INTRODUCTORY LECTURE,

DELIVERED ON

THE FIFTEENTH OF NOVEMBER, 1830,

BY

E. GEDDINGS, M. D.

LECTURER

ON

ANATOMY, PHYSIOLOGY AND SURGERY,

CHARLESTON, S. C.

PUBLISHED BY THE CLASS.

Charleston:

PRINTED BY J. S. BURGES, 44 QUEEN-ST.

1830.

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At a meeting of Dr. E. Geddings' Class, held on Wednesday, the 17th November, the following Resolutions were unanimously adopted:

Resolved, That we, the students of Dr. Geddings, hold in the highest estimation the private worth and professional acquirements of our instructor.

Resolved, That we are highly pleased with his introductory lecture, delivered before the class on Monday, the 15th inst.

Resolved, That a committee of five be appointed to wait upon Dr. Geddings and request a copy of said lecture for publication.

In pursuance with the above resolution, the following committee was appointed by the chair—Messrs. Daniel J. Townsend, Thos. H. Gregorie, A. B. Calhoun, J. Bennett, Jun. and William B. Townsend; who having communicated with Dr. Geddings, report the following answer:

To Messrs. Daniel J. Townsend, Thos. H. Gregorie, A. B. Calhoun, J. Bennett, Jun. and William B. Townsend.

Gentlemen:

Your communication of the 17th inst. accompanying the resolutions which the class did me the honour to pass, in reference to my exertions, has been received. While I feel fully sensible of my limited claims upon this flattering mark of the good opinion of the class, its expression is peculiarly gratifying, as it has always been—as I trust it will ever be—my most anxious wish to render myself deserving the confidence reposed in me by those who have honoured me with their attention.

With regard to my introductory lecture, I regret that it is not more worthy of the favourable sentiment which you communicate.—I am, indeed, too sensible of its numerous defects, to wish to give it publicity; but in this, I cheerfully acquiesce in the wishes of the class, which will always weigh more with me than any personal considerations.

In conclusion, I must beg that you will return to the class my most grateful acknowledgments for the honour they have shown me, and that you will accept, for yourselves, every assurance of my most respectful consideration.

E. GEDDINGS

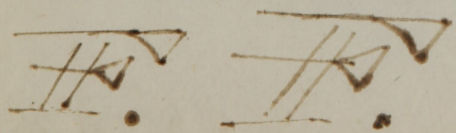
Messrs. Daniel J Townsend,
Thos. H. Gregorie,
A. B. Calhoun,
J. Bennett, Jun.
Will'm B. Townsend,
} *Committee.*

INTRODUCTORY LECTURE.

GENTLEMEN:

We cannot sufficiently express to you the pleasure we experience, on meeting you again under circumstances so well calculated to call forth our warmest expressions of gratitude. Indeed, to behold you assembled for the purposes which have brought you together on the present occasion—to witness such a number of minds, active, ardent and enterprising, devoted to pursuits involving consequences so incalculably dear to humanity, cannot fail to awaken the most pleasing reflections. But above all, to find ourselves selected for the purpose of aiding and directing you in your laudable enterprise, is to be honoured to a degree, which, though unmerited, is well calculated to inspire us with feelings beyond what even our most vain aspirations could justify. But though conscious of our slender claims upon this flattering assurance of your good opinion, we cannot feel otherwise than gratified by its expression, as it not only affords an earnest of your zeal to acquire information, but an assurance that our efforts to communicate instruction have secured the reward of your approbation. To merit and retain your good opinion thus flatteringly manifested;—to prove useful to you in the prosecution of your professional studies;—to lighten your labours and smooth your difficulties, and finally to aid you in the attainment of that professional preeminence, in which your services will become a blessing to mankind, and an honour to yourselves, we shall be proud to exercise all our efforts, and shall ever regard our employment in a task so grateful, as the fullest consummation of our happiness.

Having assembled for the purpose of commencing a course of medical instruction, we have thought we should be rendering you a service, by offering a brief exposition of the topics which are to engage our mutual attention during the winter, previously to entering upon the technical details of our course. From this, you will be enabled to judge, as well of the regions which are to be explored, as of the rout



by which you are to be conducted, and the toils and hazards which you will have to encounter in the pursuit of your noble enterprise. Like the veteran mariner, who is on the eve of embarking upon the bosom of the tractless ocean, in search of regions yet unexplored, it will be useful for you to cast your eye upon the chart, upon which are designated the treacherous rocks and hidden quicksands, that you may thereby be enabled to shun their dangers, and reach in safety the destination of your voyage. To present you with such a chart will be the object of this discourse, in the course of which, we shall endeavour to array before you, not only the different subjects which will employ our efforts, but also the intimate and important relations they possess, the ultimate results to which they will be likely to conduct us, and the most efficient means of attaining the goal of our researches.

The domain of medical science is so extensive, that it is more or less identified with almost every department of human knowledge. It may indeed be compared to a majestic river, which, made up of innumerable tributary fountains, bears along on its bosom elements as heterogeneous as the sources from whence they are derived, yet all mutually enriching each other, and every where dispensing the blessings of health and happiness. To explore all these numerous ramifications would be far beyond the competency of any mind, however powerful. Life is too short; human intellect, with all its boasted prerogatives, too feeble, ever to encompass even a fractional part of the endless and diversified themes, which blend themselves with this vast and God-like science, in the wonders of which, the mind becomes giddy, and imagination is lost in amazement. From this immense assemblage of subjects we have only selected a part, the important details of which it will be our unceasing endeavour to array before you in all their riches and power. Those which we have thought would be most deserving your attention are *Anatomy*, *Pysiology* and the *theory* and *practice of Surgery*. In the course of our labours, each of these departments will be considered individually, but always with reference to the others. Indeed, each branch of medicine may be considered as constituting a separate member of a great fabric, which, though to a certain extent perfect, and independent in itself, to exhibit an effect rich and commanding, must be viewed in connexion with the other parts, with which it must be united to constitute a grand *chef d'œuvres*, perfect in all its parts. By this plan alone can their mutual influence and dependence be fairly made out, and rendered

subservient to the elucidation of valuable principles and conclusions. In considering these subjects according to their natural relations and affinities, they become, as it were, indissolubly connected, because they are thus made to exhibit the order of their dependence; they mutually illustrate each other, and we are conducted, step by step, from those which are fundamental, to the ultimate details, which by a regular train of sequences arise out of them. In this we shall imitate the conduct of the architect, who having prepared a safe, and solid foundation, establishes upon it the materials of his edifice, which are then arranged in regular and harmonious order, each being dependent for support, upon that on which it reposes, until the whole is completed, and rendered secure in all its parts.

As Algebra constitutes an indispensable key to the higher branches of Mathematics, so Anatomy must be regarded as the main pillar of medical science. It, therefore, possesses the first, and most decided claim upon our attention. It has been very correctly defined the science of organization; and is divided, according as it has reference to man, animals, or vegetables, into human, and comparative Anatomy, and Phytotomy. The first, also called Morphology; has for its object the consideration of the form, situation, volume, number, and texture of the different parts of the human body, and their mutual relations. Comparative Anatomy, or Zootomy, has a still wider and more interesting range, as it embraces the consideration of all organized bodies, and their affinities and dissimilarities, while Phytotomy is confined to the structure of vegetables. All these departments are rich in considerations appertaining to the science of medicine; but we shall be obliged to restrict our observations to those of human and comparative Anatomy. These are divided into general and special, the first embracing the general characters of the organization, its elements, or the assemblage of parts or tissues, of which it is composed: the second, the special consideration of the organs and systems, as their situation, configuration, relations, &c. &c. To these must be added a kind of topographical or surgical Anatomy, which has reference to the parts of which any particular region is composed, their peculiarities, direction, relations, and the influence which they exercise in disease, as well as their importance to the operative surgeon. The properties of the organization may, moreover, be considered in health and disease, thus giving rise to a division of the science into healthy and diseased Anatomy. In connexion with these

subjects, must also be taken the means of unfolding, displaying and preserving the different structures, constituting what has been called the Anatomical arts.

The early history of Anatomy is involved in all the fabulous uncertainty which obscures the transactions of the primitive ages. But even at this period, many circumstances must have transpired to awaken the attention of society to Anatomical pursuits; and as the human race multiplied, mankind, impelled by a thirst of gain or a spirit of revenge, became involved in exterminating wars, and predatory excursions, which could not fail to expose them to formidable wounds and injuries, the fatal tendencies of which, they would endeavour, instinctively, to avert, by the adoption of such means, as would suggest themselves to minds thus rude and uncultivated. This would naturally lead to an observance of the injured organs, their characters, and relations, and their importance to life and health. But coeval with the early history of man, another sentiment existed, which could not fail to give an impulse to the study of Anatomy: that vain desire, which existed amongst the Egyptians, of preserving their frail masses of mortality against the ravages of time, must have led to the investigation of means calculated to resist the war of destruction to which they were exposed. These researches, which ultimately gave rise to the art of embalming, must have tended to familiarize many of those employed in them, with the structure of the human body. That horror, moreover, of the idea of corporeal destructibility, which could prompt to the construction of stupendous pyramids, which, like adamant, have withstood the strife and wear of ages, with a view of contending against the perishability of their mortal remains, after life had forsaken its frail tenement, could not have been without its influence in awakening an attention to the characters of the organization, which was thus preciously treasured up in stone and sarcophagus. We are even told by Pliny, that the wisest of the Egyptian princes, encouraged the practice of opening dead bodies, with a view of discovering the cause of disease and death. To the Asclepiades, Democritus, and Aristotle, but above all, to the Alexandrian school, must, however, be attributed the first extensive application of Anatomy to the healing art. In this school, were educated many individuals, who by becoming extended over all Greece and Asia Minor, diffused far and wide the Anatomical knowledge which they had acquired; but none so extensively as Galen, who to an untiring zeal in the cause

of science, added the most commanding powers of eloquence, which could not fail to render the subject popular, and enfeeble the prejudices engendered by ignorance, and consecrated by the tyrannic sway of superstition. But as the knowledge, which he so eagerly sought, could not be attained, except by the violation of the sacred quiet of the tomb, even the powerful strains of his eloquence were not sufficient to subdue the empire which superstitious reverence held over the sanctuary of the dead, and he was, consequently, compelled to draw many of his inferences from the dissection of animals. From this cause originated many of those Anatomical errors, which were perpetuated through the medium of his consecrated folios, until they were exposed, and thrust from their sacred seclusion, by the daring genius of Vesalius. With a mind bold, ardent, and enterprising, he was not afraid to approach the errors and absurdities which had become almost sacred under the dust and reverence of time, and purge the science of the rubbish to which ignorance had paid its court, as something sacred, throughout a long series of ages. In doing this, he created a new era for Anatomy, and gave it an impulse, to which it owes its present elevated condition. Freed from the trammels of superstition, and no longer subjected to the horrors of the inquisition, the prerogative of thought is, fortunately, in this enlightened age, a free privilege, and in venturing to cecede from the ridiculous absurdities of our ancestors, we do not incur the risk of the rack and the torture, which a despicable monkery and wicked priesthood had well nigh visited upon Vesalius, for his temerity in advocating truth, and exposing error. Thus regenerated and purified, Anatomy advanced rapidly to the highly elevated station which it now occupies, and in this progressive improvement, it has every where powerfully contributed to the developement of the resources of the healing art. It may not, therefore, be amiss, to make a few general remarks upon its importance, by considering its relations with Physiology, Pathology, Medicine, Surgery, and the Fine Arts. By viewing it in connexion with these subjects, you will be able to perceive how indispensible a thorough knowledge of its principles will be, to enable you to exercise any branch of the profession with skill and safety.

In directing our attention to the study of the organization, the first consideration which naturally suggests itself, is the character of the numerous elements of which it is composed. These must be contemplated in relation to their physical, chemical, and vital properties—the arrangement of their

molecules, the activity of their vital powers—their irritability, sensibility, contractility—the various modifications which they experience under the influence of physical and moral agencies—their capability to sustain the accidents and contingencies which beset them—their resources in health and disease, their mutual relations and affinities, their powers of reproduction, and their tendency to decay. These are a few of the considerations which appertain to what is called General Anatomy, a branch of the science, for even the existence of which, we are indebted to the original and creative genius of a Bichat, who at the early age at which others are usually merely entering on the threshold of the profession, had already decorated its temple, with a proud monument, which will perpetuate his fame to the remotest endurance of time. By this department of Anatomy we are taught, that the most perfect of our organs, when reduced to their greatest state of simplicity, merely consist of a kind of globules, intermixed with a gelatinous fluid. Even the fountain of life, and the throne of intellect—"the heart's red concave, and the silvery brain"—when subjected to the analytic procedures of the Anatomist, are found to present the same simplicity in the ultimate arrangement of their elements, the same admixture of globules and coagulable fluid, as the meanest portion of the organization. These homogeneous principles, appropriately blended, form a peculiar structure, which seems to be composed of an arrangement of fibres and laminæ, to which the term cellular tissue has been applied. This peculiar substance presents us with the simplest form of an organized solid, which by various modifications, differing in kind, as well as degree, constitutes numerous fundamental arrangements, called tissues, exhibiting a more complicated character. These have been differently enumerated by Anatomists. By Bichat, they were estimated at twenty-one. Others, however, have reduced the number considerably below that estimate, from the supposition, that many tissues which he considered distinct and independent, are merely modifications of some others. Without stopping to discuss the subject, we shall offer the distribution of the structures which appears to us to be the most conformable to nature. The cellular tissue we consider as elementary, and its several modifications we divide into four orders, founded upon the type of their arrangement: the membranous, fibrous, granulated and nervous.* The first will com-

* Cruvielhier Leçons Orale d'Anatomie. Paris, 1825.

prise the mucous and serous membranes, and the inner tunic of the vessels. The second we subdivide into two genera; the fibrous resistant and the fibrous contractile, the first including those fibrous tissues which do not contract, as the bones, cartilages, tendons, ligaments, capsules, aponeurosis, the dura mater, periosteum, tunica, sclerotica, tunica albuginea, the fibrous structure of the spleen, liver, &c.; the second, those which contract, as the proper muscular fibre, and the fibrous coat of the arteries, bronchia, &c. The granulated includes the proper structure of the glands; and the nervous the grey and medullary substance of the brain and nerves. The hair, nails, teeth, epidermis, are only appendages of the skin and mucous membrane; and the vessels must be considered as a system, or apparatus, because they are formed by the union of several tissues.

From this definition of General Anatomy, and this exposition of its objects, it will be seen that its relations are twofold: it forms the very foundation of Physiology, and the only legitimate bases of Pathology. It teaches the source of all our organization:

> "How the first embryon fibre, sphere, or cube,
> Lives in new forms, a line, a ring, a tube"—

How they are derived from a simple gelatinous and homogeneous mass—how they are shaped into determinate forms—the simple order of their developement—the series of mutations they undergo—how they are brought to assume their ultimate appropriate arrangement, and how they are nourished and sustained. It reveals to us the incessant mutations which are going on in our organs; how with ceaseless change molecule succeeds molecule, and how new atoms are introduced, to supply the place of the old, which are thrown off to enter into new formations. It teaches us the rise and progressive developement of the vital forces; how they are modified by age, sex, temperament, climate, habit, and other accidental contingencies of life; and finally, how they are worn out, and yield up their relations with the structures which they served to animate, and suffer them to be resolved into their primitive heterogeneous elements. The innumerable animated forms which crowd the boundless regions of nature, are shown by it to be the seat of changes as numerous and uninterrupted, as the lifeless atoms which surround them. The order of the universe seems, indeed, to consist in perpetual composition and decomposition, and while the lifeless masses, which constitute so large a portion of its domain, are

only resolved into their constituent elements by the wear and attrition of their particles, the animal kingdom is brought to decay by the consumption of its vital forces, occasioned by the never ceasing change of its atoms. However numerous the blessings which fall to the lot of man, sickness, sorrow, and pain must be considered his natural inheritance. Disease in a thousand forms assails the tenderest buildings of his existence—the flower of infancy is too often blighted by the chilling influence of an untimely frost—the light buoyancy of youth, and the stern vigor of manhood, are alike victims to its undermining influence—and old age, sered by the cares of time, is prematurely bowed down to the grave. No age, sex, or condition, can boast an exemption from its ravages. It acknowledges no distinctions, but humbles, alike, the pride of royalty, and the lowliest subject—preys with equal capacity upon the flower of beauty, and the rudest of human forms. "In the midst of life we are in death." Every breeze that blows wafts upon its wings the breath of the pestilence. The food that nourishes us, and the drinks that cheer the sorrows of the heart, serve as vehicles for disease and death. The corroding cares of life conspire incessantly to dim the roseate hues of health, and even the exhilirating influence of hope divine, or the soft soothings of joy, may become the inroads of the exterminating legions of destruction. Comtemplate, for a moment, that unseemly and appalling assemblage of fragments.* It constitutes the only remnants of a form, which but a few months since, was as perfect and cheerful as your own. Scarcely has the frost of a winter past, since it lived, and moved, and was joyful: its eyes were brilliant, its cheeks beamed with happiness, its form was symmetrical, its movements sprightly and graceful: it presented all the divine attributes of sensation, thought, and utterance. But, alas! while it was sporting in the midst of merriment and glee, the fell destroyer came, and in a moment all its beauties fell prostrate in the dust. What now have become of all that served to elevate it so far above its present hideous form? The skin's soft texture, and the sentient nerve—the quivering muscle, and the meandering vein—the brain that ruled, and the heart that obeyed—the stomach that ministered sustenance, and the glands that formed the waste gates of nature, no longer meet the eye, but have been long since resolved into their primitive elements, and a part borne away upon the breeze, while another

* A Skeleton.

part has mingled with other, and kindred forms. A few dry, unsightly bones are all that now remain, and they too, only to be bleached for a while by the breath of time, and then to moulder, and return to their parent earth. Such, alas! is the lot of man in common with all natural things. Every object tends incessantly to decay—every moment brings us nearer the termination of the voyage of life, and but for the new forms which spring up continually to supply the ranks of the vast kingdom of nature, the whole would be in a short time swallowed up in the insatiate vortex of destruction. Need we, then, insist upon the importance of that science, which, at the same time, teaches us the laws which control these changes, and the means of regulating and retarding their progress? To General Anatomy we shall be indebted for this important information, by which we are taught not only the healthy properties of the organization, but also the manner in which these properties may become altered by operations which are discordant and perverted. While, therefore, it is found to possess such an intimate relation with Physiology, it constitutes an indispensable companion of Pathology.

As the different properties of a tissue are the result of its mode of action, and as this mode of action is, by the circumstances and contingencies in the midst of which we live, subjected to ceaseless change, during every moment of our existence, from the cradle to the grave, it neeessarily follows, that whatever so far interrupts the natural harmony of this process of incessant composition and decomposition, must produce disease. General Anatomy enables us to detect, and appreciate these changes. It points out to us the alterations of colour and consistence, the changes of density, thickness, resistance, elasticity, contractility and permeability, to which the tissues are subject—how they become thickened or indurated—softened, dissolved, disorganized, or transformed into new and dissimilar structures. It explains the different modifications which these tissues undergo, when retarded in their developement, or perverted in their operations—the character of the unnatural forms which they sometimes assume, and the properties of the new and adventitious developements which are formed in their substance. Indeed, without its assistance, Pathology would consist of an assemblage of fanciful conceptions, as destitute of foundation as the most absurd bewilderings of imagination, and the science of medicine would relapse into the state of trick and mystery

from which it was only rescued by the transcendant genius of Bichat.

But let us pass from the subject of General to that of Special Anatomy. In this transition, what a train of interesting and important considerations break upon our view! At every stage of our investigations, the mind is struck with admiration and amazement, at the wise and beautiful adaptation of the several parts to the offices which they are destined to perform, and the perfect order and harmony displayed in the structure of the most delicate and complicated apparatuses and systems. These rude bones, apparently so shapeless and unsymmetrical in their conformation, examined in their isolated state, exhibit, when properly adjusted, a piece of mechanism constructed with the most consummate wisdom and skill. In whatever point of view it be examined, it affords matter of the most important consideration. It is eminently calculated, by the disposition and arrangement of its parts, as well for the safe preservation of those organs which occupy its cavities, as for the general frame work of the whole organization, and a means by which the individual may sustain his relations with the external world, in obedience to his volitions, whether impelled by the necessities of his nature, the calls of hunger, the allurements of pleasure, or by the instinctive desire to shun the multitudinous ills which incessantly beset him, and threaten him with danger and destruction. The head, the grand citadel of the mind's proud operations, is fortified and defended at every point by the wisest arrangements of its parts, which by a combination of arches, sutures, and cavities, accurately adapted to the important organs which they are destined to enclose, maintains them in a state of security against the innumerable sources of danger to which they would be otherwise exposed. Here the brain, the grand empire of intelligence and thought, firmly enclosed in an impenetrable coat of mail, reposes quietly in the performance of its mysterious operations. Its numerous folds and convolutions moddle to their conformation the boney casement by which they are surrounded. Their vessels are lodged and defended in deep and tortuous furrows, the silk-like filaments of the fragile nerves escape through innumerable orifices to propagate their influence throughout the wide mazes of the system. The wonderfully constructed mechanism of hearing is deeply incased in solid bone, and the eye, with its innumerable silken webs, and transparent humors, finds in the anterior part of the head a deep excavation for its reception and defence. This pile of

solid bone, traversed from one extremity to the other, by a rounded canal, supports and defends the delicate spinal marrow, which, by extending its influence far and wide, controls and regulates the immense and complicated laboratory presented by our organs. These boney arches form a large cavity, in which are maintained, in a state of safety, the heart, which like a great fountain of life, sends its numerous "streams of living waters" throughout the remotest parts of the system, and the lungs, which drink in the vital gas, to nourish and sustain the perennial flame of life. In this strong and irregular cavity, are lodged and defended those organs, without which man would in a short time be blotted from the face of nature; and these rounded excavations form the centre of the ever-varying attitudes and movements, by which we minister to our desires, or act in obedience to our aversions. The boney cylinders which here hang dangling and graceless, constitute the instruments by which man maintains his relations with the world without, and secures to himself by their restless exertion, the food that sustains his organs, or the world of pleasures to cheer the sorrows, and soothe the anxieties of existence. Every thing is constructed, either for strength or extent and rapidity of motion. The impress of wisdom is borne upon every piece—the most perfect order and symmetry pervades every part, and to which ever point we direct our attention, our mind is carried away with admiration at the science which designed, and the skill that executed, a work so wonderfully perfect in all its parts.

But this machine thus wisely constructed only furnishes a frame work upon which are superposed parts still more important. Without something to put it in motion, it would be passive, and useless, and altogether unfitted for the high destinies which it is intended to subserve. We must, therefore, next contemplate it covered with muscles, and bound together by strong ligaments, by which it acquires new beauties, receives an accession of power, and moves and acts in obedience to the necessities of its nature. In the arrangement, attachment, and relations of these muscles, and in their adaptation to the offices which it is their province to fulfil, we every where observe indications of the consummate wisdom of the all powerful hand by which they were formed. Whether we contemplate the symmetry with which they are disposed, the power-saving character of their attachments, or the almost incredible force and rapidity of their actions, every thing conspires to awaken our admiration at the perfection

and beauty of the mechanism. It is by the regular and harmonious arrangement of muscles, the accuracy of proportion manifested in their relations and forms, that is constituted that beautiful symmetry, which pleases the eye, and delights the fancy. It was by an observance of these proportions, by a delineation of their several characters and attributes—their gentle swell, and softened undulations—their varied conditions, as manifested by a state of action and repose, that a Phydias, and a Canova were enabled to impart such matchless charms to the lifeless marble. To this is owing all the unparalleled excellence of the Apollo Belvidera, and the Venus de Medicis, and in proportion as attention has been paid to these circumstances, have artists excelled in painting the passions, and portraying the emotions of the soul; in depicting the countenance distorted with rage, glowing with the sweet radiance of beauty, lit up with the smile of joy, or cast down by sorrow, gloom, or despair. By the extent and rapidity of their actions, they are moreover, instrumental in the performance of the various movements of ease and grace, which adorn and dignify the human form divine. Whether we consider them as concerned in feats of strength or agility, as employed in the acts of progression, standing, leaping or dancing, they are equally deserving our attention; and nothing surely can equal, much less surpass, the endless modulations of the human voice, whether displayed in the converse of reason, the soft accents of love, or the rapture-stirring intonations of musical harmony; all of which are but a part of the results, which owe their origin to this wonderful mechanism. From the tiniest animalcule, which from its smallness eludes the acutest powers of vision, up to the huge and clumsy elephant, tottering under the weight of his stupendous conformation, the manifestations of muscular power strike us with the most pleasing and diversified phenomena. It is by this power, that the humble Zoophyte moves, and sports, in his coral halls, in the depths of the ocean; by this the finny race dart through their crystal element; and the tinsel butterfly unfolds the glories of its hues and flutters gracefully from flower to flower. It bears the princely eagle through the regions of the clouds; and by its agency the nimble stag bounds lightly before his pursuers, and eludes destruction. Throughout animated nature, we observe the most accurate adaptation of means to ends, and in the different races, every thing is accommodated to their wants and habitudes, and as these are varied, so are the instruments which minister to their exigencies, and subserve

their preservation. The smallest insect, with its muscular system of a thousand filaments, is capable of achieving movements as rapid and diversified, as the most perfect animal; and its organization, considered in relation with the wants of its nature, is as perfect as that of man, with all his boasted superiority.

But the Anatomist must extend his observations beyond the contemplation of these subjects. The instruments which are subservient to the preservation of the individual, present an interesting topic for his consideration. He must examine the organs of prehension, mastication and digestion; and how they are varied to suit the habits of the animal, and the kind of food upon which it subsists; the lacteal system, which drinks up the nutrient particles, which serve to supply the waste of his organization; the heart, that receives and propels the vital fluid throughout every part of the system, and with it diffuses life and energy; the lungs, that inhale the vital air that vivifies the blood, and clears it of its noxious properties; the glands, which constitute the waste gates of the system, by which the useless particles of the organization are separated, and drained away from its living elements; the senses, which furnish an everlasting avenue of pleasures; the nerves, that feel and act as faithful messengers, and, finally, the brain, that perceives, and thinks, and wills, and approximates man to the angels of heaven. These are a few of the considerations which demand the attention of the Anatomist. When he has passed them in review, he cannot help exclaiming, "What a piece of work is man! How noble in reason! How infinite in faculties! In form and moving, how express and admirable! In action, how like an angel! In apprehension, how like a God! The beauty of the world, the paragon of animals!" His thoughts must indeed be elevated, in a spirit of adoration, towards the Almighty Author of our bodily frame, while he feels "how great is his wisdom, his virtue, and his goodness!"

But the mere contemplation of the structure of the human body, without any reference to the uses of its parts, would constitute but a useless and disgusting employment. We must therefore look beyond the common materials of which the organization is composed: we must contemplate them properly arranged and adjusted; the adaptation of each to its appropriate function, and examine the wonderful phenomena which result from the operations of this complicated machinery, when impelled by its animating principle. Thus we shall be conducted, by a natural transition, from the exami-

...ation of these cold and disgusting masses, without connexion, without order, and without animation, to the consideration of the organs acting under the influence of a principle, which imparts to them life and energy. Instead of a ghastly and livid form, motionless and cold as the silent tomb, which forms its last sad repository, with, "no bloom on the cheek—no motion in the limb—no lustre in the eye—no voice or look of reflection—no apparent consciousness,"* he beholds a figure with eyes beaming with sprightliness, cheeks brilliant with the blushes of animation, movements light and graceful, sensation, consciousness, utterance, and all the divine attributes of a living being. From whence springs this striking contrast? What power is it that, superadded to a form so ghastly, and a scene so disgusting, imparts to it these captivating characters? It is the vital principle—the all-animating breath of Divinity, which, as has been expressed by a celebrated writer,† "awakens with the dawn of existence, increases with the growth of our bodies, and declines with their decay." Viewed under these extensive relations, Anatomy no longer consists in a dry and uninteresting description of parts, without any reference to their uses, but blends itself with Physiology, which, a thousand times more brilliant, displays for our contemplation the transcendant laws of the living principle. It investigates the organization properly adjusted and in a state of action, unfolds to us the mysterious secrets of their internal mechanism, and cold, plodding, and insipid description becomes enlivened by considerations teeming with interest and importance.

How then shall we appreciate the richness of this captivating science? How portray to you the immensity of its relations? It unites itself with almost every department of knowledge, and there is scarcely a subject that is not indebted to it for many of its most important principles. It affords to the naturalist a thread to conduct him through the mazes of the boundless range of creation. The botanist it teaches the mysteries of the vegetable economy, and how the structure of plants is varied to suit the climate, soil, and other accidental contingencies of their existence. In the laboratory of the chemist, it lends its influence in unravelling nature's hidden mysteries. It dives into the intricate vortex of metaphysics, and reveals itself in the important manifestations of sensation and thought. It exhibits the relations between

* Brown. Philosophy of the Human Mind.

† Beclard. Anatomie Generale.

cerebral developement and the intellectual operations, in which the divine wisdom of the Creator displays itself in the highest, and noblest characterestic of human nature.

But in speaking thus of this science, we mean Physiology as based on Anatomy, and not the absurd speculations which for a long time passed current under that name—of Physiology as created by the school of the immortal Haller, and not the cabalistic mysteries of a Paracelsus, or a Helmont. The one, to use the language of Condillac in reference to a different subject, "is founded on observation: the other on hypothesis. The first, content to view things in their natural characters, is as simple as truth. The second transforms all nature into a species of enchantment equally evanescent as itself. With the one, the road to knowledge is long, but by pursuing it we avoid error, our conceptions are always clear and our opinions just. With the other, errors accumulate without number, and the mind contents itself with unmeaning apprehensions, and vague and fanciful hypotheses."*

But how precarious is the tenure of human existence! How frail the elements of our nature, and how subject to the remorseless empire of diseases and death! Indeed, can it be surprising, that a machine so wonderfully delicate and complicated, should be liable to have its actions deranged and interrupted? No harp, with a hundred strings, can "remain in tune so long," yet how simple would be even the ten thousand chords of a harp, to the millions of nervous filaments, some of them possessing a microscopic exiguity, yet all attuned to the highest notes of vital harmony? What the most complicated arrangements of pipes and aqueducts, compared to the myriads of arteries, veins, and lymphates, which pursue their meandering course through even the invisible elements of our tissues, and bear upon their never-ceasing currents, the rich treasures of life and sustenance? What forcing engine can be compared to the untiring and perennial play of the noble heart, which from the moment of the first vital throb, until exhausted nature sinks into the everlasting stillness of death, acts, and beats, and suffers no repose? While, therefore, we reflect, that "we live, and move, and have our being" in the midst of unfriendly elements, which wage a constant war with the healthy play of our functions, it is not matter of surprise, that disease in a thousand forms should assail the citadel of life. The effects

* Origine des Connoisances Humaines.

of its ravages, therefore, possess a strong claim upon our attention; and the changes which they are instrumental in developing, constitute what is called Pathological Anatomy. This department of the science, as we have had occasion already to state, has for its object the consideration of those deviations to which the organization is liable, whether they consist in some arrangement of the primitive type, or some alteration of form, structure or relations. While, therefore, healthy Anatomy has reference to the normal state of the organization, Pathological, or as it is sometimes called, Morbid Anatomy, considers the various departures from that condition.

This is a department of the science which has been unfortunately, until within a few years, too much neglected. It is as indispensable to the formation of correct therapeutic indications, as the knowledge of the properties of the healthy structures. Without an acquaintance with the laws of inflammation, how could the surgeon control the wild tumult of the functions awakened by his instruments? The procedures of his art would but constitute weapons of destruction. Without an acquaintance with the important doctrines of adhesion, the laws of suppuration, ulceration, cicatrization, &c. he could not be qualified to treat even the most simple morbid affection. Indeed, the nature of every disease, or accident, whether grave or simple, cureable or incureable, are equally illustrated by Pathological Anatomy, and cannot be understood by those who are ignorant of its principles. It teaches us the laws which influeuce the death and regeneration of parts. It reveals to us the character of those formidable degenerations, as tubercles, melanoses, cancer, &c. which prey upon the vitals, and poison the fountains of life; and it unfolds to us the impropriety of submitting certain affections to the influence of instruments, which only tend to let loose the elements of destruction which no power can control. It moreover, aids us in the management of those violent shocks and contusions, those shattered bones, and lacerated members, which daily fall under our observation. It enables us to understand the character, and obviate the consequences of those deathly injuries of the head, which in an instant annihilate the empire of sensation and thought, and sap the fountains of vitality. Deprived of the illustrations afforded by this department of science, the whole domain of medicine would consist of vague and unprofitable theories. All our ideas of disease would be speculative. We should have no certain data by which to test the validity of our con-

ceptions, no rallying point for our speculations, and nothing, in short, by which we could submit them to a rigid comparison with facts and experience. Constantly betrayed by false analogies, error would beset us on every side, and our practice would be vague, vacillating, and verging upon the grossest empiricism. You must not suppose that a mere study of the numerous hypotheses which deform our science can qualify you for the discharge of your duty. It is only by reasoning upon facts, that you can expect to arrive at positive, and useful conclusions, and the only means of attaining these facts is by a knowledge of the healthy and diseased structure and functions. Without this, it will matter but little whether you have diligently waded through all the cumbrous volumes of medical lore which have accumulated from the days of Hippocrates to the present time—whether you have treasured up all the subtleties of the dogmatists and the vaunted experience of the empirics—whether you be profoundly versed in the lore of solidism and humoralism—whether you have grown gray at the bedside of the sick in observing the endless symptoms of disease—whether you have become pale and sicklied over the midnight lamp, in studying the best authors. Without that knowledge which is fundamental, and which an acquaintance with the healthy and diseased structures alone can impart, you will be unfit to practice your profession. You must take facts for your guide, and contemplate theory with a distrusting eye. A too easy credulity has ever been one of the greatest obstacles to the attainment of correct principles in our science, and an attachment to the laws of rigid induction, rather than to the bewilderings of hypotheses and sophistry, constitutes the principle difference between modern and ancient medicine. Where now are the absurd visions of a Paracelsus or a Helmont? Who would, in the present age of improvement, attach himself to the spiritualism of Stahl: the mechanical hallucinations of Kiel, Borelli, and Boerhaave: the spasmodical inconsistencies of Hoffman and Cullen: the sthenism and asthenism of Brown, or the more refined sophisms of Darwin and of Rush? All these theories, which in their day, exercised so much sway over opinion, sleep in quiet oblivion, and are only remembered as a dream, or as something that was, but is now no more. You must study the relations between the healthy and diseased structure and functions, and from this inexhaustable fountain of truth, draw those principles and conclusions which can alone lead to success. Such was the course pursued by the immortal Bichat, and such the means,

by which he created for the science, that new and glorious destiny, which issued in the nineteenth century. If we reflect upon what has been effected in less than thirty years, in consequence of this reform, we cannot but indulge in the most pleasing anticipations of the future advancement of the healing art. Already has the road been chalked out which is to lead to this important consummation. Already has a brighter light broken through the horizon, to light us on to victory and success; and the clouds of error are fast dispersing before the all illuminating influence of truth, while the "car of medicine, enriched with the inestimable treasures of Physiology and Pathology, rolls on majestically, making constant accessions to human happiness, and securing new triumphs over human misery." Let us then, gentlemen, buckle on our armour, and unite our feeble exertions in this mortal contest between life and destruction. Let us boldly march on in the van of the battle, and while "we compel death, in his thousand forms, to retreat from the avenues of life," endeavour to merit for our names a place on the proud escutcheon of our country, and of medical science. These are the objects to which you are about to consecrate your lives and your exertions. May the trophies of victory compensate your noble undertaking, and a crown of never-fading laurels be the merited reward of your exertions. But if you should be doomed, occasionally, to meet the reverses of defeat, it will still be a part of your God-like office, to cheer the horrors of the dying hour, and smoothe the descent to the tomb. Your sympathies should, indeed, ever "set enthroned upon the portals of misery," ready to drop a tear for the sorrows and afflictions of man. These are the acts by which you will secure to yourselves a rich inheritance, in this life, and when you shall be no more, "future generations will rise up and call you blessed."