their service. That influence was judiciously and honorably employed in the cause of liberal studies, and, by degrees getting the better of Mohammed's prohibition, inspired the Califs with the love of letters.

In 762, Almanfor built Bagdad, and made it the seat of the Saracen empire. He had two Christian physicians and an astrologer, who gave him a keen taste for the arts. He gave large premiums for translations of the Greek writers, both into Syriac, the vernacular language at Bagdad, and into Arabic. These were principally executed by the Christians at Bagdad; and most of the Arabic versions were made from the Syriac. For



this reason the Syriac versions were the best; and because they were likewise the earliest, and were therefore made, when the Greek language was better understood.

Rasjidus, who began his reign about the year 786, encouraged Greek literature among his subjects, and especially poetry; but he was too superstitious.

But under his second son Abdalla or Mamon, who became Calif, Anno 813, the arts flourished more than ever, and still by the influence of the Christian physicians. Of these Johannes Mesne the older, a Chaldean, came to study the arts and medicine at Bagdad; got the direction of the hospital there, and taught philosophy and physic in Syriac, with great reputation. Honain, an Arab, but Christian, was his scholar. Upon being expelled the school, Honain retired among the Greeks two whole years, and came back to Bagdad with a very good knowledge of the Greek language, and well provided with Greek authors, where he and his family translated the best writers in physic, mathematics, and astronomy. Abdalla invited and protected all sorts of learned men; enquired after the best Greek authors, searched Syria, Armenia, and Ægypt, for copies of them, and had them translated.

In his wars and treaties with the Greek or eastern empire, he practised every art to bring away their learned men, and their books. He lived to the year 833, when there were flourishing schools at Bagdad, Couffa, Basora, Damascus, and all the great cities of the Saracen empire, which were encouraged by several of his successors.

Leo Africanus tells us of most magnificent buildings, the old public schools, for all branches of learning at Cairo, Morocco and Fez; but he says, the princes and professors of the faith, from about forty years before, had prevented teaching philosophy, mathematics, and astrology.

The Saracens, who came into Spain, destroyed at first all the Greek books which the Vandals had spared; but though their government was in a constant struggle and fluctuation during 800 years before they were driven out, they received a taste for learning from their countrymen of the east; several of their princes encouraged liberal studies; public schools were set up at Cordova, Toledo, and other towns, and translations of the Greeks into Arabic, were universally in the hands of their teachers.

Thus was the learning of the Grecians transferred to the Arabians. But though they had so good a foundation to build upon, our art was never improved while they were masters of the world; and no wonder. They were satisfied with commenting upon Galen; and, I believe, made no dissections of human bodies.

Upon this question I shall only observe, that so far as I have had occasion to consult the Arabic writers, no clear proof of their having done so has occurred to me. And if they had done so, in such a quantity of writings as they have left, we should, no doubt, have met with a hundred proofs of the fact. Abdollaliph, who was himself a teacher of Anatomy, a man eminent in his time, (at and before 1203) for his learning and curiosity; a great traveller, who had been bred at Bagdad, and had seen many of the great cities and principal places
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for study in the Saracen empire; who had a favourable opinion of original observation, in opposition to book-learning; who boldly corrected some of Galen's errors; and was persuaded that many more might be detected; this man, I say, never made, or saw, or seemed to think of a human dissection. He discovered Galen's errors in the osteology, by going to burying-grounds, with his students and others, where he examined and demonstrated the bones; and he earnestly recommended that method of study, in preference even to the reading of Galen; and thought that many farther improvements might be made; yet he seemed not to have an idea that a fresh subject might be dissected with that view.

Perhaps the Jewish tenets which the Mohammedans adopted about uncleanness and pollution, might prevent their handling dead bodies; or their opinion of what was supposed to pass between an angel and the dead person, might make them think disturbing the dead highly sacrilegious. Such however as Arabian learning was, for many ages together, there was hardly any other in all the western countries of Europe. It was introduced by the establishment of the Saracens in Spain, in 711, and kept its ground till the restoration of learning in the end of the 15th century. The state of Anatomy in Europe, in the times of Arabian influence, may be seen by reading a very short system of Anatomy, drawn up by Mundinus, in the year 1315. It was extracted principally from what the Arabians had preserved of Galen's doctrine; and, rude as it is, in that age, it was judged to be so masterly a performance, that it was ordered by a public decree, that it should be read in all the schools of Italy; and, it actually continued to be almost the only book, which was read upon the subject, for above 200 years. Cortesius gives him

him the credit of being the great restorer of Anatomy, and the first who dissected human bodies among the moderns. Notwithstanding this, and other respectable testimonies in his favor, were I to judge of his rank by the work itself, I should, without hesitation, place him rather in the end of the dark ages, than in the beginning of the more enlightened.

Before we take leave of the Saracens, in the history of our art, it is but justice to acknowledge, that however destructive their new superstition was, in its nature, to human learning, *that* had been reduced to so abject a condition in the east, when the Saracens made their first appearance upon the great stage of the world, that little more mischief remained for them to do, than that of destroying all the books which were no longer read; and this finishing blow their superstitious brutality gave with a vengeance.

In the latter half of the thirteenth century, the Arabian learning was lost in the east by the conquests of the more barbarous Turks, who raised the Ottoman, upon the ruins of the Saracen empire. They took Bagdad in the year 1258, and at once put an end to every kind of study, in that famous seat of empire, where, but a short time before, there were reckoned to be 6000 learned men in the schools.

In the fourteenth century, learning began to dawn in Europe, especially in Italy, where a taste for literature was rising, which was soon afterwards rewarded or gratified with the full restoration of the ancient Grecian learning.

As with individuals, so it is with large societies of men, and with nations; what seems pregnant with destruction and misery, sometimes proves a great blessing. Had not the Saracen empire been overturned by the Turks, probably Europe would have been still overwhelmed in ignorance. The barbarous Turks put an end to Arabian government, and Arabian studies, fixing the citadels of ignorance, despotism, and oppression, wherever they conquered and settled. Constantinople, and the neighbouring Greek cities, contained the small, but precious remains of the Grecian language, learning and arts. The Turks surrounded them, reduced them gradually to greater distresses, and at last by sacking Constantinople with superstitious rage and merciless slaughter, threatened the final extinction of all the lights, which that most ingenious of all people had set up.

But Providence had ordered that this dreadful revolution should have the contrary effect. The danger which surrounded that devoted people, forced them to implore the protection of the pope, and Christian princes of the west; and their distresses and prayers procured a sympathizing compassion.

In 1387, Chrysoloras, a learned and sensible Grecian, was sent as an ambassador, to manage that important business at the different courts; and conducted himself with so much discretion, as to ingratiate himself wherever he came. Just at this time Tamerlane gained his great victory over Bajazet, Sultan of the Turks, and made him prisoner.

This event relieved the Greeks from immediate apprehensions; and Chrysoloras settled in Italy, where he had been so well received. He taught the language, and explained the doctrines

doctrines of the best ancient Greek authors, to a great number of studious Italians at Venice, Florence, Rome, and Pavia; which, with the joint labour and influence of his scholars, for he lived and laboured till 1414, soon diffused an insatiable thirst for that study, over the whole country.

Upon the great catastrophe, many of the Greeks, especially those with cultivated minds, who were less disposed to bear the insults and cruelties of barbarians, fled for protection to Venice, Padua, and other adjacent states, and brought their manuscripts with them, just at the time when Greek literature was so much coveted in Italy. Pope Nicolas V. the celebrated family of Medicis at Florence, and some other princes, made noble exertions for improving so favourable an opportunity. By their example, their munificent patronage, and recommendations, the Greeks, who had come among them, were liberally supported, more were invited, and Lascar, one of them, was sent back into Greece, at a very great expence, to buy up all the Greek manuscripts that could be found. His collection at this day makes a very valuable part of the Florentine library.

Of the learned Greeks who came over, the principal were Pletho, Bessarion, Geo. Trapezuntius, Gaza, Argyropilus, and Lascar; and among the Italians, the principal scholars at that time were, Ficinus, Poggius, Politianus, Philelphus, Valla, Hermolaus Barbarus, Leonardus Brunus Aretinus, and many others. These were immediately employed in translating and explaining the best Greek authors. And, as if Providence had meant to shew how quick the transition might be, just at this time, the invaluable art of printing was invented or

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divulged; and thereby all the remaining treasures of ancient Greece and Rome, were presently spread over Europe.

In looking over the birth of science and tracing its progress at different periods, through different countries, it cannot escape observation, how much all the enlightened parts of the world owe to the people of Greece. They were twice totally conquered, we may say ruined; and at their fall, each time, they transferred their learning to the Italians; and each time the Italians conveyed it over the world. At this hour it is the great enjoyment and comfort of all Europe, and of many parts of Asia, Africa, and America.

The latter half of the fifteenth century was the most extraordinary for great events that is to be found in history. In that time there was a full restoration of ancient learning; printing was invented; a navigable passage was discovered to the East-Indies; and Columbus found out the other half of the terraqueous globe.

When we reflect upon the great events of the fifteenth century, it might be thought wonderful, that Italy, at that time the great fountain of superstition, should have been first smitten with the love of ancient learning and liberal studies. It was principally owing to the situation, the great power, and extensive commerce of Venice: and there were some favourable peculiarities for inviting the Italians to such studies.

In the first place, the stupendous and enchanting remains of the ancient arts, must have given an Italian, who had any
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soul in his body, a veneration for antiquity, a curiosity about it, and some degree of information likewise. The numberless inscriptions which he would meet with, and some of them upon such noble works of art, would both whet his desire for more knowledge of that kind, and be a daily exercise in language. He would necessarily grow up with something of a fine taste for architecture and sculpture, and, as all the arts are allied, a taste for one of them would beget a taste for them all. When he reflected upon what Italy must have been in former times, the *amor patriæ* would add to the enthusiasm of an Italian. Then, Italy being the seat of papal hierarchy, to which all the Latin or western church was subject, it was the great centre for information, and correspondence, for ecclesiastic applications and preferments; and therefore the rendezvous of the most learned, and most acute men of all Europe.

In tracing the great revolution of learning, which happened in the fifteenth century, I am enabled to carry the history of the improvement of Anatomy farther back than has been generally done by our own writers; and to introduce into the annals of our art, a genius of the first rate, Leonardo da Vinci, who has been overlooked, because he was of another profession, and because he published nothing upon the subject. I believe he was, by far, the best Anatomist and physiologist of his time; and that his master and he, were the very first who raised a spirit for anatomical study, and gave it credit: and Leonardo was certainly the first man we know of who introduced the practice of making anatomical drawings.

Vaffare, in his lives of the painters, speaks of Leonardo thus, after telling us that he had composed a book of the Anatomy of a horse, for his own study, “ He afterwards applied himself with more diligence to the human Anatomy, in which study he reciprocally received and communicated assistance to Marc. Antonio della Torre, an excellent philosopher, who then read lectures in Pavia, and wrote upon this subject; and who was the first, as I have heard, who began to illustrate medicine from the doctrine of Galen, and to give true light to Anatomy, which till that time had been involved in clouds of darkness and ignorance. In this he availed himself exceedingly of the genius and labour of Leonardo, who made a book of studies, drawn with red chalk, and touched with a pen, with great diligence of such subjects as he had himself dissected; where he made all the bones, and to those he joined, in their order, all the nerves, and covered them with the muscles. And concerning those, from part to part, he wrote remarks in letters of an ugly form, which are written by the left hand, backwards, and not to be understood, but by those who know the method of reading them; for they are not to be read without a looking-glass. Of these papers of the human Anatomy, there is a great part in the possession of M. Francesco da Melzo, a Milanese gentleman, who, in the time of Leonardo, was a most beautiful boy, and much beloved by him, as he is now a beautiful and genteel old man, who reads those writings, and carefully preserves them, as precious reliëts, together with the portrait of Leonardo, of happy memory. It appears impossible that that divine spirit should reason so well upon the arteries, and muscles, and nerves, and veins; and with such diligence of every thing, &c. &c.”

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Those very drawing and the writing, are happily found to be preserved in his Majesty's great collection of original drawings. Mr. Dalton, the King's librarian, informed me of this, and at my request procured me the honor of leave to examine them*. I expected to see little more than such designs in Anatomy, as might be useful to a painter in his own profession. But I saw, and indeed with astonishment, that Leonardo had been a general and a deep student. When I consider what pains he has taken upon every part of the body, the superiority of his universal genius, his particular excellence in mechanics and hydraulics, and the attention with which such a man would examine and see objects which he was to draw, I am fully persuaded that Leonardo was the best Anatomist, at that time, in the world. We must give the fifteenth century the credit of Leonardo's anatomical studies, as he was fifty-five years of age at the close of that century.

In due time, as I doubt not of being honoured with the permission of the King, who loves and encourages all the arts, I hope to engrave and publish the principal of Leonardo's anatomical designs. They will be a curious and valuable acquisition to the history of Anatomy.

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* This collection makes one large and thick folio, in old Morocco binding, with the following inscription, printed in gold capitals, on each side of the cover,

DISEGNI DI LEONARDO DA VINCI
RESTAVRATI DA POMPEIO LEONI.

which authenticates the collection; for, in a note upon the life of Leonardo, Du Pile tells us, from a latin manuscript of Rubens, then in his hands, among other things, what follows, "Rubens enlarges on Leonardo's skill in Anatomy. He adds a particular relation of his studies, and of all the designs which he made, which Rubens had seen among the curiosities of Pompeo Leoni, at Arezzo, who had all his designs."

In the beginning of the sixteenth century, Achillinus and Benedictus, but particularly Berengarius and Massa followed out the improvement of Anatomy in Italy, where they taught it, and published upon the subject*. These first improvers made some discoveries from their own dissections: but it is not surprising that they should have been diffident of themselves, and have followed Galen almost blindly, when his authority had been so long established, and when the enthusiasm for Greek authors was rising to such a pitch.

Soon after this, we may say about the year 1540, the great Vesalius appeared. He was studious, laborious, and ambitious. From Brussels, the place of his birth, he went to Louvain, and thence to Paris, where Anatomy was not yet making a considerable figure; and then to Louvain to teach, from which place, very fortunately for his reputation, he was called to Italy, where he met with every opportunity that such a genius for Anatomy could desire, that is, books, subjects, and excellent draughtsmen. He was equally laborious in reading the ancients, and in dissecting bodies. And in making the comparison, he could not but see, that there was great room for improvement, and that many of Galen's descriptions were erroneous. When he was but a young man, he published a noble system of Anatomy, illustrated with a great number of elegant figures.

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* Cortesius, who must have been well informed of the state of Anatomy in Italy, gives Bologna the honour of reviving and improving Anatomy, first by Mundinus, and then by Berengarius; both professors there, both dissectors of human bodies, and both authors, as he esteems them, of the first class.

In this work he found so many occasions of correcting Galen, that his contemporaries, partial to antiquity, and jealous of his reputation, complained that he carried his turn for improvement and criticisms to licentiousness. The spirit of opposition and emulation was presently roused; and Sylvius in France, Columbus, Fallopius, and Eustachius in Italy, who were all in high anatomical reputation about the middle of this sixteenth century, endeavoured to defend Galen, at the expence of Vesalius. In their disputes they made their appeals to the human body: and thus in a few years our art was greatly improved. And Vesalius being detected in the very fault which he condemns in Galen, to wit, describing from the dissections of brutes, and not of the human body, it exposed so fully, that blunder of the older Anatomists, that in succeeding times there has been little reason for such complaint.

From the time of Vesalius, the study of Anatomy gradually diffused itself over Europe; insomuch that for the last hundred years it has been daily improving by the labour of a number of professed Anatomists, almost in every country of Europe.

We may form a judgement about the state of Anatomy, even in Italy, in the beginning of the seventeenth century, from the information of Cortesius. He had been professor of Anatomy at Bologna, and was then professor of medicine at Messana; where, though he had a great desire to improve himself in the art, and to finish a treatise which he had begun on practical Anatomy, in twenty-four years he could, *twice only*, procure an opportunity of dissecting a human body, and then it was with difficulties and in hurry; whereas,
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he had expected to have done so, he says, *once every year, according to the custom in the famous academies of Italy.*

In the very end of the sixteenth century, our great Harvey, as was the custom of the times, went to Italy to study medicine; for Italy was still the favourite seat of the arts; and in the very beginning of the seventeenth century, soon after Harvey's return to England, his master in Anatomy, Fabricius ab Aquapendente, published an account of the valves in the veins, which he had discovered many years before, and no doubt taught in his lectures when Harvey attended them.

This discovery evidently affected the established doctrine of all ages, that the veins carried the blood from the liver to all parts of the body for nourishment. It set Harvey to work upon the use of the heart and vascular systems in animals; and in the course of some years, he was so happy as to discover, and to prove beyond all possibility of doubt, the *circulation of the blood*. He taught his new doctrine, in his lectures, about the year 1616, and printed it in 1628.

It was by far the most important step that has been made, in the knowledge of animal bodies, in any age. It not only reflected useful lights upon what had been already found out in Anatomy, but also pointed out the means of further investigation. And, accordingly we see, that from Harvey to the present time, Anatomy has been so much improved, that we may reasonably question if the ancients have been further outdone by the moderns, in any other branch of knowledge. From one day to another there has been a constant succession of discoveries, relating either to the structure, or functions of
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our body; and new anatomical processes, both of investigation and demonstration, have been daily invented. Many parts of the body, which were not known in Harvey's time, have since then, been brought to light: and of those which were known; the internal composition and functions remained unexplained; and indeed must have remained unexplicable, without the knowledge of the circulation.

Now that so much has been said of this discovery, and of its author, I may venture to make an observation or two, which otherwise might have appeared invidious. Dr. Harvey, as appears by his writings, was certainly a first rate genius for sagacity and application: and his name is deservedly immortal, on account of the many observations and improvements he made in Anatomy and Physiology. But in this, where he has acquired the most distinguished honours, I could almost think him entitled to the least. For, the singular structure of the parts concerned in the circulation, to wit, the heart, arteries, and veins, and the obvious phenomena in bleeding animals to death, the different effects of ligatures on different vessels, the practice of surgery, with regard to bleedings and blood-vessels, the action of the heart when exposed to view in living bodies, all these, I say, so evidently proclaim the circulation, that there seems to have been nothing more required for making the discovery, than laying aside gross prejudices, and considering fairly some obvious truths.

It is the more amazing that this discovery was left for Harvey, when we consider, that he was near an hundred years after Vesalius, in which interval many great men had appeared; and anatomical schools had flourished, in many different parts of Europe. And, what is still more astonish-

ing, Servetus first, and Columbus afterwards, both in the times of Vesalius, had clearly given the circulation of the blood, through the lungs, which we may reckon, at least, three quarters of the discovery; and Cæsalpinus had, many years before Harvey, published in three different works, all that was wanting in Servetus to make the circulation quite complete. But Providence meant to reserve this honour for Harvey, and would not let men see what was before them, nor understand what they read.

These reflexions on Harvey's discovery, having been misunderstood, or misrepresented, it may not be impertinent to examine the merit and circumstances of this, and some of the more important inventions.

Dr. Harvey's discovery has been commonly and justly said to have given him *immortality*; and accordingly he is often called the *immortal* Harvey. Thence, some uninformed persons, have been weak enough to suppose, that, in himself, he was something almost above a mortal; and that treating him as a very fortunate and respectable man only, should be proclaimed invidious or malicious disrespect to a most exalted character.

Some of the most important discoveries, made probably by chance, seem to have been made before, perhaps long before the invention of writing; and thence it may have happened that historians have given no account of them, as having been the happy invention of some individual, or, as having been at first peculiar to some particular people; but, they have passed as things obvious to common sense, and have been, time immemorial, as universally diffused among mankind.

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Such is the *working* of the *ore* into malleable iron; an art which must have been discovered by some happy accident in some one part of our hemisphere, and by degrees communicated to the whole; hence, at all known times, practised in part of Asia, Africa, and Europe. Yet it is an art of such difficult investigation, that in America it was never found out from the beginning of the world. It was communicated to the inhabitants of that hemisphere, by the Europeans, in very late times, and to this hour is unknown to the South-Sea Islanders.

The same may be said of the invention of letters, or writing; with this great difference however, that writing, in its gradation from something natural and hieroglyphic, to arbitrary marks or letters, would naturally occur to ingenious and thinking men.

Some of the most splendid and useful of more modern inventions and discoveries, are hardly to be traced to their first authors; such as, magnifying-glasses, gunpowder, and the compass; which is not to be accounted for so well as by supposing, that there had been such participation, such mutual assistance given and received, that no one man could boast of having a fair claim to the whole. And of these it is to be observed likewise, that after their first happy introduction, great improvements, and a variety of useful applications have been daily invented.

The blessed art of printing, from which mankind have received so much benefit, especially by rendering all kinds of learning an easy acquisition, was made out by such gradual steps, that it is difficult to say who was the inventor. Stamps

for cards, for little images, and pictures, especially of the religious kind, with the names of saints, and little excerpts from Scripture, and then little books, cut in blocks of wood, were printed by different people, in Italy, Germany, and Holland, long before Fust invented movable types, cast in metal. Of this last invention, it is very remarkable, that in the space of a very few years, it was brought almost to the highest state of perfection which it has yet attained.

The authors of the three great discoveries in later times, and all the circumstances, are well known; I mean, the discovery of the western hemisphere by Columbus; of the true solar system by Copernicus; and of the circulation by Harvey. All these three men have equally acquired immortality; but they have not had, nor deserved, an equal degree of honour and credit. Honour is acquired only by merit; immortality, by any thing very striking or interesting to mankind, whether meritorious, or flagitious, or accidental and neutral. The mad ruffian who assassinated Henry, acquired immortality as well as Henry: but he had no merit, and has had no honour annexed to his immortality.

Of these three discoverers, Columbus stands foremost in merit; indeed he is beyond comparison. His object was the greatest, among worldly things, that ever employed the human mind. It was a new subject, and entirely his own. His sagacious and comprehensive mind grasped an unseen world, with such firmness, that nothing could prevail upon him to let go his hold: and in executing his plan for finding and taking possession of it, he exercised the noblest virtues of human nature; courage, persevering resolution, patient hope, humanity

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to his fellow-creatures, and a dependence on the will of heaven, to a degree perhaps beyond any example in the history of mankind.

Next to Columbus, with regard to merit, we must place Copernicus. His subject was splendid and great, almost beyond the limits of human comprehension. But, it was not entirely his own, or new. Some advances had been made by other astronomers, to invite and direct him to the great truth which he made out; which, however, could not be made out, but by the application of very acute intellectual powers.

In merit, Harvey's rank must be comparatively low indeed. So much had been discovered by others, that little more was left for him to do, than to dress it up into a system; and *that*, every judge in such matters will allow, required no extraordinary talents. Yet, easy as it was, it made him *immortal*. But none of his writings shew him to have been a man of uncommon abilities. It were easy to quote many passages, which bring him nearly to a level with the rest of mankind. He lived almost thirty years after Afellius published the *Lac-teals*, yet, to the last, seemed most inclined to think, that no such vessels existed. Thirty hours at any time, should have been sufficient to remove all his doubts. But this subject, taken up in self-defence, grows unpleasant.

Harvey's doctrine, at first, met with considerable opposition. But in the space of about twenty years, it was so generally and so warmly embraced, that it was imagined every thing in physic would be explained. But time and experience have taught us, that we still are, and probably must long continue
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to be, very ignorant, and that in the study of the human body, and of its diseases, there will always be an extensive field for the exercise of sagacity.

After the discovery and knowledge of the circulation of the blood, the next question would naturally have been, about the passage and route of the nutritious part of the food, or chyle, from the bowels to the blood-vessels. And, by good fortune, in a few years after Harvey had made his discovery, Afellius, an Italian physician, found out the lacteals, or vessels, which carry the chyle from the intestines; and printed his account of them, with coloured prints, in the year 1627, the very year before Harvey's book came out.

For a number of years after these two publications, the Anatomists in all parts of Europe, were daily opening living dogs, either to see the lacteals, or to observe the phenomena of the circulation. In making an experiment of this kind, Pecquet in France, was fortunate enough to discover the thoracic duct, or common trunk of all the lacteals, which conveys the chyle into the subclavian vein. He printed his discovery in the year 1651. And now the lacteals having been traced from the intestines to the thoracic duct, and that duct having been traced to its termination in a blood-vessel, the passage of the chyle was completely made out.

The same practice of opening living animals, furnished occasions of discovering the lymphatic vessels. This good fortune fell to the lot of Rudbec first, a young Swedish Anatomist, and then to Thomas Bartholine, a Danish Anatomist, who was the first who appeared in print upon the lymphatics. His book came out in the year 1653, that is, two years after that

that of Pecquet. And then it was very evident that they had been seen before, by Dr. Higmore, and others, who had mistaken them for lacteals. But none of the Anatomists of those times, could make out the origin of the lymphatics, and none of the Physiologists could give a satisfactory account of their use.

The circulation of the blood, and the passage of the chyle, having been satisfactorily traced out in full grown animals, the Anatomists were naturally led next to consider, how these animal processes were carried on in the child, while in the womb of the mother. Accordingly the male and female organs, the appearances and contents of the pregnant uterus, the incubated egg, and every phenomenon which could illustrate generation, became the favourite subject for about thirty years, with the principal Anatomists of Europe.

Thus it would appear to have been in theory: but in fact, I rather believe, that as Harvey's master, Fabritius, laid the foundation for the discovery of the circulation of the blood, by teaching him the valves of the veins, and thereby inviting him to consider that subject, so Fabritius, by his lectures, and by his elegant work, *de formato fœtu, & de formatione ovi & pulli*, probably made that likewise a favourite subject with Dr. Harvey. But whether he took up the subject of generation, in consequence of his discovery of the circulation, or was led to it, by his honoured master Fabritius, he spent a great deal of his time in the enquiry; and published his observations, in a book *de generatione animalium*, in the year 1651, that is, six years before his death.

In a few years after this, Swammerdam, Van Horn, Steno, and De Graaf, excited great attention to the subject of generation, by their supposed discovery that the females of viviparous animals have ovaria, that is, clusters of eggs in their loins, like oviparous animals; which, when impregnated by the male, are conveyed into the uterus: so that a child is produced from an egg, as well as a chick; with this difference, that one is hatched within, and the other without the body of the mother.

Malpighi, a great Italian genius, some time after, made considerable advances upon the subject of generation. He had the good fortune to be the first who used magnifying-glasses with address, in tracing the first appearances in the formation of animals. He likewise made many other observations and improvements in the *minutiæ* of Anatomy, by his microscopical labours; and by cultivating comparative Anatomy.

This distinguished Anatomist gave the first public specimen of his abilities, by printing a dissertation on the lungs, Anno 1661; a period so remarkable for the study of nature, that it would be injustice to pass it, without particular notice.

The Italians, who gave not only eloquence, and the other fine arts, but science to the rest of Europe, were rising upwards from barbarity and ignorance, about the middle of the fifteenth century. They had then had Dante, Petrarch, Boccace, Emmanuel Chrysoloras, Leonard Aretin, Poggius, Philelphus, and several other learned men: but the number was only sufficient to raise an appetite in the nation for Greek learning, till Constantinople was sacked in the year 1453, which makes the

the beginning of the first great revolution in the learning of modern times; viz. the revival of the Greek, and great improvement in the study of the Latin language.

In the course of the next hundred years, these improvements were advanced to the highest perfection, and spread very generally over Europe. In every country were found some of the best scholars in the dead languages, that have appeared since the decline of the Roman empire. Physic and Anatomy were then restored to the best condition to which the study of Greek authors could bring them. In consequence of which, the Arabians began to be consulted only as commentators on Hippocrates, Aristotle, and Galen. All later writers were degraded with the appellation of barbarians, and sunk gradually in the esteem of the world, in proportion as the Greek language became more generally understood, and as their best writers both in the original dress, and in good translations, were multiplied by printing.

In the next hundred years, the Italians finding their own strength, the natural consequence of cultivating the human mind, ventured upon the more arduous undertaking of improving upon the Greeks themselves. This began with Vesalius, about the middle of the sixteenth century. And from that time, in the subsequent hundred years, the circulation of the blood, and many other important doctrines, unknown to the ancients, had been so generally adopted, and diffused over Europe, that the learning of the Greeks in natural knowledge, was allowed to be imperfect; and men of a more acute and aspiring cast of mind, after having gone through their school education, were prompted to look with their own eyes into every part of nature.

It was at this happy time that Malpighi came forth, the great period for the study of all natural things. At this time the Academy del Cimento arose in Italy, the Royal Society in London, and the Royal Academy in Paris. And from that time, the important doctrine of rejecting all hypothesis, or general knowledge, till a sufficient number of facts shall have been ascertained, by careful observation, and judicious experiments, has been, every day, growing into more credit. That doctrine was the source of Sir Isaac Newton's, and of all the improvements which have been made since the middle of the seventeenth century.

Here it may be useful, as well as entertaining to observe that novelties, and improvement of course, have always become subjects of emulation and contention, between young men, and the old. In the exercise of the mind, as well as of the body, young men are quick, eager, ambitious of being distinguished, and often rash. In adopting a new opinion, they have not to struggle with the habitual influence of a contrary opinion, to which they have long adapted all their other reasonings. Young men have likewise, very commonly, no dislike to pull down the magisterial dictates of age; and old men can seldom bear, what they think an inversion of the natural order of things, that youth should instruct age. Of all men, teachers of every kind, bear this with the least patience. For that reason, we see in fact, that the seniors of schools, colleges and universities, have generally been the most obstinate in shutting out light, and claiming a birth-right for opinion, as for property.

A little reflexion into human nature, will shew, that vanity is the principal source of this absurdity. All men wish to be respectable; and most of them carry about with them, through life, what they think a secret, and yet what very few of them can conceal, a constant endeavour to pass in the world, for what they are not; for being more acute, more judicious, more studious and learned, than they really are. Thence, professors, enjoying the admiration of their young pupils, assume a decided and dictatorial character, affecting to have gone to the bottom of every thing, and to have overcome every difficulty, either by the natural powers of the mind, or by severity of study and perseverance in the pursuit of knowledge. Under the influence of this passion, they are mingling self-applause with every doctrine which they teach. It is easy to see, that such men will resist new doctrines with more obstinacy than the rest of mankind, perhaps with inveteracy, in proportion as the doctrines are well founded. They will be sensible that all their scholars who embrace the new opinion, will call to mind, many looks of importance, and expressions of vanity, which must now appear truly ridiculous.

But those few teachers, who have had moderation enough to wish for that respect only which they really deserved, have had the satisfaction of knowing, that they could not be reduced to that humiliating situation, because when they had doubts they avowed them; where truth lay beyond their reach, they confessed their ignorance, with a decent and becoming sense of the imperfections of human nature. Such men will always be ready to receive instruction, and to embrace truth, from whatever quarter it may be presented.

What Malpighi says, of the efforts made to resist his first new doctrines, is so much to our purpose, that we must give the substance of it in a few words. Op. Posth. p. 20, 21. "In the mean time, says he, contentions being raised among studious men, especially the younger, both theoretical and practical, and the new doctrines growing daily into more credit, the senior professors were inflamed to such a pitch, that in order to root out heretical innovations in philosophy and physic, they endeavoured to pass a law, whereby every graduate should be obliged to take the following additional clause, to his solemn oath on taking his degree; viz. You shall likewise swear, that you will preserve and defend, the doctrine taught in the university of Bononia, viz. that of Hippocrates, Aristotle, and Galen, which has now been approved of for so many ages; and that you will not permit their principles and conclusions, to be overturned by any person, as far as in you lies.—*pro toto tui posse* is the expression. But, says our author, this was dropt, and the liberty of philosophizing with freedom remains to this day."

In the microscopic part of Anatomy, he was well seconded by Leeuwenhock of Holland. They took up Anatomy where others had dropt it, and, by this new art, brought a number of amazing things to light. They discovered the red globules of the blood; they were enabled to see the actual circulation of the blood, in the transparent parts of living animals, and could measure the velocity of its motion; they discovered that the arteries and veins had no intermediate cells or spongy substance, as Harvey and all the preceding Anatomists had supposed, but communicated one with the other, by a continuation of the same tube.

Leeuwenhock

Leeuwenhock was in great fame likewise, for his discovery of the animalcula in the semen. Indeed there was scarcely a part of the body, solid or fluid, which escaped his examination; and he almost every where found, that what appeared to the naked eye, to be rude, undigested matter, was in reality a beautiful and regular compound.

In the latter part of the last century, Anatomy made two great steps, by the invention of injections, and the method of making what we commonly call preparations. These two modern arts have really been of infinite use to Anatomy; and besides have introduced an elegance into our administrations, which in former times could not have been supposed to be possible. They arose in Holland under Swammerdam and Ruysch, and afterwards in England under Cowper, St. Andre, and others, where they have been greatly improved. And from England, they are of late years spreading to all parts of the British dominions, to France, Italy, and other parts of Europe. I say *from England*, because the arts of making fine injections, and preparations, seem to have been almost peculiar to Holland and England; and, the Anatomists, who have excelled in that way, have generally made a secret of their methods and improvements; till within the last thirty years, when all these arts have been constantly taught in public courses of Anatomy here.

Were the great Harvey to rise from his grave, to examine what has been done since his time, I imagine that nothing would give him more pleasure, than to view with attention, the cabinets of some of the Anatomists of the present times. He, and the Anatomists of former ages, had no other knowledge of the blood-vessels, than what they were able to collect

lect from laborious dissections, and from examining the smaller branches of them, upon some lucky occasion, when they were found more than commonly loaded with red blood. But filling the vascular system with a bright coloured wax, enables us to trace the large vessels with great ease, renders the smaller much more conspicuous, and makes thousands of the very minute ones visible, which from their delicacy, and the transparency of their natural contents, are otherwise imperceptible.

The modern art of corroding the fleshy parts with a *menstruum*, and of leaving the moulded wax entire, is so exceedingly useful, and at the same time so ornamental, that it does great honour to the ingenious inventor, Dr. Nicholls.

The wax-work art of the moderns, might deserve notice in any history of Anatomy, if the masters in that way, had not been so careless in their imitation. Many of the wax-figures which I have seen, are so tawdry, with a shew of unnatural colours, and so very incorrect in the circumstances of figure, situation, and the like, that, though they strike a vulgar eye with admiration, they must appear ridiculous to an Anatomist. But those figures which are cast in wax, plaister, or lead, from the real subject, and which of late years have been frequently made here, are, of course, very correct in all the principal parts, and may be considered as no insignificant acquisition to modern Anatomy. The proper, or principal use of this art, is, to preserve a very perfect likeness of such subjects as we but seldom can meet with, or cannot well preserve in a natural state; a subject in pregnancy, for example.

The modern improved methods of preserving animal bodies, or parts of them, has been of the greatest service to Anatomy; especially in saving the time and labour of the Anatomist, in the nicer dissections of the small parts of the body. For now, whatever he has prepared with care, he can preserve; and the object is ready to be seen at any time. And, in the same manner he can preserve anatomical curiosities, or rarities of every kind; such as, parts that are uncommonly formed; parts that are diseased; the parts of the pregnant uterus and its contents. Large collections of such curiosities, which modern Anatomists are striving, almost every where to procure, are of infinite service to the art; especially in the hands of teachers. They give students clear ideas about many things, which it is very essential to know, and yet which it is impossible that a teacher should be able to shew otherwise, were he ever so well supplied with fresh subjects.

The Anatomists of this century have improved Anatomy, and have made the study of it much more easy, by giving us more correct as well as more numerous figures. It is amazing to think of what has been done in that time. We have had four large folio books of figures of the bones, viz. Cheselden's, Albinus's, Sue's, and Trew's; besides one which was long expected from my old master and friend, Dr. James Douglas, and, which I wish very much to have time to publish, as the plates are all in my possession. Of the muscles, we have had two large folios, one from Cowper, which is elegant, and one from Albinus, which, from the accuracy and labour of the work, we may suppose will never be matched or outdone. Of the blood-vessels we have a large folio from Dr. Haller. We have been in expectation of having
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one upon the nerves from Dr. Meckel. We have had Albinus's, Roederer's, and Jenty's upon the pregnant uterus; and within these two years, as most of you know, one has been published here, which is allowed to be inferior to no book of Anatomy; whether we consider the accuracy with which the natural appearances are represented, or the elegance both of the engravings and of the press-work. But it would be endless to mention the anatomical figures that have been published in this century, of particular and smaller parts of the body, by Morgagni, Ruysch, Valsalva, Sanctörini, Heister, Vater, Cant, Zinn, Meckel, Zimmerman, Walther, Haller, and two or three hundred more.

In our own times, after schools of Anatomy have long flourished in all the civilized nations of Europe, and when from the number of men who have been employed in such researches, it might have been imagined that discoveries were exhausted, Providence has allowed me a greater share of that sort of honour which is generally given to discoverers, than I could have expected.

I think I have proved, that the lymphatic vessels are the absorbing vessels, all over the body; that they are the same as the lacteals; and that these altogether, with the thoracic duct, constitute one great and general system, dispersed through the whole body for absorption; that this system *only* does absorb, and not the veins; that it serves to take up, and convey, whatever is to make, or to be mixed with the blood, from the skin, from the intestinal canal, and from all the internal cavities or surfaces whatever. This discovery gains credit daily, both at home and abroad, to such a degree,
that

that I believe we may now say, that it is almost universally adopted: and, if we mistake not, in a proper time, it will be allowed to be the greatest discovery, both in physiology and in pathology, that Anatomy has suggested, since the discovery of the circulation.

Having ventured to throw out so bold a proposition, that my credit may not suffer through want of a little reflexion upon the subject, I must ask leave to explain my opinion. The discovery of a particular fact, with regard only to a particular organ in the body; such as, the duct of a gland; or, the use of a gland; an undescribed muscle, or artery, or vein; or any new organ found out or explained; all such discoveries are certainly trifling, when compared with the introduction of a new general system, which is interwoven with, and performs a peculiar and important function in every part of the body; so important indeed, that it was necessary, and accordingly has since been actually found out, in brutes likewise, in birds, and in fish. Such is the discovery of the absorbing system: and every person, who is really an Anatomist, or Physiologist, will, upon a little reflexion, admit what has been advanced; and, looking over the whole progress of Anatomy, he will allow, that since the days of Aristotle, there have been only two great inventions in the physiology of our bodies; to wit, the circulation of the blood, and the absorbent system. And, were we to draw a parallel, with regard to the circumstances of these two discoveries, they would be found more similar than could have been expected: at present I shall only observe, that however important I think the discovery of the true use of the absorbent system, I never thought the author entitled to much honour, for having made out (as I said of the circulation) what was obvious to any

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person,

person, who would but think upon the subject without prejudice.

The Anatomists of all Europe, for a hundred years, in the most improved state of our art, from all their enquiries were of opinion, that the lymphatic system was wanting in birds and fishes. But having found out the importance of the absorbent system in man, and in all quadrupeds, we could not rest satisfied, that it was wanting in the other two great classes of animals; and kept that object, and every thing that could throw light upon the absorbent system, constantly in view.

Accordingly, my brother, Mr. John Hunter, whom I bred to practical Anatomy, and who worked for me, and attended my dissecting-room, and read some lectures for me many years, found some lymphatics, first in birds, and then in a crocodile.

Next, Mr. Hewson, whom I first bred to Anatomy, and then took into my house to work for me, and under my direction, in practical Anatomy, to attend my dissecting-room, and read some lectures as my partner, which he did for a number of years; Mr. Hewson, I say, by a continued course of observations and experiments made in this house*, discovered and fully demonstrated the lymphatics and lacteals, both in birds and fishes: which confirmed the use and importance of the absorbent system in the human body; and in comparative Anatomy was one of the greatest improvements that could have been made, to establish the universality of nature's laws in animal bodies.

And,

* In Dr. HUNTER's dissecting-rooms in Windmill-Street.

And, last of all, Mr. Cruikshank, whom I likewise bred to Anatomy, and took into my house upon the same plan, with the opportunities which he has had in this place, and by being particularly attentive to the lymphatic system, at my desire, has traced the ramifications of that system in almost every part of the body; and from his dissections, figures have been made, which, with what I had before, will enable us to publish (we hope, in a little time) a full account of the whole system, illustrated by accurate engravings*.

The gravid uterus is a subject likewise, which has afforded me opportunities of making considerable improvements; particularly one very important discovery; viz. that the internal membrane of the *uterus*, which I have named *decidua*, constitutes the exterior part of the *secundines*, or after-birth; and separates from the rest of the *uterus* every time that a woman either bears a child or suffers a miscarriage. This discovery includes another, to wit, that the placenta is partly made up of an excrescence or efflorescence from the *uterus* itself.

These discoveries are of the utmost consequence, both in the physiological question about the connection between the mother and child; and likewise in explaining the phenomena of births and abortions, as well as in regulating our practice.

Besides the more capital improvements above mentioned, I have been fortunate enough to make several others, not unimportant, with regard especially to diseases; which, as they occur in the course of lectures, you will see, have had considerable influence in improving physic, surgery, and midwifery.

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* It is hoped that the public may still have this work laid before them..

You will see that even new diseases (such as, the varicose aneurysm, and the retroverted uterus) have been made out, and a proper and successful treatment recommended; by which several lives have been already saved, in cases which, otherwise, *must* have proved fatal.

This affords me an heart-felt comfort, now, when years and reflexion have given me the clearest view of the uncertainty, the shortness, and the miseries of human life. I sincerely pray that a great number of you may enjoy such a comfort in the close of life; when, I am certain, the most diligent, the most conscientious, and the most humane, among you all, will most ardently wish, that you could have done still more service to the cause of your poor distressed fellow-creatures.

To conclude: the history of Anatomy should stimulate us all to cultivate it with diligence; when we see, that Anatomists, in all ages, have made useful discoveries, and in consequence thereof, have enjoyed the advantages of reputation in their profession; and when we see that the subject is still so far from being exhausted, that it is to this day, and must be to the end of time, new, entertaining, useful, and inexhaustible.

END OF LECTURE I.

L E C T U R E II.

ASTRONOMY and Anatomy, as Fontenelle observes, are the studies which present us with the most striking view of the two greatest attributes of the Supreme Being. The first of these fills the mind with the idea of his immensity, in the largeness, distances, and number of the heavenly bodies; the last, astonishes with his intelligence, and art, in the variety and delicacy of animal mechanism.

The human body has been, commonly enough known, by the name of microcosmus; as if it did not differ so much from the universal system of nature, in the symmetry and number of its parts, as in their size.

Galen's excellent treatise of the use of the parts, was composed as a prose hymn to the Creator; and abounds with as irresistible proofs of a supreme Cause, and governing Providence, as we find in modern physico-theology. And Cicero dwells more on the structure and œconomy of animals, than on all the productions of nature besides, when he wants to prove the existence of the gods, from the order and beauty of the universe. He there takes a survey of the body of man
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in a most elegant synopsis of Anatomy, and concludes thus,
 “ Quibus rebus expositis, satis docuisse videor, hominis na-
 “ tura, quanto omnes anteiret animantes. Ex quo debet
 “ intelligi, nec figuram situmque membrorum, nec ingenii
 “ mentisque vim talem effici potuisse fortuna.”

The satisfaction of mind which arises from the study of Anatomy, and the influence which it must naturally have upon our minds as philosophers, cannot be better conveyed than by the following passage from the same author; “ Quæ
 “ contuens animus, accepit ab his cognitionem deorum, ex
 “ qua oritur pietas: cui conjuncta justitia est, reliquæque
 “ virtutes: ex quibus vita beata existit, par et similis deorum,
 “ nulla alia re nisi immortalitate, quæ nihil ad bene vi-
 “ vendum pertinet, cedens cœlestibus.”

It would be endless to quote the animated passages of this sort, which are to be found in the physicians, philosophers, and theologians, who have considered the structure and functions of animals, with a view towards the Creator. It is a view which strikes me, with a most awful conviction; and when I speak of it, I feel that I must speak from my own senses and observation. Who can know and consider the thousand evident proofs of the astonishing art of the Creator, in forming and sustaining an animal body such as ours, without feeling the most pleasing enthusiasm? Can we seriously reflect upon this awful subject, without being almost lost in adoration? without longing for another life after this, in which we may be gratified with the highest enjoyment, which our faculties and nature seem capable of, the seeing and comprehending the whole plan of the Creator, in forming the universe, and in directing all its operations.

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The man who is really an Anatomist, yet does not see and feel what I have endeavoured to express in words, whatever he may be in other respects, must certainly labour under a dead palsy, in one part of his mind. Milton could look upon the sun, at noon, without seeing light. There was no apparent defect in his eye, but the nerves of that part were insensible.

But, the more immediate purposes of Anatomy, concern those who are to be the guardians of health; as this study is necessary to lay a foundation for all the branches of medicine.

The more we know of our fabrick, the more reason we have to believe, that if our senses were more acute, and our judgment more enlarged, we should be able to trace many springs of life, which are now hidden from us: by the same sagacity we should discover the true causes and nature of diseases; and thereby be enabled to restore the health of many, who are now, from our more confined knowledge, said to labour under incurable disorders. By such an intimate acquaintance with the œconomy of our bodies, we should discover even the seeds of diseases; and destroy them, before they had taken root in the constitution.

This indeed is a pitch of knowledge which we must not expect to attain. But surely we may go some way; and therefore let us endeavour to go as far as we can. And if we consider, that health and disease are the opposites of each other, there can be no doubt, that the study of the natural state of the body, which constitutes the one, must be the direct road to the knowledge of the other.

What

What has been said of the usefulness of Anatomy in physic, will only be called in question, by the more illiterate empirics among physicians. They would discourage others from the pursuit of knowledge, which they have not themselves, and which therefore they cannot know the value of; and tell us that a little of Anatomy is enough for a physician.

Let us judge of this question, by collecting the opinions of the most eminent physicians of different countries and ages. If we have recourse to Hippocrates, Celsus, Galen, Rhazes, Avicenna, Harvey, Pitcairn, Boerhaave, Hoffman, and Mead, we shall find that all of them, either wrote upon Anatomy, or taught it.

One of the most unexceptionable testimonies in our favour, is that of Sydenham; who is allowed, by all parties, to have been a most sagacious observer, and a most excellent practical physician. In his treatise *de Hydrope*, he quotes a passage from Hippocrates, and then adds, “Attamen [ne vel divinus
“ hic auctor, erroris ullatenus insimulatur, vel ex hoc loco
“ empirici ignorantia suæ patrociniū quærant] aperte dicam,
“ me, quantum attentissima cogitatione, eaque ad praxin re-
“ lata, adsequi valeam, utcunque existimare, quod necesse om-
“ nino sit, ut medicus structuram humani corporis probe
“ calleat; quo rectius veras ideas, et naturæ et causarum quo-
“ rundam morborum, animo concipere ac formare queat.”

Here you will observe, that Sydenham's pen wrote nothing but what his judgment and candour dictated. He does not say, *of all*, but *of some*; and he might very well have said, *of a great number* of diseases. Some physicians, of a different opinion, argue thus, as I have been informed: “The cure
“ of

“ of diseases, is to be considered as a matter of fact and
 “ observation; and is not to be found out, or improved,
 “ by dissecting dead bodies: the bark cures fevers; mercury
 “ cures venereal disorders; a little oil cures the bite of a
 “ viper; and nothing, yet known, cures the bite of a mad
 “ dog.” An argument which draws universality from some
 particulars, all logicians will condemn, as inconclusive. It
 were just as reasonable to assert, that the bark, and mercury
 are useless, in the cure of diseases, because the bark does
 not cure a pox; nor mercury, an intermittent; or, because
 neither of them cures all disorders. It is by Anatomy alone,
 that we know the true nature, and therefore the most proper
 cure of the greatest number of local diseases.

That Anatomy is the very basis of surgery every body al-
 lows. It is dissection alone that can teach us, where we may
 cut the living body, with freedom and dispatch; and where
 we may venture, with great circumspection and delicacy; and
 where we must not, upon any account, attempt it. This
 informs the *head*, gives dexterity to the *hand*, and familiarizes
 the *heart* with a sort of necessary inhumanity, the use of
 cutting-instruments upon our fellow-creatures.

Were it possible to doubt of the advantages, which arise
 in Surgery, from the knowledge of Anatomy, we might have
 ample conviction, by comparing the present practice with that
 of the ancients: and upon tracing the improvements which
 have been made in later times, they would be found, ge-
 nerally, to have sprung from a more accurate knowledge of
 the parts concerned. And if at any time an accident, or
 something else, gave the first rise to an useful invention, it
 was Anatomy that regulated, improved, and established it.

In the course of these lectures, both when we examine the parts themselves, and when we consider the chirurgical operations we shall see the strict connection between Anatomy and Surgery: how much the last is demonstrative, clear, and infallible, when it receives the full lights from the former; how uncertain without them. In the hands of a good Anatomist, surgery is a salutary, a divine art; but when practised by men who know not the structure of the human body, it often becomes barbarous and criminal.

All that has been now advanced, concerning the usefulness of Anatomy in physic and surgery, is indeed so apparent, so demonstrable, that in our days it is not controverted, by those in the profession who have any pretence to be judges; or any character to give weight to their opinion. But, my duty to you, my sincere desire to serve the public, obliges me to urge the question much farther. I must insist upon it, and will beg of you to believe, that it is not barely a *general* knowledge of Anatomy, that is necessary; but the most particular, and the most accurate, that can be acquired. It is not the common attendance upon a course or two of anatomical lectures; but an attentive and persevering study; an intimate acquaintance with the practical part while we are in the course of education; and also, though this be generally neglected, a continued, or frequent exercise of the art, as long as we continue in the practice of physic or surgery.

When we hear any man of the profession, talking of all the knowledge of Anatomy that is necessary for a physician, and of as much as a surgeon needs to know, we cannot but lament the singularly hard fortune of his patients; first in being sick, or diseased, and then, in falling under the care of
so

so ignorant a counsellor. Who is the man of practice and integrity, that can lay his hand upon his heart, and say, that he has not, in some case or other, had occasion for all his anatomical knowledge; and who has not wished, at times, that he had been possessed of more? Who, then, are the men in the profession, that would persuade students, that a little of Anatomy is enough for a physician, and a little more too much for a surgeon? God help them! They have it not themselves, and are afraid that others should get it.

Many of the old generation among us, and it is to be feared some of the younger too, never understood Anatomy well enough to know its true value: and besides, many of them have no way left of preserving any rank in the profession, but that of undervaluing and ridiculing improvements; they would have young men continue as ignorant as themselves, that their own wants may escape observation. But, thank heaven! such arts cannot prevail. Knowledge and improvements gain ground every day; and ignorant men are perpetually seen in humiliating situations. Men have begun to reason more correctly; to exercise their own judgment, upon their observations; and when that comes to be the case generally, there must be an end to the delusion; many doctrines of old physicians, and of old women, will meet with proper contempt; the tyranny of empty pomp and mystery in physic, will be driven out of the land, and forced to seek shelter among less cultivated societies of men.

The more clear and perfect our knowledge of every part of the body is, both in its sound and morbid state, the better

we shall understand the nature, and strength, and tendency, of its diseases. Thence we shall more readily and certainly learn to discover a disease in its beginning; to obstruct its progress; to put it under difficulties; to prevent its gaining strength by the acquisition of auxiliaries; to cut off its supplies of necessaries; and finally to drive it out.

The comparison of a physician to a general, is both rational and instructive. The human body under a disease, is the country which labours under a civil war or invasion; the physician is, or should be, the dictator and general, who is to take the command, and to direct all the necessary operations. To do his duty with full advantage, a general, besides other acquirements, useful in his profession, must make himself master of the *Anatomy* and *Physiology*, as we may call it, of the country. He may be said to be master of the *Anatomy* of the country, when he knows the figure, dimension, situation, and connection, of all the principal constituent parts; such as, the lakes, rivers, marshes, mountains, precipices, plains, woods, roads, passes, fords, towns, fortifications, &c. By the *Physiology* of the country, which he ought likewise to understand, is meant, all the variety of active influence, which is produced by the inhabitants. If the general be well instructed in all these points, he will find a hundred occasions of drawing advantages from them; and without such knowledge, he will be for ever exposed to some fatal blunder.

What contempt would the King of Prussia, or Prince Ferdinand entertain, for any officer, who would say, that a moderate share of that sort of knowledge, is sufficient for a general?

general? The famed retreat of the ten thousand Greeks from Persia, would have been easily effected, if their leaders had known the country through which they were to pass: their dangers, disappointments, and distresses, arose principally from their ignorance of the *Anatomy* of that part of the globe.

The most specious argument, which ignorance has been able to suggest, against the usefulness of much anatomical study, is a piece of mere sophistry; it is, that the exact knowledge of all the parts of our body, in minute detail, cannot be useful; such as, that of many little muscles, and arteries, and veins, and nerves, and little processes or other features of bones, which are described by anatomical writers. The fact, as here stated, is true; but the inference drawn from it, is not just. Many Anatomists, indeed, have been blameable in this respect; they have dwelt upon trifling *minutiae*, objects adapted to their own minds. All sensible students, must have been disgusted with the common tiresome, and useless description, of the *separated* bones of the head, and of the precise attachment of all the muscles of the body; they must have been sick of the descriptions of the smaller branches of blood-vessels, and of nerves. Men who drudge without comprehension, treat those objects in their lectures and writings, with all the solemnity and respect which is due to useful enquiries. Men of more understanding must despise them. But let us remember, that when such *unimportant* subjects are given up, there are more useful facts to be learned in Anatomy, than most men can have opportunities of acquiring.

Besides

Besides the knowledge of our body, through all the variety of its *structure* and *operations* in a *sound* state, it is by Anatomy only that we can arrive at the knowledge of the true nature of most of the diseases which afflict humanity. The symptoms of many disorders are often equivocal; and diseases themselves are thence frequently mistaken, even by sensible, experienced, and attentive physicians. But by anatomical examination after death, we can with certainty find out the mistake, and learn to avoid it, in any similar case. Fatal mistakes of that kind are shocking to humanity; but it would be invidious, and even cruel, to expose such as I myself have known; because it would involve the innocent with the guilty; as in our profession, the best are liable to error. It becomes us all to be humble, to confess our ignorance, and to encourage every study that is likely to improve us.

This advantage, which we receive from Anatomy, of finding out the real disease after death, has been so generally adopted by the moderns, that the cases already published are almost innumerable: Mangetus, Morgagni, indeed many of the best modern writings in physic are full of them. And if we look among the physicians of the best character, and observe those who have the *art* itself, rather than the *craft* of the profession at heart; we shall find them constantly taking pains to procure leave to examine the bodies of their patients after death; desirous that it may be done by experienced Anatomists (a circumstance often of the highest importance) and unhappy when they cannot procure this opportunity of improving themselves, and their art.

Were

Were I to guess at the most probable future improvements in physic, I should say, that they would arise from a more general, and more accurate examination of diseases after death. And were I to place a man of proper talents, in the most direct road for becoming truly *great* in his profession, I would chuse a good practical Anatomist, and put him into a large hospital to attend the *sick*, and dissect the dead.

After having considered the rise, and progress of Anatomy; the various discoveries that have been made in it, from time to time; the great number of diligent observers who have applied themselves to this art; and the importance of the study, not only for the prevention and cure of diseases, but in furnishing the liveliest proofs of divine wisdom; the following questions seem naturally to arise. For what purpose is there such a variety of parts in the human body? Why such a complication of nice and tender machinery? Why was there not rather a more simple, less delicate, and less expensive frame?

That beginners in the study of Anatomy, may acquire a satisfactory general idea of their subject, we shall furnish them with clear answers to all such questions. Let us then, in our imagination, *make* a man: in other words, let us suppose that the *mind*, or immaterial part, is to be placed in a corporeal fabric, to hold a correspondence with other material beings by the intervention of the body; and then consider, *a priori*, what will be wanted for her accommodation. In this enquiry, we shall plainly see the necessity, or advantage, and therefore, the *final cause* of most of the parts,

parts, which we actually find in the human body. And if we consider that, in order to answer some of the requisites, human wit and invention would be very insufficient; we need not be surprized, if we meet with some parts of the body, whose use we cannot yet make out, and with some operations or functions which we cannot explain. We can see, and comprehend, that the whole bears the strongest characters of excelling wisdom and ingenuity: but the imperfect senses and capacity of *man*, cannot pretend to reach every part of a machine, which nothing less than the intelligence and power of the *Supreme Being*, could contrive and execute.

To proceed then, in the first place, the *mind*, the thinking, immaterial agent, must be provided with a place of immediate residence; which shall have all the requisites for the union of spirit and body; accordingly she is provided with the *brain*, where she dwells as governor and superintendent of the whole fabric.

In the second place, as she is to hold a correspondence with all the material beings which surround her, she must be supplied with organs fitted to receive the different kinds of impressions, that they will make. In fact therefore, we see, that she is provided with the organs of sense, as we call them: the eye is adapted to light; the ear, to sound; the nose to smell; the mouth, to taste; and the skin to touch.

In the third place, she must be provided with organs of communication, between herself, in the brain, and those organs of sense; to give her information of all the impressions that are made upon them: and she must have organs between herself,

herself, in the brain, and every other part of the body, fitted to convey her commands and influence over the whole. For these purposes the nerves are actually given. They are chords, which rise from the brain, the immediate residence of the mind, and disperse themselves in branches through all parts of the body. They convey all the different kinds of sensations to the mind, in the brain; and likewise carry out from thence all her commands or influence to the other parts of the body. They are intended to be occasional monitors, against all such impressions as might endanger the well-being of the whole, or of any particular part; which vindicates the Creator of all things, in having actually subjected us to those many disagreeable and painful sensations which we are exposed to, from a thousand accidents in life.

Further, the mind, in this corporeal system, must be endued with the power of moving from place to place, that she may have intercourse with a variety of objects; that she may fly from such as are disagreeable, dangerous, or hurtful, and pursue such as are pleasant, or useful to her. And accordingly, she is furnished with limbs, and with muscles and tendons, the instruments of motion, which are found in every part of the fabric, where motion is necessary.

But, to support, to give firmness and shape to the fabric; to keep the softer parts in their proper places; to give fixed points for, and the proper direction to its motions; as well as to protect some of the more important and tender organs from external injuries; there must be some firm prop-work interwoven through the whole. And in fact, for such purposes the bones are given.

The prop-work must not be made into one rigid fabric, for that would prevent motion. Therefore there are a number of bones.

These pieces must all be firmly bound together, to prevent their dislocation. And, in fact, this end is perfectly well answered by the ligaments.

The extremities of these bony pieces, where they move, and rub upon one another, must have smooth and slippery surfaces, for easy motion. This is most happily provided for, by the cartilages and mucus of the joints.

The interstices of all these parts must be filled up with some soft and ductile matter, which shall keep them in their places, unite them, and at the same time allow them to move a little upon one another. This end is accordingly answered by the cellular membrane, or adipose substance.

There must be an outward covering over the whole apparatus, both to give it a firm compactness, and to defend it from a thousand injuries; which, in fact, are the very purposes of the skin, and other integuments.

And, as she is made for society, and intercourse with beings of her own kind, she must be endued with powers of expressing and communicating her thoughts, by some sensible marks or signs; which shall be both easy to herself, and admit of great variety. And, accordingly she is provided with the organs and faculty of speech; by which she can throw out signs with amazing facility, and vary them without end.

Thus

Thus we have built up an animal body which would seem to be pretty compleat. But we have not yet made any provision for its duration. And, as it is the nature of matter to be altered, and worked upon by matter; so, in a very little time, such a living creature must be destroyed, if there is no provision for repairing the injuries which she must commit upon herself, and the injuries which she must be exposed to from without. Therefore a treasure of blood is actually provided in the heart and vascular system, full of nutritious and healing particles, fluid enough to penetrate into the minutest parts of the animal; impelled by the heart, and conveyed by the arteries, it washes every part, builds up what was broken down, and sweeps away the old and useless materials. Hence we see the necessity, or advantage of the heart and arterial system.

What more there was of this blood, than enough to repair the present damages of the machine, must not be lost, but should be returned again to the heart: and for this purpose the venal system is actually provided. These requisites in the animal, explain, *a priori*, the circulation of the blood.

The old materials which were become useless, and are swept off by the current of blood, must be separated and thrown out of the system. Therefore glands, the organs of secretion, are given, for straining whatever is redundant, vapid, or noxious, from the mass of blood; and when strained, they are thrown out by emunctories, called excretories.

Now, as the fabric must be constantly wearing, the reparation must be carried on without intermission, and the strainers must always be employed. Therefore there is actually a per-

petual circulation of the blood, and the secretions are always going on.

But even all this provision would not be sufficient; for, that store of blood would soon be consumed, and the fabric would break down, if there were not a provision made for fresh supplies. These we observe, in fact, are profusely scattered round her, in the animal and vegetable kingdoms; and she is provided with hands, the finest instruments that could have been contrived, for gathering them, and for preparing them in a variety of different ways for the mouth.

These supplies, which we call food, must be considerably changed; they must be converted into blood. Therefore she is provided with teeth for cutting and bruising the food, and with a stomach for melting it down: in short, with all the organs subservient to digestion. The finer parts of the aliments only, can be useful in the constitution: these must be taken up, and conveyed into the blood, and the dregs must be thrown off. With this view the intestinal canal is actually given. It separates the nutritious part, which we call chyle, to be conveyed into the blood, by the system of absorbent vessels; and the fæces pass downwards, to be conducted out of the body.

Now we have got our animal not only furnished with what is wanted for its immediate existence; but also, with the powers of spinning out that existence, to an indefinite length of time. But its duration, we may presume, must necessarily be limited: for as it is nourished, grows, and is raised up to its full strength and utmost perfection; so it must, in time,
in

in common with all material beings, begin to decay; and then hurry on to final ruin. Hence we see the necessity of a scheme for renovation. Accordingly wise Providence, to perpetuate, as well as preserve his work, besides giving a strong appetite for life and self-preservation, has made animals, male and female, and given them such organs and passions, as will secure the propagation of the species, to the end of the world.

Thus we see, that by the very imperfect survey, which human reason is able to take of this subject, the animal man must necessarily be complex in his corporeal system, and in its operations.

He must have one great and general system, the vascular, branching through the whole, for circulation. Another, the nervous, with its appendages, the organs of sense, for every kind of feeling. And, a third, for the union and connection of all those parts.

Besides these primary and general systems, he requires others, which may be more local or confined; one for strength, support, and protection; the bony compages: another for the requisite motions of the parts among themselves, as well as for moving from place to place; the muscular part of the body: another to prepare nourishment for the daily recruit of the body; the digestive organs: and one for propagating the species; the organs of generation.

And, in taking this general survey of what would appear, *a priori*, to be necessary for adapting an animal to the situations

ations of humanity, we observe, with great satisfaction, that man is accordingly, in fact, made of such systems, and for such purposes. He has them all; and he has nothing more, except the organs of respiration. Breathing we cannot account for *a priori*: we only know that it is, *in fact*, essential and necessary to life. Notwithstanding this, when we see all the other parts of the body, and their functions, so well accounted for; and so wisely adapted to their several purposes, we cannot doubt that respiration is so likewise. And if ever we should be happy enough to find out clearly the object of this function, we shall doubtless, as clearly see, that the organs are wisely contrived for an important office, as we now see the purpose and importance of the heart, and vascular system; which till the circulation of the blood was discovered, was wholly concealed from us.

The use and necessity of all the different systems in a man's body, is not more apparent, than the wisdom and contrivance which has been exerted in putting them all into the most compact and convenient form; and in disposing them so, that they shall mutually receive, and give helps to one another; and that all, or many of the parts, shall not only answer their principal end or purpose, but operate successfully and usefully, in many secondary ways.

If we understand and consider the whole animal machine in this light, and compare it with any machine, in which human art has exerted its utmost, suppose the best constructed ship that ever was built; we shall be convinced, beyond the possibility of doubt, that there is intelligence and power, far surpassing what humanity can boast of.

In

In making such a comparison, there is a peculiarity and superiority in the natural machine, which cannot escape observation. It is this: in machines of human contrivance or art, there is no internal power, no principle in the machine itself, by which it can alter and accommodate itself to any injury which it may suffer; or, make up any injury which is reparable. But in the natural machine, the animal body, this is most wonderfully provided for, by internal powers in the machine itself; many of which are not more certain and obvious in their effects, than they are above all human comprehension, as to the manner and means of their operation. Thus, a wound heals up of itself; a broken bone is made firm again by a callus; a dead part is separated and thrown off; noxious juices are driven out by some of the emunctories; a redundancy is removed by some spontaneous bleeding; a bleeding naturally stops of itself; and a great loss of blood, from any cause, is, in some measure compensated, by a contracting power in the vascular system, which accommodates the capacity of the vessels to the quantity contained. The stomach gives information when the supplies have been expended; represents, with great exactness, the quantity and the quality of what is wanted in the present state of the machine; and, in proportion as she meets with neglect, rises in her demand, urges her petition with a louder voice, and with more forceible arguments; for its protection, an animal body resists heat and cold in a very wonderful manner, and preserves an equal temperature, in a burning and in a freezing atmosphere.

There is a farther excellence, or superiority in the natural machine, if possible, still more astonishing, more beyond all human comprehension, than what we have been speaking of.

Besides

Besides those internal powers of self-preservation in each individual; when two of them co-operate, or act in concert, they are endued with powers of making other animals, or machines like themselves; which again are possessed of the same powers of producing others, and so of multiplying the species without end.

These are powers which mock all human invention or imitation. They are characteristics of the divine architect.

Having premised this general account of our subject, we shall next consider the method to be observed in studying Anatomy. In order to treat this art distinctly, and with perspicuity, we must follow either what is called the analytic, or the synthetic method. The analytic, is that of resolving, or taking down the whole or compound, into its more and more simple parts; till at length we come to examine, even the most simple, uncompounded ingredients. The synthetic is the reverse: in this method we begin with the most simple, elementary parts; and proceed gradually to the more compound.

As it is in Science, so in Anatomy, we might expect that the analytic method should be the most fit, in the enquiries which we undertake, with the view of making discoveries; and the synthetic more proper, when we propose to teach. Thus, to use a familiar example, suppose an ignorant man were to try to find out the construction of a watch; he would naturally first look carefully upon the whole, and then he would cautiously take it to pieces; observing the relations that the parts have to one another as he proceeded, till he had reduced it to its most simple parts. This would be the direct
and

and natural way of finding out the mechanism. But if that man were to be taught the construction of a watch, by an artist, in order to give him a clearer and more demonstrative view of the machine, the artist would naturally prefer the synthetic method; he would begin by explaining the matter, and form, and general use of the spring, the wheels, and other simple parts, then he would proceed to the relations they bear to one another; from the simple he would go to the more compound; from small to larger masses of machinery; and end with the idea of the whole.

Were the fabric of the human body perfectly understood; and were its constituent parts as simple, and as manageable as those of a watch, we should not hesitate to prefer the synthetic method, in a course of lectures; and then the demonstrator might be called a teacher. Accordingly many of the systematic treatises are composed upon this plan.

But the structure of an animal body, is hitherto so imperfectly understood, the machinery so infinite, the parts so delicate, and their relations to, and influence upon one another so incomprehensible, that with this view of the subject, the demonstrator, as well as the student, should look upon himself in the true and humble light of an enquirer, and follow the method of investigation. And many of our best systems of Anatomy are composed in this method. We may observe, however, that as some parts of the body are better adapted to one method, and some to the other, we shall make use of both occasionally. And as our time must be limited, and fit materials are not always to be had, we shall sometimes be obliged to alter, not only the method, but the more common order likewise; and so, to anticipate,

or postpone something, as the circumstances of our dead bodies may direct.

The study of the human body is commonly divided into two parts. The first, which is called *Anatomy*, relates to the matter and structure of its parts; the second, called *Physiology*, and *Animal œconomy*, relates to the principles and laws of its internal operations and functions.

As the body is a compound of solids and fluids, *Anatomy* is divided into,

1. The Anatomy of the solids, and
2. The Anatomy of the fluids.

The *solids*, by which we mean all parts of our body, which are not fluid, are generally divided into two classes, viz.

1. The hard solids or bones; and that part of Anatomy is called osteology; which signifies the doctrine of the bones.
2. The softer solids; which part is called sarcology, viz. the doctrine of flesh.

This division of the solids, we may observe, has probably taken its origin from the vulgar observation, that the body is made of bone and flesh. And, as there are many different kinds of what are called soft or fleshy parts, sarcology is subdivided into,

1. Angeiology,

1. Angeiology, or the doctrine of vessels, by which is commonly understood *blood-vessels*.

2. Adenology, of glands.

3. Neurology, of nerves.

4. Myology, of Muscles, and,

5. Splanchnology, of the viscera or bowels; and there is, besides, that part which treats of the organs of sense, and of the integuments.

This division of the solids has been retained, rather for the sake of explaining so many words, which are constantly used by Anatomists, than for its importance or accuracy. For, besides many other objections that might be urged, there are in the body, three species of solids, viz. gristle or cartilage, hair, and nails, which are of an intermediate nature between bone and flesh; and therefore cannot so properly be brought into the osteology, or sarcology. The cartilages were classed with the bones, because the greatest number of them are appendages to bones; and for the like reason the hair, and the nails were classed with the integuments.

For the sake likewise of explaining the meaning of words which often occur in older writers, I must just mention two divisions of the solids, which are now in disuse.

1. They said that the solids were either similar, or dissimilar. Of the similar class, were bones, muscles, &c. which were thought to be homogeneous, or made up of similar parts.

The finger, the eye, &c. they called a dissimilar part, because composed of ingredients of very different natures: the eye being made up of membranes and humours. The moderns have dropt this division of the solids, because they know that a muscle and a bone are each of them compounds of parts that are unlike.

The other obsolete division of the solids, is that of 1. *fanguinary*, and 2. *spermatic*. Such parts of our body as are plentifully supplied with blood-vessels, and are thence red coloured, the muscles for example, they called fanguinary; and the expression may be useful. The absurdity is in the next part of the division. Such parts of our body as have few or no red blood-vessels, and are consequently of a pale or white colour, tendons and cartilages, for example, they called spermatic.

The fluids of our body, for we have gone through the division of the solids, may be divided into *three* kinds, which I shall call the *crude*, the *general* or *perfect*, and the *local* or *secreted fluid*.

1. By the *crude* fluid we mean, the chyle, and whatever is absorbed at the surfaces of our body: in other words, what is recently taken into the body, and is not yet mixed with, or converted into blood.

2. The *general* or *perfect* fluid, is the blood itself; to wit, what is contained in the heart, arteries, and veins, and is going on, in the round of the circulation.

3. The

3. The *local* or *secreted*, are those fluids, peculiar to particular parts of the body, which are strained off from the blood, and yet are very different in their properties from the blood. They are commonly called secretions; and some are useful, others excrementitious.

Some authors have thought, that the solids only are the subjects of Anatomy, and that the fluids belong to the Physiology. This can only mean, that we cannot anatomize, because we cannot cut or dissect fluids; which is a dispute about words. The solids and fluids are equally the objects of our senses; and the matter and properties of both must be understood, before we can know even the structure of our body.

In explaining the structure of the parts, if a teacher would be of real service, he must take care, not barely to describe but to shew or demonstrate every part. What the student acquires in this way, is solid knowledge, arising from the information of his own senses: thence his ideas are clear, and make a lasting impression upon his memory.

It is therefore necessary, for giving a complete course of Anatomy, to provide a number of *fresh subjects*, and to have a competent stock of *anatomical preparations*.

The dead body cannot be too fresh for dissection; every hour that it is kept, it is losing something of its fitness for anatomical demonstrations; the blood is transfusing, and bringing all the parts nearer to one colour, which takes off the natural and distinct appearance; and putrefaction is advancing, which makes all the fleshy parts tender and indistinct.

A subject

A subject is commonly of little use for demonstration, after eight or ten days; though the circumstances of habit, disease, and weather, will sometimes make a great deal of difference. There is another reason for providing a number of dead bodies in succession for one course: diseases frequently alter the state of the parts, so as to render them unfit for a demonstration of their natural condition. Thence it is that we are under a necessity of having, sometimes, several subjects to shew the bowels only.

For these reasons we may conclude, that, except there be an avowed establishment, for a plentiful supply of dead bodies, a truly useful, and complete course of Anatomy, can only be given in a great city. Whatever pity it may be, that so few professors can have sufficient supplies of dead bodies, we should be very unreasonable to blame those who cannot have that advantage.

After this observation, which candour obliges me to make, I may be allowed to illustrate the doctrine by an example. In the course of my own studies, I attended, as diligently as the generality of students do, one of the most reputable courses of Anatomy in Europe: there I learned a good deal by my ears; but almost nothing by my eyes; and therefore, hardly any thing to the purpose. The defect was, that the professor was obliged to demonstrate all the parts of the body, except the bones, nerves, and vessels, upon one dead body. There was a fetus for the nerves and blood-vessels; and the operations of surgery were explained, to very little purpose indeed, upon a dog. And, in the only course which I attended in London, which was by far the most reputable that

that was given here, the professor used only two dead bodies in his course. The consequence was, that at one of these places, all was harangue; very little was distinctly seen: in the other, the course was contracted into too small a compass of time, and therefore several material parts of Anatomy were left out entirely.

Besides dead bodies, we said, that a professor of Anatomy should have a competent stock of *preparations*. These are, parts of the body, artfully prepared by dissection, or some other methods, and preserved from putrefaction; so that they may be ready to be consulted occasionally.

Preparations serve two purposes chiefly, to wit, the preservation of uncommon things, and the preservation of such things as required considerable labour to anatomize them, so as to shew their structure distinctly. Of the first sort are, the pregnant uterus, diseases, parts of singular conformation, &c. Of the second class are, preparations of the ear, the eye, and, in general, such as shew the very fine and delicate parts of the body, which we call the *minutiæ* of Anatomy.

There are two different methods of preserving animal parts; one is putting them into spirits, or such liquors as prevent putrefaction; and then they are called *wet* preparations: the other is, by drying them; after which they are covered with a varnish, which preserves them from the injuries of the air, and from insects. These are called *dry* preparations.

Both kinds have advantages and disadvantages: both are useful; but for the most part, the wet are preferable to the dry, because they are more like nature. For, this is the defect

defect of all preparations, that they lose more or less of the natural appearance. The *wet* lose their colour and transparency, and suffer even a change in their texture, from the restraining of the spirits, in which they are commonly suspended. The *dry* lose their complexion and consistence; and, except the bones, most of them retain little of their natural size and shape. We may be assured, therefore, that it is wrong to take ideas of the parts of our body from preparations, when they can be seen distinctly in the fresh subject.

It is pity that preparations, which may be made so useful to Anatomy, should in any way become detrimental to it. Yet it is certain, that in some courses formerly given, students were rather amused with elegant preparations, than instructed in the essentials of solid Anatomy. We have known gentlemen of sense, learning, and application, attend repeated courses of that sort; and after all confess, that upon opening a dead body, they could scarcely point out the different viscera.

Might we not ask any man of common sense, what idea he can have of the nerves, for instance, if he has only seen them when they have been dissected from the body, pinned out and dried upon a flat board? Or what his notions are, of that soft and spongy membrane which lines the nose, if he has only seen it dried upon the bones, full of vermilion vessels, and covered with a shining varnish?

Preparations should not be used as substitutes for a body; but supplementally, to demonstrate such circumstances clearly, as are intricate, confused, or invisible in the fresh subject.

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And, a demonstrator who makes fine preparations, should be very much upon his guard; otherwise, he will be apt to make an abuse of preparations; he will, insensibly, contract a partiality to that in which he excels; the elegance of preparations is delusive with students; and the more they are used, there will be less expence and trouble with fresh subjects.

Some Anatomists in our times, endeavoured to propagate and support a very ill grounded opinion, viz. that in the study of Anatomy, preparations are almost always either useless, or hurtful: *useless*, they said, because the same things might be seen in a more natural state; and *hurtful*, because they give false ideas, inasmuch as the natural condition of the part is changed. One of those Anatomists would declaim upon injections stretching the blood-vessels beyond their natural state; and would plead, that Morgagni and Winslow, hardly made any use of preparations. Another would harangue in the same stile, growing angry as he went on; and then would pretend to give a clear proof of his supposition, by shewing his pupils a dried, shrunk, and corrugated muscle, as a preparation: which he would compare with a beautiful, fresh dissected muscle, in its natural state and situation; and then appeal to their eyes for conviction. Here was some plausibility of argument, drawn out of misrepresentation and delusion. In fact, they were both out of humour with, and jealous of a third person, who was making use of preparations successfully; and they had almost none: which last circumstance alone, is enough to render it at least, problematical, whether their conduct was not an illustration of the well known fable of the four grapes.

Both of those gentlemen demonstrated the bones, not in a fresh subject, and in their natural state, with all their marrow and periosteum, and tendons, and ligaments; but upon the artificial skeleton; that is, upon a preparation made by boiling and steeping, for the sake of shewing more clearly the figure and features of bones. This preparation they used, because it was very useful to students, and because they could make it: but such preparations as they had not, either because they could not, or would not, take the pains to make them: they said were *useless* or *hurtful*.

In a matter so evident and demonstrable as the usefulness of preparations, I not only can rely upon my own judgment, but I have the concurring opinion of all the sensible men who ever honoured me with their attendance. I never talked with one of them, who did not say that he received much improvement from what he saw exhibited in preparations. The appearances of diseases, except now and then by accident, cannot be otherwise demonstrated. What advantages then must a teacher have, were it only in this way, who by preparations can demonstrate, in many hundred instances, the changes which are actually produced in the human body, by different diseases.

In my situation, and at this time of life, it cannot be supposed that I should take the trouble of giving lectures, if I did not consider it as a duty that I owe to the public. Every man should be held as a criminal who locks up his talent, whatever it may be. Mine, from nature was small; but, by application and perseverance, it has grown to be considerable. Hitherto it has been diligently employed for the advantage of others; and at the same time it has brought to
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myself, all the advantages which I have been ambitious of gaining. I have collected such an anatomical apparatus, as was never brought together in any age or country. The specimens of diseases, especially, are inestimable, and must render a course of lectures here, instructive and useful to any man, wherever he may have studied, or whatever he may have seen. And, it may be presumed, that, from knowing my own collection best, and from long experience in demonstrating them, I am better qualified to make them useful to the world, than at this time, any other man can be. That consideration has induced me to go on with my lectures: and, with that view, I am much more ambitious of a few students, who will attend with diligence, and with a sincere desire of improvement, than of a great number. The first will give me satisfaction and credit; the last would only bring in a larger sum of money, which could be no equivalent for the vexation of seeing young men throwing away their time, when such an opportunity is offered. For the future, money can be of no use to me, but for acquiring and communicating science; which shall be my object, as far, and as long as I can pursue it.

In treating of the physiology, it is very difficult to say, what plan we should follow; for, every method which has been yet proposed, is attended with manifest inconvenience. The powers and operations of the machine, have such a dependence on one another, such connections and reciprocal influence, that they cannot well be understood, or explained, separately. In this sense, our body may be compared to a circular chain of powers, in which nothing is first, or last; nothing solitary or independent; so that wherever we begin, we find that there is something preceding, which we ought to have

known. If we begin with the brain and the nerves, for example, we shall find, that these cannot exist, even in idea, without the heart: and if we set out with the heart and vascular system, we shall presently be sensible, that the brain and nerves must be supposed: or, should we take up the mouth, and follow the course of the aliment, we should see that the very first organ which presented itself, supposed the existence both of the heart and brain. Wherefore, we shall incorporate the Physiology with the Anatomy; by attempting to explain the functions, when we have demonstrated the organs.

The animal œconomy, indeed, is so extensive a field, and takes so much light from philosophy, and other arts, that in most universities, it has been found necessary to appoint two professors, one for Anatomy, and the other for the Physiology. Undoubtedly the man who makes it his business, to investigate every thing relating to the structure of the human body, must be, *cæteris paribus*, the fittest person to explain its operations; and there cannot be a more proper occasion, than when the parts are before us. And, yet, in some sense, it is just the reverse: for, every good Anatomist, who has a cool head, and keeps a guard over his imagination, knows, that many of the received hypotheses in Physiology, are built on very loose foundations, and liable to weighty objections; or, demonstrably repugnant to what we already know of the structure of our body. So that if the Anatomist is weak enough, to think that he can, or that he must explain, all the operations of the machine, he will certainly make partial dissections, mislead himself and others, and put a thousand little arts in practice, to make the structure correspond with the imaginary use.

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This unguarded proceeding, which has been too much the manner of teachers, though it may strike weak, uncultivated minds with reverence, yet by men of finer intellects it is construed, with great propriety, an indignity thrown out against the great Author of all things. It is indirectly passing off our own trifling schemes, and silly conceits, for his infinitely wise and extensive views. It is not shewing us what we *are*, but what we *should have been*; and in effect, therefore, is a piece of presumption, which moves the indignation of all men, who look upon the works of nature with that humility and awe, which the dignity of the object demands.

I must therefore expect, that you will not hereafter be surprized, when you find me avowing great ignorance, in many of the most considerable questions relating to animal operations; such as, sensation, motion, respiration, digestion, generation, &c. In my opinion all these subjects are much less understood, than most people think them. Our vanity deceives us, and persuades us that we have got the whole, as soon as we have acquired a smattering of natural knowledge. Hence it is, that the different sects of Physiologists, have endeavoured to explain animal functions upon such different principles. Hence, for example, to account for digestion, some have made the stomach a mill; some would have it to be a stewing-pot; and some a wort-trough: yet all the while, one would have thought that it must have been very evident, that the stomach was neither a mill, nor a stewing-pot, nor a wort-trough, nor any thing but a stomach.

This species of philosophy, has prevailed in many parts of Physiology; and makes up a great part of what has been commonly taught, as found and useful physiological learning. One thing, of peculiar properties and powers, has been explained
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by another, of different properties and powers, as absurdly, as if colours had been explained by sounds. Animal functions, generally speaking, are of a peculiar nature; and like nothing which is to be found in the works of art, or wherever there is not animation and life: and, had Physiologists spent that time in making accurate observations upon animals themselves, which has been thrown away upon mechanical and chemical visions, by this time we might have understood animal principles and processes, better than we now do.

The capital errors which have prevailed in different ages in the philosophy of human bodies, are the following:

1. The palpable absurdity of the older Anatomists, in describing the structure, and settling the functions of our body, by an examination made on brutes only—now fully exploded.

2. An absurdity, prevalent with many moderns, that of finding out, and ascertaining the chemical changes produced in our juices, by experiments made on dead matter out of the body.

3. The third, an error which has been very generally introduced into the writings of the best modern authors, is the drawing conclusions with regard to the *living* body, from experiments made upon the *dead* body. This, in many cases, will be found to be fallacious; and on that account many doctrines and arguments of Kow, Boerhaave, and others, will in a little time be exploded.

4. A similar absurdity, that of explaining the functions of our body, upon mechanical principles; arguing still from *dead* to *living* matter.

To shew the state of Physiology in this country, as late as the earlier part of my life, I may quote a passage from Dr. Friend's History of Physic, vol. ii. page 398, which was the prevailing opinion of the times, supported by Dr. Mead, we might almost say by the college of physicians, and universities of Oxford and Cambridge. Speaking of the errors of modern Physiologists, he says, "It were to be wished, that some able hand would set this matter in a true light, and illustrate it as far as may be, by the unalterable laws which nature has impressed upon all matter and motion: and indeed since the human body is nothing else but a fine contexture of solids and fluids, which observe the rules of *mechanism*, it is amazing to find that men should think of any other principles than the *mechanical* to explain it by. Would any one go so much out of the way, as to account for the motions of a watch, from the precarious doctrine of *acid* and *alkali*?"

Instead of attempting to give any compleat system of Physiology, we propose to incorporate a sketch of it only, and upon the following plan.

1. To lay before you the structure of the parts, and the known phenomena, as *data*.

2. Then to explain briefly, the most prevailing opinions or hypotheses, with the principal arguments that have been brought, either to support, or to overturn them.

3. In some instances to give our own opinion with caution and reserve; but more generally to leave your judgements free, that enquiry and improvement may go on.

Left I should be thought too short in the physiological part, I would beg leave to observe, that, as far as it is yet known,

known, or has been explained by Haller, and the best of the moderns, it may be easily acquired by a student, without a master, provided the student is acquainted with philosophy and chemistry, and is an expert and ready Anatomist; for with these qualifications he can read any physiological book, and can understand it as fast as he reads.

In this age, when so much has been printed upon the subject, there is almost as little inducement to attend lectures upon Physiology, as there would be for gentlemen to attend lectures upon government, or upon the history of England. Lectures upon subjects which are perfectly intelligible in print, cannot be of much use, except when given by some man of great abilities, who has laboured the subject, and who has made considerable improvements, either in matter or in arrangement.

In our branch, those teachers who take but little pains to demonstrate the parts of the body with precision and clearness, but study to captivate young minds with ingenious speculation, will not leave a reputation that will outlive them half a century. When they cease from their labours, their labours are buried along with them. There never was a man, perhaps, more followed and admired in Physiology, than Boerhaave. I remember the veneration he was held in; and now, in the space of forty years, his Physiology is—it shocks me to think in what a light it appears.

Anatomical lectures being intended to serve as a solid foundation for two such important arts as medicine and surgery, a teacher cannot take too much pains to render them useful: and if he be limited in time, it will require more particular

particular care that the most essential things be well explained. And with that view he must be satisfied, with touching more lightly, such things as are of less importance; and even to pass over many things of little use, though perhaps curious; for in the study of nature, there is no end, if we give way to curiosity.

With this view of my situation in life, I always have studied, and shall continue my endeavours to employ the time that is given up to anatomical studies, as usefully to the students as I can possibly make it. And therefore, shall never aim at shewing what I know; but labour to shew, and describe, as clearly as possible, what they ought to know. This plan rejects all declamation, all parade, all wrangling, all subtlety. To make a shew, and to appear learned and ingenious in natural knowledge, may flatter vanity: to know facts, to separate them from suppositions, to range and connect them, to make them plain to ordinary capacities, and, above all, to point out the useful applications, is, in my opinion, much more laudable, and shall be the object of my ambition.

Allow us here to remove a false notion which has been circulated, among those who have not had an opportunity of knowing better. They imagined, or, should I rather say, they wished the world to imagine, that the lectures given here, are upon the higher, the more curious and speculative parts of Anatomy: and therefore above the comprehension of a beginner. This I positively deny; and would recommend it to students to judge of this question, by the testimony of those who must be the best judges; those who have actually attended the course. And when they take advice upon the best plan for their studies, let them remember, that few men can
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divest themselves of prejudice, and that where prejudice has tainted the mind, a fair and candid opinion, or advice, must not be expected.

Some people thought even my former courses too long. Why? They had been used to see a course of Anatomy finished in thirty or forty lectures; and therefore imagined that, when it took up near four months, it must be unnecessarily minute or prolix. But, let them reflect how imperfect such courses were; let them recollect, that they never saw the human brain and nerves, nor the human lymphatic system, nor the human gravid uterus and its contents: let them recollect, that there were few parts of the body, which they understood thoroughly, after attending even repeated courses of that kind; and then they will see that there was great room for improvement; and own that an opportunity of attending a more compleat course of anatomical lectures, must be a national advantage.

It has been objected likewise, that a lecture of two hours continuance, is too much: the attention must flag, and the memory cannot carry the substance of it away.

My answer to this is, that if there be useful business enough, for two hours a day through the proper season, so much time nearly must be given up to each lecture; otherwise a number of material things must be omitted. And, there is enough of useful matter. Therefore, as I wish to adapt my labour to the attentive and diligent student, for the benefit of the public, the objection might pass without farther notice. But, in fact, a diligent student seldom tires; because

because the novelty, or variety, or usefulness, is continually fixing his attention; and he easily carries off the substance of the whole lecture, because it is not hurried, but given with deliberation; and he is not simply hearing a lecture, but seeing a variety of interesting objects, all in connection with one another; and when the objects are small, or the subject obscure, a good deal of time is taken up, with repetitions of the demonstrations; which gives time, either to relax the attention, or to become more perfectly master of the subject.

So much for our subject, and for what is proposed on our part. Allow me now, gentlemen, to say what is expected of you.

In many parts of the education of young men, the object is not very considerable; and will so far admit of idleness in the student, that his being so, will not essentially affect, either his own happiness, or that of others. But in our profession, the study of Anatomy is the most serious business of life; whether we consider the duty, which students owe to themselves, or to their friends and fellow-creatures. It is an absolutely necessary foundation, upon which they are to build their practice, in curing diseases; and upon that will depend their success, and the figure which they are to make in the world.

If they will be idle, whether from not having acquired habits of application, or from eagerness to indulge themselves in youthful pleasures and dissipation, they must lay their account with paying dearly for it. They must expect to be struggling to raise themselves in their profession, when the

opportunity is past, when it is too late: they must expect disappointments, vexations, and rebuffs in the world: in one instance they will not be employed, because their ignorance is known; in another, their want of qualification will be discovered by some blunder committed; a consultation will be demanded, and they will be dismissed with disgrace. They will see that their character is settled, and that there is an end of all ambitious views. They will therefore find themselves under the mortifying necessity of treading a low path in life, hardly able perhaps to get honest bread. And when they are under difficulties of that sort, God only knows, what they may be tempted to do, and what they may be compelled to suffer.

But, if they will be diligent, they may expect credit and independence; they will endear themselves to their friends and patients; they will be respected and courted by mankind; they will every day receive the grateful blessings of the sick and lame, whom they have comforted or saved; and all this put together, will furnish a man of the best regulated ambition, of humanity and feeling, with as much heart-felt satisfaction, as much real happiness, as human nature can well receive in this world.

This, gentlemen, as far as experience of the world has enabled me to judge, is certainly the alternative that is before you: and I firmly believe, that it is in your power not only to *chuse*, but to *have* which rank you please in the world. An opinion, the child of spleen and idleness, has been propagated, which has done infinite prejudice to science, as well as to virtue. They would have us believe, that merit is neglected, and that ignorance and knavery triumph in this world

world. Now, in our profession it seems incontestable, that the man of abilities and diligence always succeeds. Ability indeed is not the only requisite; and a man may fail, who has nothing besides to recommend him; or, who has some great disqualification either of head or heart. But sick people are so desirous of life and health, that they always look out for ability: and, surely the man who is really able in his profession, will have the best chance of being thought so. In my opinion, a young man cannot cultivate a more important truth than this, that merit is sure of its reward in this world. I will flatter myself then that you will be diligent.

A beginner in this study ought by no means to be absent from a single lecture; because he would thereby lose, not only what was then demonstrated, but the chain and connection of things; and therefore he would lose a part of all that comes after. For the same reason, in the time of demonstration, a beginner should not allow his attention to be called off, even for a moment; lest he should lose something of importance. Upon this account, I think it injudicious in a beginner, to write notes in the time of a lecture. His business is, first of all, to get clear ideas of every thing. His eyes and ears are to be employed in that service only. He is first to understand; let him remember as he can. And to say the truth, as it is a difficult task to remember what we do not understand; so, it is hardly possible to forget, what we clearly and fully comprehend. So that in getting distinct and clear ideas, especially of the objects of our senses, we are taking the best method of fixing them for ever in the memory.

In attending a second course of lectures, a diligent student cannot employ himself to more advantage, than by taking *notes* in the time of lecture; and by writing it out fully, at his leisure, in the evening and next morning, while it is yet fresh in his memory. His *notes* should be very *short*; otherwise the writing will take his attention too much from what is going on. For, even if he could, by *short-hand*, take down every word that is said, he would then be possessed only of a system of Anatomy, at best full of tautology, and undigested; and besides, he would not understand it, because he had not had time to see and examine the objects: so that he would lose the very thing that is aimed at by attending lectures; which is, to see and to comprehend things clearly. A man is no more an *Anatomist* for possessing a system of Anatomy in manuscript, than he is, for having a system of Anatomy, or a hundred of the best books upon the subject, in print.

Students, especially if they have not been in the habit of taking pains, will think that a diligent attendance alone, when they happen to be conscious of having a good memory, will be enough; or, at least, that it will be sufficient to take short notes, for greater security to the memory; and that composing and writing out a lecture at length, from such *notes*, can answer no good end; that it must be such drudgery, as no young man of good natural parts will submit to. Yet it is what I would earnestly recommend to all those, who wish to make any figure in the profession. And, to induce them to adopt this part of the plan recommended, I will let them know the great benefit they will reap from it.

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First, It fixes attention. For, when we know that we are to give a full and distinct account of what we see and hear, we find out the necessity of being very attentive.

Secondly, It fixes the subject indelibly on the memory; both by the close attention which is given at the time of lecture, and by the strong and clear conceptions, which are afterwards raised in the mind, and deeply impressed there, by being clothed in our own words.

Thirdly, This is the only method of discovering, what we really do know, and what we do not; therefore, of discovering, what it is that we must get farther explained to us, or find out by our own industry. From experience I can say, that I have often come away from a lecture, thinking that I understood and retained, the substance of all that was said or shewn: and yet, when I tried to put it on paper, which was the test, I found several things, which I understood so imperfectly, as not to be able to give an account of them.

Fourthly, This method of writing out lectures, gives possession of a system of Anatomy, intermixed with innumerable observations in physic, surgery, and midwifery, which may be consulted through our lives, with much more advantage than any other book; because, it brings to mind things that had been under the examination of our own senses; and, in the order and connexion in which they were examined by us.

Surely these advantages are considerable enough to balance the labour that must be bestowed; and they are perhaps all that are commonly either sought after, or held up to our view. Yet there

there is a benefit arising from this method of study, more important, perhaps, than any which has been mentioned; and which, the interest I take, in what will so much affect your success, in becoming respectable members of society, obliges me to explain.

Good language, good composition, good *writing*, in every sense, depends very much upon practice and habit. All good writers allow this. The best of them, generally speaking confess, that, though all their valuable works cost them a great deal of labour, yet that they found the labour of being an author became much lighter, after some practice.

Now, a student who writes out lectures, is, by that very practice, acquiring a facility of writing upon subjects in his profession; of describing all sorts of natural and morbid appearances; of reasoning upon these; of putting his thoughts into the most distinct order, and of expressing them in the most clear and proper language.

Besides the honour which arises from acquiring the character of being a *good writer*, we observe, that in fact, every man in the profession, who has been a considerable writer, has, in consequence, become a considerable practitioner likewise; and the public has, almost always, at least, done justice to respectable writers.

Many of you, perhaps, are now saying in your own minds, *we need not give ourselves the trouble of writing out lectures with that view, because we never mean to write books.* That is a very young way of thinking. At your age, no man can say what he will not do; because he cannot know what he may hereafter

after wish to do. And therefore, while we have time and opportunity, let us endeavour to qualify ourselves for making the best figure.

But, suppose any of you could be sure that he should never write a book in the way of his profession; may not an occasion offer itself, for publishing some interesting case, or some improvement, that will be both honourable to himself, and beneficial to mankind? Can any man say, that he may not be malevolently attacked, injuriously misrepresented, perhaps ruined in his reputation as a man, or as a practitioner, if he does not write a justification of his conduct; which will require the talent of writing for the public?

In the last place, to shew you the advantage of writing well, and with facility, you must all know, that in every branch of the profession, every practitioner must frequently be obliged to write letters upon cases that come before him; he must state them in writing, for the information of those who are to be consulted, and for the satisfaction of the relations. Now, as you may naturally imagine, I can assure you, that in fact, not only medical people, but the world in general, upon reading and considering a letter, are apt to measure, and settle the character of the man, by the character of the writer. Upon a thousand occasions I have been so sensible of what I have been recommending to you, that I could not help taking pains to persuade you.

It has been a common practice with diligent students to read with care some good author, before he attends lectures; or to read, before hand, upon the subject of every lecture, to prepare himself, so that he may profit more by what he

is to see and hear at the lecture. But, it is my opinion, that the student will profit most, in the study of Anatomy, who is the least prepared by previous reading: he will come with no false, no confused ideas in his head, and therefore will have no rubbish to be cleared away; he will take his first ideas from nature herself; they will be more distinct than any thing the imagination can suggest, from bare verbal description; and the first ideas strike the mind with the most deep and lasting impression. But, after a student has laid a proper foundation, by attending a compleat course of demonstrations, the more he reads, of the best and latest writers especially, the more he will improve himself.

I should wish no student to engage in dissections, till he had first attended a complete course of demonstrations: otherwise, he will be so much at a loss in his work, and receive so little instruction or satisfaction, that at best it will be so much time almost thrown away. It may even create disgust to a study, from which he ought to receive pleasure and advantage. But, when once he is prepared for this part of his education, he cannot dissect too much. Our lectures are not intended to make men Anatomists, but only to furnish them with such a knowledge of the subject, as will enable them to prosecute the study with success; which can be done only by the labour of their own hands, by an examination with their own senses, and by reflecting and exercising their own faculties upon their own observations.

In the earlier part of my life, I found such advantage in putting my own hand to the knife, and in examining the different parts of the body, at my leisure, and in my
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own way; that I was convinced, I might be of considerable service to the public as a teacher, by opening a school for practical Anatomy, which had not been done before in this great city; and the influence which it has actually had in this country is evident. There are now among us a hundred men, who with one winter's preparation for the office, might distinguish themselves as professors in any school of Anatomy. The conditions of attending the dissecting room, were made as easy to the students, as the circumstances of this town would admit of: and I think it my duty to entreat you to dissect as much as you can, while you have the opportunity.

Besides attending lectures, and dissecting dead bodies, there is here an opportunity of learning Anatomy to the best advantage, by attending the dissecting-room. One winter's attention there, will certainly make a diligent student a good Anatomist. He will, in that time, see the preparatory dissection for every lecture; which will make the lecture itself much more intelligible, and fix it deeper in the mind; he will see all the *principal parts* dissected and demonstrated over and over again; whatever he finds he does not clearly understand, there is such a number of bodies dissected in succession, that he will, at any time, have an opportunity of attending to that particular object, and of getting it explained to him; he will see all the operations of surgery performed and explained, again and again; and he will see the practice of all the arts of making preparations. It is an important piece of education; and as it is not to be had at other places, I recommend it earnestly; especially to those students who are to be in London, one winter only.

Some eminent Anatomists, have conducted themselves in their practical methods, with such cautious reserve, or secrecy, as if their ambition had been to have it said, when they were gone out of the world, that no man was left, who was fit to take their place. It would be still more reputable for a teacher, to have it said, that he had raised such a spirit for the art, and taught so openly all he knew, that he left behind him, at least a score of better Anatomists than himself.

I must likewise earnestly recommend it to every student, to make and collect as many anatomical preparations as he can. He should not only have a skeleton for his own use, but he should have several skulls, divided by different sections, to shew all the interiors of that part. He should have a preparation of all the blood-vessels in their natural situation, and two preparations of the trunk of a child, the one presenting a fore-view, the other a back-view of the whole viscera; and as many preparations of the organs of sense and generation, and of the particular viscera as he can easily procure. The advantage which he will receive from such preparations, will not be confined to the few years which are commonly given up to the study of Anatomy; but in the course of his business afterwards, he will have occasion to consult them in many cases, where an exact recollection or knowledge of the precise situation of parts may be very necessary to determine the nature of a disease, and to direct the cure. I recommend this to students, with earnestness, because I so frequently find the advantage of it myself. When consulted about any uncommon case, I frequently go to my preparations, and receive much information and satisfaction, by comparing the diseased parts with the sound.

In the study of Anatomy, there are so many occasions of examining minute objects, that every student should provide himself with a magnifying-glass, and practise with it upon objects in bottles, as well as upon those that are uncovered; that he may acquire a dexterity, and readiness, in bringing the object into a good light, and proper distance.

In our demonstrations here, large and conspicuous objects will be shewn to the whole company at once. You may observe that this theatre is particularly well constructed, both for seeing and hearing; a strong sky-light is thrown upon the table, and the glass being ground, that is, made rough upon one surface, the glare of sun-shine is not admitted: the circular seats are brought as near the table, as ease in sitting would admit of; and, as they go back, they are a good deal raised, which is a considerable advantage both in seeing and hearing; you may observe another circumstance in this theatre, which has not been sufficiently considered in buildings of that kind, viz. the table, where the object is placed, and by which the demonstrator stands, is not in the centre of the circular room, but about half way between the centre and the circumference; thence the seats make smaller segments of larger circles, in proportion as they are farther removed; and the spectators, in proportion as they are at a greater distance, are more directly before the object and speaker, which, both in hearing and seeing, makes some compensation for the greater distance.

When smaller parts of the body are to be demonstrated here, or such as are obscure from their situation, they will
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be shewn at two or three places successively, that every one present may get a distinct view of them.

Objects that are still more minute, and most of the *preparations*, must be sent round the company; that every student may examine them in his own hand. To prevent confusion, you will please to observe, that, in the first seat, the preparations are to go round from right to left; in the second bench, from left to right; and so alternately, to the farthest seat of all. To prevent loss of time, when you give a preparation to your neighbour, be so good as to point out the *part*, or *circumstance* which is then to be examined; as I shall do, when it is first handed round: and every student will recollect, that he is to confine his examination to that part only; for, were he to speculate upon other things in the preparation, he would not only wander from the subject in hand, which would reflect upon his understanding, but he would detain the preparation too long from the rest of the company.

We expect that the preparations will not be injured, or destroyed, by your examination of them; and therefore, that they will only be looked at: no experiment is to be made, by pressing or bending, to try their strength or texture. With all possible care they are constantly wearing out, or growing the worse for use. Many of them are the result of patient labour, and not easily restored; many of them are such rarities, as are not recoverable, when lost, by any pains that can be taken.

Among

Among a number of students, there will always be some young men, who will attend, without any desire of getting instruction, but to go through a prescribed form of education. From such nothing is expected, but that they will not disturb the rest of the company: that point must be insisted upon.

In a country where liberty disposes the people to licentiousness and outrage, and where Anatomists are not legally supplied with dead bodies, particular care should be taken, to avoid given offence to the populace, or to the prejudices of our neighbours. Therefore it is to be hoped, that you will be upon your guard; and, out of doors, speak with caution of what may be passing here, especially with respect to dead bodies.

These considerations render it necessary to shut our doors against strangers, or such people, as might chuse to visit us, from an idle, or even malevolent curiosity. But, if a student should wish to introduce a friend to any particular lecture, it will give us pleasure to oblige him; provided he will only take the trouble of presenting his friend, just before the lecture begins. The lectures, however, upon the organs of generation, and gravid uterus, are to be excepted. No visitor can be introduced when we are upon these subjects. The reasons for such exceptions must be obvious.

The hours will be from *two* to *four* o'clock every day, except Sunday, till the whole be finished.

The

The conditions, as usual, are hung up in a frame, for the inspection of those who do not know them.

Our next meeting shall be opened with the plan, or order of the whole course; and then we shall explain the nature of the blood.

END OF THE LECTURES.

PAPERS

P A P E R S

R E L A T I N G T O

Dr. H U N T E R ' s I N T E N D E D P L A N ,

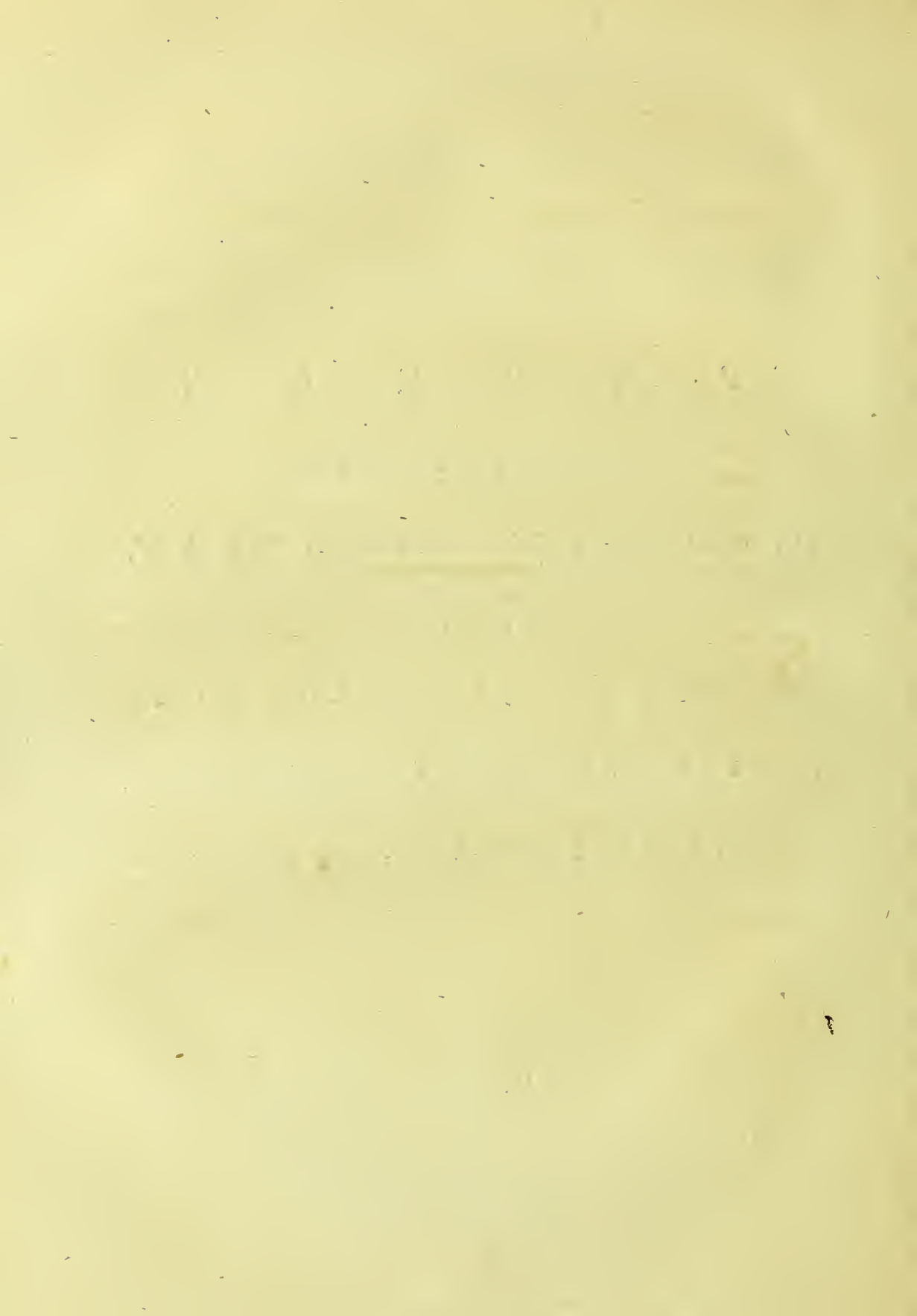
F O R

E s t a b l i s h i n g a M U S E U M i n L O N D O N ,

F O R T H E I M P R O V E M E N T O F

A N A T O M Y , S U R G E R Y , A N D P H Y S I C .

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COPY of a MEMORIAL given to the EARL
OF BUTE, first Lord of the Treasury, a short
Time before he resigned that Office, by DR.
HUNTER.

SCARCE any science or art requires the protection of
a prince more than Anatomy, as well on account of
its great use to mankind, as because it is persecuted by the
prejudices, both natural and religious, of the multitude in all
nations.

Its usefulness indeed is generally allowed; and yet the de-
gree and extent of its benefit is known only to a few.
It is the only solid foundation of medicine. It is to the
physician and surgeon, what geometry is to the astronomer.
It discovers and ascertains truth; overturns superstition and
vulgar error; and checks the enthusiasm of theorists and of
sects in medicine, to whom perhaps more of the human
species have fallen a sacrifice, than to the sword itself, or
pestilence.

It is likewise, or at least might be made of considerable use in sculpture and painting.

A great school, provided with all the means of improvement, is much more necessary in this, than in any other branch of knowledge, because it is less capable of being studied or improved in private. The difficulties, dangers, and expences, that must be incurred, in procuring dead bodies, and in providing proper places for dissection, and the secrecy with which the business must be conducted, are such discouragements to the study of Anatomy, that few men, even of the profession, ever attempt the practical part: and, without practice, there can be no great share of real and useful knowledge.

There can be no effectual school for this art, in any other place than a large city; because it requires a great number and a regular succession of bodies, which cannot be procured in smaller towns.

Of the very few who profess or teach this art in any part of Great-Britain, London excepted, there are none who can be supplied with dead bodies for the private use of students. They can with difficulty procure only so many as are absolutely necessary for the public demonstrations of the principal and well known parts of the body. Hence it is that the students never learn the practical part, and therefore never become Anatomists: and the teachers themselves can hardly make improvements, because they cannot have subjects for private experiments and enquiries.

Anatomy was not upon a much better footing even in London, till the year 1746. From that time, not only more compleat courses have been regularly given in public, but students have always had opportunities of exercising themselves in the practical part, which, before that period, they could not do, in any part of Great-Britain. This has raised and diffused a spirit for the art, which (if we may be allowed to speak the truth) will be felt, for some time, by the sick, and the lame, in all parts of the British empire. And this has been owing to one, who, with very moderate abilities, happened to have an uncommon love for the study; and who therefore took uncommon pains, both to inform himself and to inform others. Hence it is that London has for some years been one of the best schools for Anatomy; and hence the London teacher is become possess'd of a collection both of preparations and books, inferior perhaps to none in Europe.

He wishes to teach Anatomy to the best advantage of his pupils, while he enjoys life and health; and to perpetuate the spirit for Anatomy, in this country, as far as human institutions can secure perpetuity.

But without some public and permanent foundation he foresees that Anatomy, and every thing that depends upon it, must sink again to its former state. It will be taught only by young men, as an introduction to business; the name of lecturer, in news-papers, and in private conversation, never failing to give a man some degree of credit. But such young teachers will generally be very indifferently qualified when they begin; and when they have acquired some ability, from experience, that is, when they are just become
fit.

fit for teaching, they will generally leave it off. They will always find their labour better rewarded (in the vulgar sense of reward) by following the practice of physic or surgery, than by reading lectures. So it has been, in fact; and thence, though we have had many professors, or teachers, in this great town, we have not had one Winslow, Morgagni, or Albinus: nor can it be expected, that a Briton should be able to do, in a few years, what is done by the labour of a long life in other countries: especially too, when we consider that there is no provision made by our government for supplying him with subjects, and that in other countries this article is amply provided for.

Above two years ago, Dr. Hunter found himself under a necessity of giving up his lectures. The fatigue of reading two or three hours every day for six months, during the winter season, when the town is full and busy, and at some distance from his dwelling-house; this, with his other engagements, which consume a great deal of time, and frequently deprive him of natural rest; all this grew to be insupportable, and forced him to give notice, that he should read but one course more. After that course, he was importuned so urgently by his pupils, that he granted them another short one upon the principal parts; but he read it gratis, thinking, thereby to put an end to all further solicitation. When he took his leave of the students, he received such flattering marks of their gratitude, and such pressing calls to continue his lectures, for the good of mankind, that, after very deliberate reflexion, he thought it his duty to do so, even if he should be obliged to drop a part of his more lucrative employments. He conceived that a man may do infinitely more good to the public, by teaching
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his art, than by practising it. The good effects of the latter must center in the advantage of the few individuals that may be under his cure as patients; but the influence of a teacher extends itself to the whole nation, and descends to posterity.

With these intentions towards mankind, and with a desire of gaining what the best men have ever esteemed the highest reward, he begs that the Earl of Bute, who knows well the force of such motives, would recommend him to the King's favour, that he may the better execute his plan of giving lectures during his life, and perpetuate a succession of public teachers of Anatomy, under the royal protection.

What he at present wishes is this; to be allowed a proper piece of ground, that he may forthwith lay out six, or even seven thousand pounds, in erecting a building fit for the purpose, under any condition that may be agreeable to the King.

Or, if his Majesty's known love of the polite arts, and his benevolence to mankind, should suggest to him a design of establishing an academy on a more extensive plan, Dr. Hunter would be still more happy, if what he now proposes for the advancement of one science, might be made a small part of an institution, worthy of the British nation, and a British King.

P L A N

PLAN of a THEATRE, MUSEUM, &c. proposed by
Dr. HUNTER: With an Account of several Parcels
of Land in Westminster, in his Majesty's Disposal,
one of which may probably be thought proper
for carrying the DOCTOR'S Scheme into Execu-
tion.

IT is required to find a convenient piece of ground within
his Majesty's lands in Westminster, large enough for a
Dwelling-house, a Theatre, and Museum, for carrying Dr.
Hunter's plan into execution; but there being no petition
or memorial from the Doctor, nor any reference to the Sur-
veyor General; verbal directions were given by Mr. Dyson,
to the Deputy Surveyor, referring him to the Doctor for
the quantity of ground and situation requisite thereto; ac-
cordingly the Doctor delivered a sketch of his design, whereby
it appears, that a piece of ground, of about thirty rod, or
of the dimensions of one hundred and twelve feet in front,
by seventy-one feet in depth, is wanted for this use.

B A I L I W I C K O F S T. J A M E S.

With regard to his Majesty's demiseable land, within the
bailiwick of St. James now laid out in streets, and built
and

and improved at the tenant's expence, by virtue of leases under the seal of the Court of Exchequer. These are not to be come at without purchasing in the terms in being; even old buildings in Duke-Street, Bury-Street, King-Street, or other parts of this extensive bailywick, will fetch eight or ten years purchase, and in Pall-Mall, Piccadilly, or St. James's-Street, near as much more. And when bought in at those prices, must be pulled down, before they can be of any service in the plan proposed.

S C O T L A N D - Y A R D .

The ground in both Scotland-Yards, are so encumbered with the leases of the Earl of Northumberland, Mr. Ripley, Mr. Edwyn, Mr. Gwyn, Mr. Gibbons, Mr. Killegrew, General Cholmondeley, Mr. Wallace, and others, besides the parts necessary for his Majesty's service, as the guard-rooms, the office and accommodation of his Majesty's works, the wood-yard, and other offices, that it does not seem possible to find one piece of ground there, large enough to answer the intended purpose.

S T . J A M E S ' s P A R K .

St. James's Park, and the Green Park, are strait enough for the air and accommodations of their Majesties palaces, unless a piece of ground of one hundred and twelve feet by seventy-one feet, might be spared in that corner of the park, joining to Queen's-Square, by Petty France; which is the most remote, and least frequented of any other part of the

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parks.

parks. But it is imagined, the Lords Commissioners of his Majesty's Treasury, will, with great reason, object to any diminution of them.

S A V O Y.

In the Savoy is a large front of old houses on the south side of the Strand, consisting of about thirty houses, seven of these in the broad part of the Strand, may be taken down, which will give a space of one hundred and twenty feet by seventy feet, and will fully answer the intended use. They are now, and for many years past have been, held by the inhabitants, without any title but possession. This part may be soon cleared of the present incroachers, by order of the Court of Exchequer, with the consent of the Chancellor of the Duchy, the old buildings pulled down, and the Doctor's plan carried into execution, without the least prejudice to the garrison there, the prison, the infirmary, the French, or Prussian churches, or any of the public buildings whatsoever, standing within the Savoy. And the residue of these old houses, may be let to such tenants as the Lords of the Treasury shall think fit.

M E W S, U P P E R E N D.

At the upper end of the Mews, joining to the houses in Orange-Street, there may be taken one hundred and forty feet in length, and eighty feet in depth; this piece of ground at present, is part in ruins, on other part are stables belonging to his Royal Highness the Duke of York, and also
some

some buildings and ground in possession of Captain William Hamilton; and it is very probable, other accommodations might be found for his Royal Highness, and Mr. Hamilton, in other parts of the Mews, by advice of the Master of the Horse, under whose jurisdiction the premises are.

M E W S, L O W E R E N D.

At the lower end of the Mews, fronting the main street at Charing-Cross, is a range of ground of about one hundred and twelve feet in front, and a suitable depth for the use proposed; it is now used, part as a sutler's and porter's lodge. Other part, as coach-houses for the carriages of the King, Queen, and Duke of York; other part is used by the Serjeant Farrier, and the rest is in the occupation of the servants belonging to Colonel Carpenter, and Captain Hamilton. These buildings, where some of the carriages of the Royal Family are put up, are mean old sheds, very unfit for the use they are put to; and if other and better accommodations might be found for these uses, with the advice of the Master of the horse, to whose jurisdiction the whole Mews belongs: then this parcel might be applied to Doctor Hunter's proposal, being well situate for that purpose. It is necessary, the Lords of the Treasury should be informed, that a plan was formerly made for rebuilding the Mews; which was no farther carried into execution, than building the royal stable in the middle of the Mews. If this design still exists, this plan of Dr. Hunter's would break in upon it.

H Y D E - P A R K.

Just within the gate leading into Hyde-Park, between the said Gate and the Water Conduit, may be spared a piece of ground, lying between the Park Road to Kenfington, and the south east wall of the Park, large enough for Doctor Hunter's plan. The way to it may be along the common road to Kenfington, just beyond the Turnpike Gate, and the situation will be airy, if placed over against the end of the road leading to Westminster. The houses of the Lords Holdernes, Cholmondeley, and March, &c. are all remote two or three hundred yards from this piece of ground.

Surveyor-General's Office,

January 16, 1764,

This

This was given to the KING by Mr. HAWKINS.

DR. HUNTER has given in a memorial to Lord Bute, which his Lordship recommended to Mr. Grenville, setting forth the usefulness of Anatomy; and that it is an art which cannot be cultivated in private; and therefore requires a public school with every advantage, and has a peculiar claim to the protection of the Crown; that London is the only place for such a school, because a sufficient number of dead bodies cannot be procured in any other part of Great-Britain; that he had improved and extended the study of Anatomy, and supported it for many years; that he foresaw it would be in danger of sinking again if there was not some fixed foundation; that therefore, though he had once taken a resolution of giving up his lectures, he not only had resumed them again, but was now come to a resolution of continuing them for his life, and of perpetuating useful lectures of Anatomy in this place.

This he is determined to do in the best manner he is able. His heartiness in the cause, his very large collection of preparations and books, his experience, and industry, can hardly fail of success: and he thinks, for many reasons, this national, and disinterested scheme, may be executed with much greater advantage in his life-time, than after his death.

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He is ready to lay out six or even seven thousand pounds immediately, but cannot expend more, (at least now) without risking his peace of mind.

He flatters himself if the King knew of a scheme so useful, and so perfectly disinterested, that he would honour it with his name and protection, and give a convenient piece of ground for the building.

There are now two old houses in Scotland-Yard, which the proprietor has begun to repair for the twenty-five remaining years of his lease. He asks one thousand pounds for them. These, with a row of little houses belonging to the scullery, would answer the purpose for situation and space: and if it should be wanted, the next house (which is old) may be purchased for six hundred pounds.

If any delay be made, that piece of ground will be lost; at least, the price will rise daily, because the repairs are now begun.

To the Right Hon. GEORGE GRENVILLE:

S I R,

I MOST sincerely repent having given you so much trouble about a piece of ground to build upon. The scheme I proposed was for the public: I offered to lay out seven thousand pounds from my own pocket, and intended giving my museum and labour: but, what I did not expect, I have been obliged to give up a good deal of time, (which is more precious to me than any thing) in waiting, and hitherto to no purpose. I had a message from the Surveyor, above five months ago, and when I waited upon him, I told him, that it was unexpected to me; that from the delay, and apparent neglect, for some months, I had considered the proposal as in effect refused; but said, I was still ready to execute my part. I then expected something was to be done immediately, but heard nothing more for about two months, and then Mr. Wheatly sent for me. I complained to him of the delay, but said I was still ready to do my part, if you would please to do yours, and insisted if any thing was to be done, that it might be done immediately. He talked of a *few days* being necessary; and I told him, that a *few days* would make no difference at all, but that my present situation would not admit of waiting *months*. Yesterday, nearly three months were elapsed from that time, without my hearing any thing of the matter, and I thought
it

it at last time to wait at the Treasury, and to finish the business one way or other. Accordingly, I found that nothing was done: and therefore nothing remains for me, but to beg pardon for giving so much trouble, and to beg that I may no longer be considered as bound in honour to fulfil my part of the proposal. However, as this is the last time that I will give you any trouble about this affair, to cut off all suspicion of my having made a sham proposal, I will take the liberty to say, that if any order be given for the ground, *before the first day of February next*, I shall be ready to go on with the plan; otherwise, I am so circumstanced that *I never can, and never will.*

I am, &c.

W. H.

F I N I S.

