An address to medical and surgical pupils, on the studies and duties of their profession; to which is appended, a case of caesarean operation / by James Barlow.

AN ADDRESS

TO

MEDICAL AND SURGICAL PUPILS,

ON THE

STUDIES AND DUTIES

OF THEIR PROFESSION;

TO WHICH IS APPENDED,

A CASE OF CÆSAREAN OPERATION.

BY JAMES BARLOW, SURGEON,

BLACKBURN.

Nil moliri inepté.—Hor.

BLACKBURN:

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PREFACE.

The object of the following observations is briefly to elucidate the importance and extent of the various branches of Medical knowledge; to shew their connection and mutual dependence; to point out the most advantageous mode in which they can be studied, as well as the most eminent Authors by whom they are treated of; and to furnish the student with some hints for his general conduct, when engaged in the duties of practice.

The experience of more than half a century, passed in the arduous duties of the profession, has convinced me of the imperfect state of Medical discipline in this country; and if, in the following work I have succeeded in conveying to the student a clearer conception of the several Medical sciences, or impressed him with a full conviction that not one of them can be safely neglected, I shall have the satisfaction of having accomplished all that I could hope to perform.

J. B.

Spring Mount, Blackburn,
July, 1839.

The Profits arising from the Sale of this Work will be given to some Charitable Institution in Blackburn.

OBSERVATIONS

ON THE

STUDIES AND DUTIES

OF THE

MEDICAL PROFESSION.

Few subjects, perhaps, form so interesting a matter of inquiry, or are so important in their influence on the well-being and happiness of man, as education. Much, indeed, has been effected towards its improvement; yet, from the great diversity of opinion which prevails, it may be doubted whether the principles on which it ought to be conducted are sufficiently understood, to produce the full measure of benefit which might result from a more rational and well directed system of education, adapted to the age, acquirements, and future pursuits of individuals. The greatest experience of the ablest men in the profession is derived chiefly from insulated deductions of established facts, and well authenticated cases;

and it is practice, united with experience, which makes the scientific surgeon.

Principles should be founded on observation and experience, and all hypothesis thrown aside; the one is a sure light to guide the judgment, and serves to direct the way of the practitioner; while the other may be compared to an *ignis fatuus*, almost sure to lead him into error. The attention should be directed to well selected Medical and Surgical cases, for it is well known that neither the principles nor practice alone can be sufficiently impressed upon the mind of the student; there must also be a close attention to the nature, progress, and event of disease, and a personal acquaintance with the appropriate method of cure. Hence no amount of theoretical knowledge can be received as a substitute for attentive study whilst at the bedside of the patient. It is the practice of students, who are attending the Hospitals, to look up with avidity to the greater surgical operations, without paying due regard to minor cases; and this omission cannot be too much cautioned against, for it is by attention to these lesser bodily evils and operations that young men acquire a competent knowledge of each department of Surgery. It is, then, by a mature judgment, combined with practical experience, which will make Surgery beneficial to our fellow-creatures. The student should bear in mind, in the early part of his studies, that the

knowledge of diseases consists simply in a knowledge of the relationship which exists between their external symptoms and the inward bodily and mental affections by which they are produced and carried on.

The study of Anatomy has been essentially improved; whilst Physiology is raised into a new science. Pathology has reaped a corresponding advantage from new facts, and Therapeutics has been equally successful in the world of science. Hence it may be said, that Anatomy, Physiology, Pathology, and Therapeutics, comprise the principal part of the science of Medicine.

The principles of the practice of Medicine consist likewise in a knowledge of the variations and changes of the human body and of the mind, from their natural state of health and integrity; and, also, in a knowledge of the extent and power of the means to correct and amend such changes and deviations.

A knowledge of these deviations and conversions of disease can only be derived from the Anatomy and Physiology of the body and of the mind in health and disease; and a knowledge of the extent and power of the curative means can only be derived from an experience in the use of these measures. Such various knowledge, when duly applied, makes up the whole fabric of medical science.

It is the outline of this vast fabric of anatomical research that I am anxious to see more fully developed by the medical student in his philosophical inquiries.

If such should be the result of his studies in the acquisition of medical knowledge, we may look forward to a period when the art is based on a more permanent and less conjectural fabric. The student will find as he advances in it a source of analogies, remote, it is true, in the more specific details of bodily structure, but rising in importance as he elevates himself to the more general views of the laws of life and organization, which must form an essential part of the problem which the professional student proposes to himself to study of the organization of man; and which I should wish to see pursued with ardour and usefulness to the community. It is to be observed that, in the following pages, I include under the term Medicine all its subordinate branches; whether we recognise it as belonging, in one case only to the Surgeon, and in another to the Physician;—it appearing to me just as unnatural and inconsistent to separate two members of one family, as to divide Medicine and Surgery.

The study of Medicine has been sought after with much avidity from the very infancy of society, and the earliest dawnings of the world; thus moulded into form by the hand of Hippocrates, *

* Hippocrates lived about 460 years before the Christian era.

the father of Physic, it has descended to us through the lapse of ages, undergoing many of those revolutions which awaited almost every department of science, till, by the care and industry of modern labourers, it has been made to embrace a range of inquiry, unsurpassed, perhaps unequalled, by any other branch of learning. I have taken the science of Medicine in its present existing state, and have adopted the arrangement of its subjects which seems to me best fitted for the study of the young practitioner. When, in his first practical attempts, a disease is presented to his observation, he inquires what functions or what organs are disordered,—the circulating, the respiratory, the digestive, the intellectual, the sensorial, the muscular, the generative, &c. &c.; and he will surely find his inquiry thus greatly facilitated by having studied the disease, whatever it may be, at the bedside of the patient. The student thus takes into his view many circumstances which otherwise would escape his attention, and, by a comparison of them in his study, he becomes enabled to determine the nature of the case, and the method of treatment it requires. He will, by this mode of proceeding, soon obtain a competent acquaintance with what is to be learnt from lectures, from books, and from an observation of the practice of others. The chief requisite for practising physic is what is commonly called *good sense*, by which I mean

the vigilant and ready exercise of the understanding or judgment in all the accidents of practice, and a prompt adaptation of what you know, to what you have to do;—a possession which, though partly innate or a gift of nature, is consequently capable of great development by careful cultivation.

In what relates to a practical art, industrious talent with perseverance may acquire and arrange, genius may improve and adorn, but good sense must always direct. If we consult the history and progress of Medicine, we shall find that the most opposite theories have existed at the same time, and have each been most zealously defended by their advocates; and these, again, have given place to others, with almost the frequency and regularity that one season is succeeded by another, and which have been as warmly contested, and as soon exploded and forgotten as their predecessors.

Much of the improvement and avidity of the present day, is no doubt due to the study of a single subject; which mode of pursuit generally begets an exclusive attachment to the object which so ardently engages the mind. Beneficial results will no doubt frequently flow from the discoveries thus made, but not till the errors are perceived and duly appreciated; they will then stand as landmarks to the scientific student, or as beacons to warn the mariner of unseen danger. A succeeding, rather than the present, generation will

profit by the truth and the error that we shall leave behind us; they will reap the fruits of our labour when time, the only true test, shall have refined the ore, and the dross shall have become separated from the pure metal. The medical student will doubtless soon perceive, as he advances in the study of the living body in its healthy and morbid states, that all which the longest life and the most vigorous intellect can accomplish, either by his own researches or availing himself of those of others, will only be to place him on the very frontiers of medical knowledge; and will eventually afford the medical inquirer a distant glimpse of boundless realms of knowledge, where no human thought has yet penetrated.

The agents that influence health, beneficially or detrimentally, are innumerable; and their effects on the countless varieties of health and disease, are frequently with difficulty discoverable: hence the study of Medicine is a boundless pursuit, and he who engages in it must resolve to devote himself zealously and perseveringly to the acquisition of an extensive and arduous range of knowledge. Such, then, I conceive to be the proper mode of proceeding; to convey to the mind of the pupil a general notion of the objects to be attained,—a distinct, if not an adequate, conception of each of the several sciences comprehended under it, of their reciprocal relation to each other and to their common end, and of the degree of

attention or study which they respectively demand. It is, doubtless, most desirable that the general education of a student should end when his professional education commences.

It may appear, at first sight, to the juvenile student, by no means difficult to form a general idea of the object in view in the study of Medicine; —it is manifestly, he will say, the prevention and cure of disease; or, since disease is a deviation from a certain condition of the body which we call health, we may define our object to be the preservation of health. But what does this imply?—a knowledge of the conditions of health, or what is equivalent, of the conditions of life. These are, in the first place, a certain structure or arrangement of the parts of the animal body, which we call organization; in the second, a certain determinate relation to this organized body of the external agents which surround it.

Of these two elements, as it were, of our study, the organized body on the one hand, and the external agents on the other, the one appears to be sufficient, how vague the other! What may not be comprehended under the influence of external agents? The very ground on which we tread, the air we breathe, the materials which minister to our sustenance, the light which cheers us, the warmth which vivifies us, that mysterious agent Electricity, which exerts its unseen, ill understood, yet unquestionably powerful influence

upon us,—do not all these stand in a certain definite relation to life and health? or is there, in a word, in all nature a single substance which may not, in some conceivable relation to the organized body, exert an influence on it for good or evil? Is it not, therefore, on a certain harmonious adjustment of all these to the human body, that the life and health of man are essentially dependent; and will not our ability to compass the object we have in view be exactly in proportion to our knowledge of this adjustment; in other words, to the power of controlling it, which such knowledge can alone supply? Let me endeavour to illustrate this by example. You will, at an early period of your studies, be made acquainted with the curious and important properties of the atmospheric air; you will be informed that this Fluid apparently so simple is composed of two simpler elements differing widely in their qualities, the one highly positive, the other altogether negative.

Now, there is a certain combination of these two elements, and one combination only, which is not only conducive but essential to the life and health of man,—a certain weight or density of the air exactly adapted to the most perfect condition of health. There are certain relations of heat and moisture, certain conditions of the soil, fitted in one case to minister to life and health, in others to become agents of destruction.

Of the properties of these agents, of their relations to the organized body, we possess some knowledge, though limited; and in proportion to this knowledge is our power of controlling them, and of adopting them as means to our end.

On the other hand, we have been taught by sad experience, that there are causes of disease in operation, of the nature of which we are totally ignorant, whereas their relation to the animal economy is too clearly proved by their effects. We know not whence they come, or whither they depart, but we trace them sometimes in the wide wasting pestilence that follows in their track, at others in their more insidious operation; in the character of malignancy and intractability, which they may impress upon certain diseases that we are accustomed to look upon as completely under our control. Into the nature of these agents we possess no insight, and, therefore, not only do they often mock our efforts to stay their progress, or abate their virulence, but they disarm us in some measure of our power of counteracting the effects of those agents which are better known to us.

It is evident, therefore, how much our power of preserving health, and of arresting disease, must depend upon our knowledge of the powers of nature, and the physician should be truly what his name implies, the natural philosopher. To him may be applied, emphatically, what Bacon

has observed of man, "*That he is but the servant and interpreter of nature, that he can act and understand no further than he has, either in operation or contemplation, observed of the method and order of nature.*"

Such then, Gentlemen, is medical science; such must appear to be the nature of our problem, when we have the courage to conceive it in all its vastness and complexity. But to prevent misapprehension, and lest I should appear to exaggerate the difficulties of medical science, and to have assigned to it an extent and complexity which would place it beyond the reach of ordinary capacities, let me request your attention to the distinction between that knowledge which may be necessary to the ultimate perfection of Medicine, as a science, and that which is requisite to its more immediate application as an art—the one admitting and requiring that division of labour which is alone compatible with profound research in each of the several sciences—the other a more general acquaintance with the principles of them all, as far as they are applicable to the purposes of practice.

It is, I believe, in consequence of overlooking this distinction, that the pupil has often been discouraged by a formidable array of sciences principal and collateral, of acquirements preliminary and prospective, which were probably never yet combined in a single individual.

Nevertheless, it is manifest that in endeavouring to form a distinct and adequate conception of the real nature and extent of any science whatever, we should fall far short of our object, if we were to circumscribe it within the narrow limits of our own faculties, and further still, if within those which supineness or mediocrity would attempt to fix. We must bear in mind that, as in morals, so in science, there is a standard of ideal excellence, to which, indeed, no one can hope to attain, but which all may endeavour to approach. With this conception of the full extent of our problem, let us see what approaches have been made towards its solution; how much the physician has yet observed of the method and order of nature; what are the objects, in so wide a field, to which his observations are more especially directed; and what the method by which those observations should be guided.

Whenever we have occasion to make anything in nature or art the subject or object of our operations, or proceedings; in other words, whenever we have occasion to use it, either as a means or as an end, the first indispensable requisite is to make ourselves acquainted with its properties, namely, with its structure and uses. But in Medicine it is the human body that is the subject, and at the same time the object of our operations —at once the means and the end. My design

is to make the student familiar with the circumstances which render the human body prone to disease. Of the inferior animals not destroyed for the food of man, by far the greater number die of mere old age; whereas it is probable, that of human deaths not more than one in ten take place at what may be called the natural term of life. It is obvious, on reflection, that the very activity and aspiration of man's mind, acting on his powers of locomotion, engage him in enterprises, and expose him to dangers, and thus subject him to many causes of disease and peril, from which the narrow intellect and unambitious and instinctive range of the humbler animals are wholly exempt.

It will then appear that what is termed disease, is disordered action of some part of the machinery, the operations of which are only known by their effects; and that we consequently recognise disease only in certain results; these results being painful uneasy sensations, or impeded functions, or altered structure, all of which produce or constitute what we call symptoms of disease. Constitutional affection may produce febrile heat, and may be excited by various causes, such as impressions made by the atmosphere on the nervous system, &c. By symptoms, therefore, thus produced, we are warned of the presence, of the nature, of the extent, and of the departure of the various diseases affecting all the diversified

organs of the body; parts of medical knowledge, which are termed Diagnosis and Prognosis.

That branch of Pathology which treats of the causes of disease, is called Etiology, and is of great extent and importance. Man is constantly exposed to innumerable injuries from various causes; he is very frequently subjected to morbid contaminations of the atmosphere, producing a numerous tribe of epidemic and endemic diseases. Every kingdom in nature furnishes a number of agents directly detrimental to health. The habits, employments, appetites, and passions of man are transmutable sources of disease. In short, man is continually assaulted, from within and from without, by morbific agents, whose powers must be learnt by the medical student, and counteracted by the medical practitioner.

In some cases the causes of disease are obvious, in others they may be discovered by inquiry; in some they elude minute research; but in all cases they are to be carefully investigated; for they frequently throw light upon the nature of disease, and their removal, when practicable, is always the first step towards a cure.

A knowledge, therefore, of the structure and uses, or, in other words, of the Anatomy and Physiology of the human body, is the very foundation of medical study in all its varied branches. When, however, we thus make a distinction between Anatomy and Physiology, we

must not forget that we are separating in idea only, and in words, what in nature is essentially one. In Anatomy, we study the structure in repose; in Physiology, in action. The function is not one thing, and the organ another, but the function, is the organ itself in action. Hence it is obvious that Anatomy and Physiology, structure and function should be studied together, lest, in considering the function apart from the structure, we should lose ourselves in metaphysical abstractions. Hence arises the important distinction between Anatomy and Physiology; for example, in disease of the lungs, we have as the consequence of disturbed function, all the painful effects of impeded respiration, and which at once point to the lungs as their seat; but, in addition, there are other symptoms which we may trace to some particular tissue, as their more immediate seat, and it is in these fluctuating symptoms, more particularly, that we mark out the origin, course, and probable termination of the disease, and the remedy best adapted to its cure.

Hence the knowledge of general Anatomy may thus be said to furnish us as it were with an analytical instrument, by which we may decompose a disease into its simpler elements, or, in other words, resolve a group of symptoms associated by their common relations to the functions of an organ, into the minor groups which are dependent on the properties of the affected tissues.

The study of Anatomy may be further illustrated, thus by the aid of the dissecting knife the student may separate the finest tissue of the body into its minutest fibres, and when even by the aid of the microscope, (that powerful instrument of anatomical analysis,) he has divided visually what he cannot dissever mechanically, even then he has not carried his decomposition of the body to the utmost: he has not yet reached or discovered the nature of the elements of which it is constructed. Let him, for instance, take a portion of bone, pound it into dust, take the minutest particle of that dust, subject it to the most powerful microscope, and he has not yet reached or discovered the element of which the bone is in reality composed; and yet he may, on reflection, put himself in possession of a scientific mode of proceeding, by which he can separate these elements with as much certainty, as he can part asunder, by the aid of the dissecting knife, the grosser tissues of the body, and all this is effected by Chemistry: the science which separates and combines the mutual action and reaction of the ultimate particles or molecules of matter, and has also enabled the inquirer to extort from nature the secret of her hidden operations, so as to unite and to separate, to build up and to destroy, and thus transform in obedience to its will. Such is Chemistry; it may be called an instrument more searching than the surgeon's dissecting-knife.

Anatomy, Physiology, and Comparative Anatomy are the studies to which the student should pay the most minute attention; for what would be the state of our knowledge of many of the organs and tissues of the human body, if we were obliged to study the uses of its several parts in man alone? The brain, for example, how numerous, how diversified are its functions. How numerous, therefore, and how various must be the organs requisite to their production! How are they to be distinguished? If the anatomist flatters himself that he can distinguish these different organs by slight differences of mechanical arrangement, slight diversities of texture imperceptible to the unpractised eye, even then he cannot detect in them their fitness to a given end.

There are certain organs of the body; the eye for instance, which we are apt indeed to consider as a single organ, and properly enough in relation to its final function, vision, but it is in reality a congeries of organs, each performing its peculiar function, by which it tends to the final purpose of the complexity of its structure and use. In the eye, in the first place, are certain media of different degrees of sphericity and density, to transmit and to refract the light, which is thus made to convey and form an image on the retina, the more immediate seat of vision. There is also a curtain to regulate the

admission of light, a blackened surface (*nigrum pigmentum*) to absorb the reflected light, a certain contrivance for preserving the distinctness of the image by adjusting the focus to the varying distance of the object, and many other curious arrangements, both in the internal and external apparatus of the eye and its functions.

Such, then, are the sources from which the student may derive his knowledge of the conditions of the human body in health and disease; which knowledge, however, is but the means to the end you have in view—the preservation of health, the prevention and cure of disease. The prevention of disease requires a knowledge of etiology or science of disease, which has for its object the investigation of disordered function. But where are we to search for the causes of disease? Manifestly, in either the organic structure itself, or in the influence of external agents. Hence it has been well observed by the poet, that "we are born dying." We bring with us into life the seeds of decay, which, whatever may be the influence of external agents, must sooner or later terminate in corruption. But over such causes of decay or disease as are in accordance with the final purpose of organization, we have little or no control.

We can at the utmost so temper the action of external agents on the human frame, that they shall not accelerate its onward progress to decay;

we may remove, indeed, any extraneous body that might derange the mechanism of life, but we can neither so regulate the spring, nor lengthen the chain, that it shall not run down at its appointed time. But besides this necessary result of the mechanism of man, which is the very condition that called it into existence, which contains the necessary limits of its duration, and which must, sooner or later, terminate, not because it is imperfect, but because it is not infinite; there is reason to fear that in many there is some imperfection in the mechanism itself, some weak part which may give way before its destined time: with the seeds of disease and decay common to all, there may be scattered seeds, which may either necessarily develope themselves in the gradual progress of evolution, whatever may be the influence of external circumstances, which can at most accelerate or retard their growth, or may await in insidious slumber some untoward influence from without. Both conditions, however, may be considered rather as diseases themselves than as the causes of disease.

It will naturally occur to every reflecting mind, before undertaking any pursuit, still more when that pursuit is a profession, to inquire strictly, what, in the first place, is the nature and true value of the object sought; and, secondly, whether consonant with our tastes, habits, and

pursuits, or otherwise. Having taken a dispassionate view of what the profession is, and the duties we owe to each other, and to the public, we should, in the next place,—having determined on the profession, enquire, are the means of attaining this important object within our reach? That is, supposing the choice suitable, do we possess the moral, physical, and pecuniary requisites necessary for its acquisition and its practice.

These are preliminary inquiries of paramount and indispensable importance; and such as prudence demands that the parents of every student intended for the medical profession, and the student himself, should ascertain to the best of their ability. First, is the profession suitable to him? and secondly, is he, or will he be, fit and eligible for the discharge of its important and responsible duties?

Deeply impressed with the vital importance of these inquiries, more especially for those about to commence the profession, I seek not to allure or deceive, but candour urges me to address these remarks to my valuable friends and the medical pupils of this country—to give them the result of my knowledge and long experience, in reference to a subject of such importance, and so momentous to their future welfare. Having now laboured in the profession for more than half a century, I feel fully impressed with the conviction

of the great utility of this justly named divine art, when conducted on genuine principles. Is not the extent and magnitude of its usefulness as boundless as creation itself?

Allow me, young Gentlemen of the medical profession, to briefly state, generally, that all professions, when duly attended to, are arduous; the medical calling pre-eminently so, both in its acquisition and its practice. It is with reluctance that I impress upon the student's mind that the road to the Temple of Medicine is a series of rough and rugged ascents—truly an up-hill course —a long and weary way, beset with stumbling-blocks and mischances. In the mind—expanding science, preparatory to a course of study and education, are all ways of pleasantness: but these soon open upon the narrow passage to the dissecting-room; for there you are to lay the foundation of your medical knowledge.

I have in this Essay urged the necessity of a vigorous mind, and a healthy constitution. I have also dwelt upon the importance of aiding the natural and mental powers of the aspirant to medical fame, by a well-regulated course of training; and the mode of study best calculated to ensure that end, is pointed out. Also, subjects which should engage the attention of the pupil during his apprenticeship, have been and will be incidentally noticed. It must not, however, be supposed that the most intelligent man will always succeed

in obtaining the most extensive professional employment; for such a man will, in general, contemptuously spurn the low arts of charlatanry and chicanery, to which some individuals with contracted minds resort to attain that end; thereby reducing themselves to the moral level of those who, to gratify their desire for gain, live by systematically imposing on the credulity of the afflicted.

It ought not to be required at the present day, that a work should be written expressly with the object of directing the attention of parents to the necessity of making those of their sons, whom they destine to be physicians, well-informed and highly educated. It may, perhaps, be doubted even, by some members of the profession, whether any necessity existed for directing the attention of the public to the subject; but let every individual, in whose mind there is a doubt of the propriety of the step I have taken, con over the advertising pages of our medical periodicals, and he will there find, to his bitter mortification, if he be desirous of seeing the intellectual character of the profession elevated above the standard which those advertisements denote it to have attained, abundant proof that there are to be found in its ranks, many young men, whose education has been so limited, as to compel them to have recourse to the artificial aid of a "Grinder," that they may make themselves

qualified in that department of learned lore, the translation of prescriptions, without a tolerable knowledge of which they dare never venture into the presence of the Worshipful Company of Apothecaries.

Parents, it is assumed, who make a son a Physician or a Surgeon, (for throughout this essay I have used the terms in a synonymous sense) are actuated by a desire to see him possess that rank in the profession, which should ever be obtained, as its just reward, by intellectual merit; but parents must sometimes expect to have their wishes thwarted, if they make a Physician of him, to whom nature has given the love of revelling in gaiety and pleasure; and, unfortunately, it is not always in the power of the parent to measure the human mind, whether nature has or has not been lavish in her gifts: consequently the best way of proceeding will be to educate the youth as efficiently, and as early as his bodily powers will admit, and his parents' means will allow. A few plain directions, as a guide, will often enable a traveller steadily to pursue his onward course, and to reach his destination, without wandering materially from his proper path; so with regard to parents, who purpose to bring up their sons to the most arduous, and the most useful, if not the most delightful of all professions, that of Medicine, a few simple hints may enable them the better to accomplish their object, and to avoid

those circumstances which may otherwise interfere with the consummation of their hopes.

But before parents come to a determination to enlist a son in the ranks of the medical profession, it is of the utmost importance that they should satisfy their minds, that the mental capacity of the boy is so constituted, that he will be able to imbibe such a draught at the fountain of knowledge, as will fit him to undertake the important task he will be called upon to perform! Unless they are satisfied on this point, the sooner they relinquish the idea of making him a Surgeon the better; for, without such capacity, the exertions of teachers, and their own trouble and anxiety, as well as their money, will be sadly misapplied.

There is another preliminary circumstance, which parents should also well consider; their son ought to be of that hardy frame of body, that he will, as far as probability goes, be able to bear the excessive fatigue and watching, which, to a certain extent, fall to the lot of every medical man.

Before I proceed farther, it will be proper to make some allusions to the preparatory mode of education of the youth intended for the medical profession, observing that his future usefulness and success in his career will greatly depend on the early habits he may acquire; his studies and even his amusements should be calculated to improve his powers of observation, of reasoning,

and of patient and persevering exertions. He should be accustomed to use his hands mutually and interchangeably, by which means, a surgeon will be enabled to use any instrument with greater facility than if he could not avail himself of this essential requisite and most desirable faculty. Order and diligence may surmount difficulties, but ordinary minds are seldom equal to the necessary exertions when left without assistance, for let it be borne in mind that there is no *royal road* to professional excellence. Hence habits of order, method, accuracy and dispatch, cannot be too early established; for there is an error in education of cultivating extrinsic accomplishments more than useful knowledge, which is an evil of great magnitude, and which cannot be too severely censured.

The youth brought up in habits of industry, obedience, and under parental control, gains an early triumph over idleness, inebriation and sensuality, and forms a character for life. The education of a youth, intended for the medical profession, ought to commence, as it were, by first learning the letters of his alphabet; so that which is simple is fully attained, that which is more complex will be easier understood, and better remembered; and it will often be found, that the final success of acquiring that which is great, very much depends on the accurate execution of that which is little.

In no one of the numerous occupations of civilized society is it so necessary for an individual to enjoy the perfect use of all his mental and physical faculties, as in the medical profession; for in the course of practice important cases will occur, which will demand his prompt attention and decision, and on these attainments the future happiness of himself and those under his immediate care will greatly depend. But if, from any fault or neglect on the part of the medical attendant, any omission or injury be sustained by the patient, his own reputation will suffer by the infliction—for scandal, with her thousand pointed tongues, will usher forth the circumstance, and blast his future prospects in the locality where it occurred, even if he be not called upon to answer for his conduct in a court of law.

In making these remarks, it is far from my intention either to discourage the wishes of a parent, or to depress the well directed ardour of youth: on the contrary, I would encourage the one, and animate the other. I am only anxious to impress upon the minds of all concerned, the importance and comprehensiveness of the task to be undertaken; well knowing, that inconsiderately many youths have engaged in apprenticeship, who have no conception of the immense tract they will be called upon to explore; and who, when they contemplate the diversity of subjects fairly before them, are dismayed by the prospect;

and sink, either into cold indifference, or retire altogether from the pursuit with chagrin and disappointment.

Parents are often impelled by very different motives, to choose the medical profession for their sons. Some, dazzled by the glare and show which a practitioner of their acquaintance makes, and without considering the means which enabled him to make them, are ambitious to pursue a similar course; and this is frequently done without considering the intellectual qualifications of the aspirer; for, if we may judge from general observation, we may fairly conclude that the mental fitness of the youth for such occupation has never been considered by his parents.

The tree of knowledge spreads forth its numerous branches in various forms, and as the human mind is not constituted alike in any two individuals, different opinions cannot fail to be entertained as to what kind of intellectual attainment is best calculated for our welfare and happiness, as well as whether any or what mode of attaining the requisite steps for the instruction of one intended for the profession should be adopted, instead of losing a period of perhaps five years in attaining the Greek and Latin languages alone, for let it not be forgotten, that after the lapse of study in question, and a competent knowledge having been obtained, the juvenile

mind thus becomes loaded with an endless variety of artificial signs of an ideal nature, wholly incompatible with anatomical studies.

A professed linguist will very rarely be found overburthened with genius or ability; and, in defiance of his immense mental store of the elements of composition, neither his orations nor writings are found to evince that superiority which a superficial view of the case would suppose him capable of imparting. A knowledge of the foreign languages is no doubt useful, and may enable the student to become acquainted with the treasures of the ancient physicians, though most of their works of much value have been translated into the English language. Since then, the powers or faculties of the human mind appear in various forms, how incumbent is it in those who have the direction of youth, to ascertain the most active and leading features or faculties, and direct the attention accordingly. In allusion to the dead languages, I would say, may not an individual, without being thoroughly versed therein, be so educated as to be competent to the highest and most perfect achievements in the arts and sciences, as well as in professional life? This is an important qnestion, and one which may be answered by stating that a Surgeon and Accoucheur may dispense with Greek and Latin learning, as their chief departments are of a mechanical nature, and depend on manual dexterity; while

a Physician will be more subject to a diversified sphere of literary attainment.

At this stage of my inquiry the science of Phrenology presents itself, and if a knowledge of its merits will enable a parent to foresee his son's intellectual capacity, and enable him to direct his attention to the most proper source for the attainment of the requisite literary knowledge, and his future progress in life; it must be admitted, that Phrenology is one of the most valuable discoveries ever made by the persevering sagacity of human genius; and that it is well calculated for this highly-important purpose of parental attention in every walk of society connected with education, by unfolding the faculties and treasures of the human mind, as evinced by the works of Dr. Combe and Caldwell.

Notwithstanding what may or may not be advanced against a classical education, a practice has prevailed of making it so general, as to include boys, of whom it is known by their parents beforehand, that they are to engage in the ordinary pursuits of trade and commerce; in a case of this nature, the youth might employ his time better in acquiring manual dexterity and mathematical knowledge, than in puzzling himself with acquiring a dead language. If the individual select commerce or mechanics as his occupation for life, the time devoted to the dead languages is evidently misapplied.

It is a fact quite notorious, that nine-tenths of the children educated in a commercial town do not follow professions for which Greek and Latin are indispensable; and hence the time and money thus expended are most unprofitably bestowed.

The greatest evils attending a purely classical education appears to me to be the ignorance in which it sometimes leaves the pupil of the objects, agents, and relations existing in nature and social life, and the extent to which, in consequence, his mind is exposed to the influence of prejudice and superstition. A thorough education in natural knowledge, on the other hand, enlarges, invigorates, and humanizes the whole mental powers, wherever they possess native aptitude for improvement. A classical education, no doubt, offers the best training for the youthful mind whose aim is to be a Physician, where circumstances will allow; but we must not shut our eyes to the fact, nor our minds to the conviction, that much is yet wanting to improve and perfect the attendant discipline. A perfect knowledge of the English grammar and language might be obtained in a fourth part of the time which the classics now occupy, and very few youths who are intended for the medical profession could spare either the time or the expense. Let, therefore, this be considered as of primary importance in a plan of education.

Let youth be accustomed to express themselves in conversation and writing, with ease and correctness, precision and elegance. Let it be considered more desirable, honourable, and useful, to write English like Addison, than Latin like Cicero.

When parents are not in a situation to enable them to give all their sons the benefit of a suitable education, it is desirable that they should, at as early a period as possible, determine on the one they intend to bring up to the profession, in order that he may be thoroughly grounded in classical learning; for this he will afterwards find to be the *pabulum vitæ*—the indispensable requisite in his future medical career, if he be desirous of becoming an accomplished practitioner. By classical learning, I wish to be understood as not only including a thorough knowledge of the Latin language, to enable the youth to peruse the works of the old medical authors, and to write his prescriptions with accuracy and elegance; but also such a knowledge of the Greek tongue that he may be able to understand the etymology of the nomenclature of diseases, and of the various sciences indirectly connected with that of medicine, as the chief terms employed are either derived from the Greek or Latin tongues, or are a compound of both. It is not easy to ascertain what is the minimum amount of knowledge with which a

practitioner may be able to satisfy his ardour, or properly to perform his professional duties. I wish rather to point out to parents what their sons ought to know, if they be desirous that they should occupy an elevated rank in the profession.

In addition to what has already been advanced on language, there are others, which though not absolutely necessary to be learned, are notwithstanding both useful and ornamental, inasmuch as they will open to him a fertile source of information which he cannot otherwise obtain,—namely, the languages of France, Italy, and Germany. These countries have the most highly gifted men in the field of medical research, and the splendid productions of their capacious minds will remain a monument of wisdom to the scientific inquirer as long as science endures. True it is, that many of the works of our continental neighbours are translated into our own language; but however faithfully the translation may be executed, the matter will frequently suffer deterioration by the change, and bear the same relation to its prototype, that our own ideas do to what we intend, when they are put into substance by the hand of another.

It is often required of the Surgeon, when endeavouring to describe the state of diseased parts, or of altered formation, to be able accurately to depict the appearance which they present to the eye; and unless he can do so, it is absolutely

impossible for him to convey to others, by words, a correct idea of the deviations from healthy structure; or even to describe, in a way to be understood, the condition and situation of an organ, when it is distorted by accident, or malformed by nature. Hence, it will appear evident to parents, that their son will find the art of Drawing to be of infinite use to him; for without the aid of the pictorial art, however accurately he may arrange his ideas or clearly express them, such an hiatus will still exist in his medical education, that all the other acquirements he may attain will not completely fill up the void.

It is lamentable to observe young students assemble at the Hospitals in London to attend lectures, whose acquirements afford ample proof that, with them, the seed-time of education has been sadly neglected, not only in many cases as regards professional knowledge, but also in that most important particular, their previous education. Is it not, let me ask, degrading in the extreme, to see young men going to London to perfect themselves in their profession, so far deficient in preliminary lore, as to be actually forced to have recourse to a private teacher or a *Grinder*, to instruct them in translating prescriptions, and learning Anatomy by rote?

Is the youth, whom parents destine to be a Surgeon, of an ardent temperament: in a word,

is he an enthusiast? If he be, and possesses, in addition, the necessary mental and bodily requisites to become a Physician, I would then, without hesitation, advise that he be brought up to the profession; and the probability is, that industry and talents, employed with that earnest devotedness which a little enthusiasm engenders, will make him a distinguished member of the profession. When, therefore, parents have made up their minds to embark a son in the profession, the choice of a master, with whom to place him, becomes a matter of great importance, not merely to themselves, but more particularly to their son; for on the way in which the apprenticeship is served, and on the means of instruction which the master may be able to impart, will much of the future success of the pupil generally depend. There are, however, some practitioners, who, having a strong sense of the trust placed in them, make it a matter of conscience to instruct their pupils efficiently. Such a master deserves commendation. It cannot, however, be denied, nor should it be attempted to conceal such impious and disgraceful practice, that the premium which is paid with an apprentice, is often a temptation to needy practitioners, to advertise for, and to take pupils, when in reality they are in far greater want of professional employment, and of money, than they are of pupils. Of such glaring imposters, it behoves

parents and the public to be, as much as possible, on their guard; for the timely discovery of them may avert much future misery, not only to themselves, but also to the public.

There are several items in the list of medical knowledge, required by a Surgeon during his apprenticeship, which, though their acquirement is frequently left till the period of Hospital study commences, might with much more propriety, and economy of time, be, to a considerable extent at least, obtained during the term of five years' apprenticeship. Amongst these requisites are general Botany, Materia Medica, the elements, at least, of Chemistry, Osteology, Drawing and Stenography.

Osteology, or a knowledge of the form and situation of the different bones, is a subject of so much importance to the Surgeon, that it may, very properly, receive a more extended notice than has yet been given to it. Without a thorough knowledge of Osteology, the pupil will never be able completely to understand the direction of a fracture, or the situation of a dislocation; much more to rectify it. The bones are the basis of the human fabric, and should be studied during the period of apprenticeship, as it is the foundation of all anatomical knowledge.

Though this may appear a dry pursuit, the student should first accurately observe the general form and connection of the different bones, and

then compare each individually with a minute description, (such as that of Monro or Leber,) not resting satisfied till he knows the name and use of every prominence, furrow, orifice, and surface to which a name is given, or a use assigned. Indeed, it should become one of the first objects of a pupil's study; and he will find that it can be as perfectly learned in the private surgery, (with a skeleton before him) as in an anatomical theatre in London; and he who makes himself perfect master of it before he goes to London, will have an advantage over his fellow students,—an advantage he will be able to appreciate, when he sees the difficulties which the want of such knowledge inflicts on those who know little or nothing of the subject.

When the apprentice is well acquainted with the bones, he will be able to understand the origin, insertion, and relative situation of the muscles with infinitely more ease; and, when he is familiar with the bones and muscles, the vessels, nerves, and absorbents, will present no difficulties to his comprehension; and Anatomy, altogether, will then become to him a mere source of entertainment rather than an irksome study. When the student has made himself familiar with these essential acquirements, he should zealously pursue the study of Chemistry, which teaches him to examine the constituent parts of bodies with reference to their nature, proportions, and

method of combination; and which is indispensable to the medical practitioner, on account of its constant application in the preparation and compounding medicines, and its frequent use in the detection of their adulterations, the discovery of poisons, and analysis of morbid excretions, &c., &c.

Chemistry should, in reality, precede the study of Medicine; as it stands connected with Therapeutics, Pharmacy, and Botany, it prevents the student from combining medicines incompatible with each other; and it also points out the antidotes and tests for poisons, whether animal, vegetable, or mineral.

Mathematics, Electricity, Natural Philosophy and Optics, also claim a share of attention from the aspiring student, and should be illustrated by experiments. The making and adapting of simple apparatus for experiments, will greatly assist in establishing that ready and adroit use of the hands and fingers,—a faculty so desirable in surgical operations. Every surgical aspirer after improvement should make himself expert in the use of mechanical tools, and be able to use them with ambidexterity. Every Surgeon should be able to exercise this faculty either in opening a vein, an artery, or in extracting a tooth, however situated. These essential requisites will render to the student great facility in cases of emergency, when otherwise a patient might inevitably suffer.

The study of these extensive departments of knowledge tends, in a very high degree, to improve and enlarge the mind; and Natural Philosophy is further directly of importance to the practitioner in medicine; for neither the structure and functions of man, nor the effects of various remedial agents, can be clearly understood, without an acquaintance with Mechanics, Pneumatics, and Optics.

The study of Natural History, commenced in youth, may be useful through life as an amusement and relaxation to the medical practitioner. Hence the structure, functions, and diseases of man may be frequently elucidated by those of the lower animals, and sometimes even by those of plants; and a more accurate inquiry into the kingdoms of nature may be reasonably expected to lead to the discovery of new and efficacious remedies. The study of Mineralogy, Zoology, and Botany, are important to the medical practitioner; particularly on account of the great variety of plants that are used as food and medicine, and others that are pernicious to man.

It may be said, that no pursuit has a greater tendency than that of Natural History to quicken the powers of observation and discrimination, upon which the excellence of the medical practitioner greatly depends. This science has for its object the description and arrangement of the

natural bodies that form, cover, and inhabit the earth; and its immense productions. Here the medical inquirer will be struck with the knowledge required to guide him on his way to prosecute further studies. Hence a knowledge of the relative distribution and connection of every nerve and blood-vessel, the nature and composition of every element and tissue, whether solid or fluid, with their chemical agency; and the general share which all are destined to contribute in producing the phenomena of life, health, or disease.

Under these diversified structures of the human body, the student should endeavour to detect those fluctuating changes in their functions, which constitute the groundwork of every morbid action; and labour to trace every diseased affection which is thus created, to its source, and denote the effects produced in the body, and watch the progress, and ascertain the influence and manner of operation, of those remedial agents by which we attempt to remove existing disease in all its complicated and diversified forms.

The medical student should not overlook Comparative Anatomy, a knowledge of which will greatly assist an inquiry into morbid Anatomy, and should be pursued along with that of the human subject; in investigating the nature of the various processes carried on in our own bodies, and comparing them with similar functions

in other animals, not only in a state of healthy action, but also under all the varying circumstances of disorder itself. For example, if we take a general view of the organized world, we observe, however well defined may be the difference between the higher order of animals and the lower order of vegetables, that at the other extremes no link appears to be wanting in the chain, and that they are far from being readily distinguished; so much so, that it has been found difficult to assign a definition to either, which is not applicable to both.

The young medical student will see, by these Physiological hints, that he is not entering into a dry and uninteresting branch of science, but one replete with evidences of the most perfect design, full of objects calculated at every step to call forth feelings of gratitude and admiration, and to impress on his mind that the Creator of Nature does all things wisely and for the best. Yet man, in his present state, is so ignorant that he cannot perceive the prospective ends and views of Providence.

In the investigation of this Physiological pursuit, the student must not lose sight of the main object he has to attain. It is not merely in the light of a pecuniary profession, considered chiefly as a means of earning a competency, that the practice of medicine ought to be pursued, but as an honourable and happy way of benefitting

his fellow creatures,—by administering comfort to the afflicted, and of prolonging human life. Hence it is seen, that the primary principle, which should influence and govern the conduct of the upright medical philosopher, consists in a desire to benefit all who employ him, by his professional unremitting diligence, to attain the utmost height of scientific truth and practical information, by which the student acquires power and inclination to pursue his purpose. These invaluable attainments comprise the essence of medical ethics.

It is scarcely possible to conceive any science more adapted, in this respect, to attract our attention and to awaken our mental faculties, than one which, in its extensive range, unfolds to view our physical and intellectual nature, explains the structure, and lays open the hidden powers by which life is maintained and existence prolonged. The process of nutrition and digestion are not the only characteristics of the power and influence by which life is maintained. Many circumstances occur and combine in the living system, which indicate a capability of continuing those vital actions, notwithstanding the occurrence of accidental obstacles, which may injure its mechanical structure, or derange its functional operations. Such inherent power of accommodating itself to external causes and actions of foreign agents, and also of repairing injuries,

exists, in a greater or less degree, in every species of living beings.

Thus is established a constant circle of actions and reactions, which continue their course, with various degrees of activity, for a certain period of time. But, at length, even when placed under the most favourable circumstances, they are observed to proceed with more languor,—the fluids of the body are gradually dissipating, and become diminished, and the repair of the substance of the body falls short of the waste,—the solids in turn dry up and harden,—the moving powers become torpid; and all the voluntary and involuntary motions of the system finally cease. The materials of which the body had been composed, like those of some deserted edifice, fall to pieces, and moulder into their original elements; and while the parts that are most fitted to resist the ravages of time, may still remain as rude monuments of the fabric they supported; yet the rest are scattered abroad, leaving no trace of their former existence.

What then is man,—this being who is the subject of all our medical investigations? Of what is he composed? What is he to himself? How is he related to other beings and objects around him, animate and inanimate; and how are they related to him? How is he constructed? What are the natures, and what are the influences, of his passions and emotions? What are his physical, his intellectual, and his moral faculties?

What are the destinations of his existence on this globe? How is he capacitated to fulfil them? What are his resources, when struggling with impediments from affliction? These are questions which embrace a field of philosophical inquiry, vast in extent, minute in detail, and infinite in importance.

Man, it is to be considered, is a material, a living, a rational, a mortal, an immortal, and an accountable being. What, therefore, is the power, that, since the creation, and under obedience to the laws then enacted, generates, increases, adjusts, completes, regulates, and repairs this our bodily machine? What is this power, which possesses that controlling influence over ordinary affinities,—which preserves and directs all its parts to their destined uses; implants in them an innate repugnance to such things as may injure or impede them; and makes it shrink from those by which their integrity and their co-existence may be endangered or destroyed. This is a power which mocks all human invention or imitation. It is a characteristic of the divine architect!

It is no uncommon error for parents to remain indeterminate regarding the choice of a profession or mode of life for their children to pursue after leaving school; but as the medical profession is an eminently useful and honourable, and (to borrow a sentiment of the great Roman orator

and moralist,) a God-like profession, the parent should not delay in establishing the ardent youth in his destined situation.

Were parents to watch with attention, the dispositions and propensities of their children, whilst young and at school, they would evince their natural propendancy and genius in such a way, that the parents would be at no loss to fix on a pursuit most congenial to their wishes. By this mode of attention, parents might be able to perceive the juvenile mind gradually expanding, and ultimately becoming developed.

There is a wall of adamant, which bounds all human inquiry within certain limits. Thus encompassed by difficulties on every side, the humble researcher, with his limited faculties, well-nigh despairs, and is ready to exclaim, there is no arriving at the summit of medical science; but let no such gloomy apprehensions for a moment deter the student from the ennobling pursuit. The fault may be our own, and originate from want of energy and application. There is abundant evidence to prove, that by industry we may attain a knowledge of the fundamental principles of our science, and be enabled to add to the accumulation of facts in our profession. How few of us spend our time as we ought to do! How few of us, alas! labour in our vocation! Look at the general condition of medical men. What are they? We rest contented with the doctrines of

others; we leave what is unknown, or not understood, to be revealed by the enterprising few; we waste our time in pleasure or idle pursuits; we neglect to register the experience which we have individually acquired, and it becomes lost in forgetfulness. "Thus man passes away; his name perishes from record and recollection; his history is as a tale that was told; and his very monument becomes a ruin." I am sorry to say that these words may be applied to the great majority of our profession in the present day.

I consider, Gentlemen, that the primary mode of acquiring sound and valuable medical knowledge, is to examine, as far as opportunities will permit, into the great book of nature, and to strive to learn what she so mysteriously teaches. You are not to entertain a hope of understanding your profession solely by attendance on lectures, or a mere acquaintance with books. This is the true spirit in which you must pursue your investigations,—this is the means by which the territory of human knowledge can alone be explored; and although each aspiring youth should, to use the words of the immortal Newton, but resemble a "child gathering pebbles on the sea-shore;"—and though our knowledge should be limited within the vast labyrinth which we have to explore, yet it is only by industry that our researches will be rendered permanent, and our

learning useful. As a noble instance of the truth of what I have advanced, I would here recall to your recollection the imperishable name of John Hunter. By his own persevering efforts did this great man raise himself from the lowest obscurity to a reputation wide as the world itself, and certain to last as long as the age in which he flourished shall be remembered by posterity. He studied the great book of nature; and hence proceeded both the patience with which he traced its characters, and the rich and plentiful discoveries with which the search rewarded him. The study of Physiology should not be overlooked by the student. He may imagine that a competent knowledge of the subject will be imparted to him in the lecture-room, and he is perhaps too often content to receive it thus at second hand; but he should bear in mind that information, thus received, scarcely deserves the name of knowledge.

If the limits of this short essay would permit, I could illustrate this by referring to the very interesting question of the Physiology of death. It might be requisite to show how much this question, among others, is perplexed by the reciprocal influence and dependence of the functions concerned, and how much, on the other hand, it is elucidated by studying the action of the same organs, as they exist in a more insulated condition in other animals. From these

considerations, it will be obvious, how much assistance the student in Anatomy and Physiology may derive from the study of the structure and functions of the lower animals; or, in other words, from Comparative Anatomy, which (to resume some of its advantages,) enables us,

1st, to unravel the intricacy of a complicated organ, by showing it to us in other animals in its simplest condition and primitive elements.

2nd, to resolve a complex organ into its component functions and structures, by presenting it to us in different degrees of complexity with the corresponding variations of function.

3rd, to disentangle, as it were, the intricate results of associated action, by presenting to us, in a more insulated and independent condition, those organs of which the functions are masked and obscured by the reciprocal influence; the innumerable actions and reactions, by which they are linked together in the complicated organization of man.

To these manifest, and, I may say, indispensable aids which Comparative furnishes to Human Anatomy, I may add likewise the opportunities it affords, where the end sanctions the means, to supply by experiment the deficiency of direct observation, it being manifest that we must be acquainted with the structure of the animals we are about to make the subject of such experiment. But it must be borne in mind, that the truly

benevolent and scientific physiologist prefers to interrogate nature rather by the gentler means of observation than by the more violent methods of manual indagation; and that whenever he has recourse to the latter alternative, it is with that clear conception of the end he has in view, of the degree of evidence the experiment is likely to afford, and of the benefit which such evidence is calculated to produce, which can alone justify or even demand the infliction of pain on the brute creation.

But all this requires a greater degree of knowledge, and a deeper insight into the problems of Physiology, than a pupil can be expected to possess. In availing himself, therefore, as far as time and opportunity will allow, of the ample resources of Comparative Anatomy, he may safely omit experiment, while, on the other hand, he will be taught, by the Lecturer on Botany, how he may extend his researches to the vegetable kingdom, where he will not search in vain for objects of comparison. He will find in it a source of analogies, remote, it is true, in the more specific details of structure, but rising in importance as he elevates himself to the more general views of the laws of life and organization, which must form an essential part of the problem he proposes to himself in the study of the organization of man. Nor should he, in investigating the laws of life, overlook the advantages he may derive from the study of the laws of matter.

All these structures the medical man should of course understand,—in other words, he should be acquainted with the principles of Natural Philosophy. Hence it is obvious, that the dependence of Pathology on morbid Anatomy is precisely the same as that of Physiology on healthy Anatomy; and that as the latter must be studied in connection, so must the former.

Such, then, Gentlemen, are the sources from which you are to derive your knowledge of the conditions of the human body in health and disease. This knowledge, however, is but the means to the end you have in view, the preservation of health, the prevention and cure of disease. But since we can control events only by a knowledge of their causes, the preservation of health, or, what is the same thing, the prevention of disease, necessarily requires a knowledge of its causes. Hence it appears, that Pathology is nearly allied to Physiology; they both treat of functions, and both of the functions of the same parts; but while Physiology explains the actions of healthy parts, Pathology accounts for the actions of those parts when in a state of disease. Thus considered, Pathology includes both Medicine and Surgery. Pathology, then, affords a wide scope for the student's consideration; and it may well be comprehended or divided into several branches of the profession, such as Surgery, Medicine, Midwifery, &c., &c.

Politeness and good manners are the result of education, without which the medical student knows nothing of sentiment, and is governed by two predominant and paramount objects—the gratification of his passions, and the appropriation to himself of every thing to which he may take a fancy. Mathematics may be cultivated by the medical student with advantage, because they assist in forming the youthful mind to clear perception, and to accurate reasoning; and more particularly, as they open the road which must hereafter be travelled in pursuit of all science. But with these studies must be united a large acquaintance with those divine truths which are the fountain of all human contemplations. It must never be forgotten, (says Lord Bacon,) in any system of education, that religion is the cementing and preserving principle of civil society, and the source of all good and of all comfort.

A pupil thus sent forth, accomplished in a virtuous and moral discipline, fitted to procure him attention and respect in his place in society, may now commence the duties of our profession; a profession which calls for the constant exercise of a quick perception, a sound judgment, a perfect knowledge of all the resources of our art, and an indefatigable industry; all which will be amply rewarded by what is better than honours and wealth—the blessings of thousands on his successful skill. He should possess a heart,

though firm enough to encounter appalling scenes of danger, yet full of sensibility and tenderness,—one which shall respond quickly to the feelings of another, and so be likely to conciliate the sick man's confidence and attachment.

In the practice of Surgery, also, many essential qualities are requisite on the part of the surgeon; the first of which is, neatness in the application of his remedies; awkwardness in this respect will frequently injure his professional prospects,—the patient and his friends often judge of a man's skill by his manner of bleeding, or from the application of a bandage. In many cases, indecision is as dangerous as bad practice; for while hesitating about the course to be pursued, the time for acting with effect may pass, never to be regained.

The young surgeon should, therefore, cultivate a habit of concentrating his reasoning faculties, and his store of acquired knowledge, so as to apply them, as promptly as possible, to the exigencies of the case before him.

He should always be at his post, always in a fit state to attend to the responsible duties of his station, whatever that may be.

Patience is to a professional man a blessing, and is a lesson which will have to be frequently studied; for the ignorance, the caprices, and prejudices of society will unite occasionally to

destroy his equanimity. The next requisites are punctuality, and gentleness of manners; violence and hurry are always bad, and are sometimes followed by fatal consequences.

Pathological Anatomy has been very slow in its progress; but we cannot be surprised at this, when we consider the many obstacles which stand in the way of those who engage in its cultivation. The feelings, and even prejudices of the community, are doubtless entitled to every consideration; yet, without pathological knowledge, when a case occurs, the nature of which is involved in obscurity, the practitioner will find himself unable to offer a prognosis of the termination of the disease, without having recourse to morbid inspection, rather than resting on mere conjecture. A surgeon, however, may annually inspect a vast many bodies, and yet be not a whit the wiser than if he had not examined them at all; for morbid Anatomy, like every other study, may be well or ill pursued: and it becomes useful in the diagnosis and treatment of disease, only when we are enabled to group round each form of organic lesion, the symptoms which accompanied and characterized it during life, and to connect the symptoms and lesion in such a way, as that they shall stand in the relation of sign and thing signified.

When Pathology is studied with these views, it becomes not a pursuit of mere curiosity, but

one of the greatest importance to the individual and to the community also: indeed, so important and so necessary, that the study of it should be prosecuted assiduously. It is nevertheless necessary to remark, that a thorough knowledge of Anatomy, in its healthy and sound state, should precede that of Pathology; in order that the surgeon may be able to discriminate between healthy and morbid textures; it being a well known fact, that on many occasions it requires more than ordinary judgment to mark the requisite distinctions. If a pupil, in case of the death of a patient, obtains a *post-mortem* examination of the body, he should take notes of the morbid appearances, and compare them with those which had been previously made during the progress of the disease; and thus he will be able to appreciate the importance of every symptom, to trace the connection between cause and effect, to consider in what points his treatment has been defective, and how far judicious, and to determine whether a contrary mode of treatment would have given the patient a better chance of recovery.

Look at the labours of the student whilst employed in the dissecting room,—the studies, the incessant application, the fatiguing, the harassing watchings, the exposure to night air, and contagious diseases, when roused at midnight from a bed of weariness to visit a bed of

fever; all these fully prove, that the pursuit and practice of the medical profession are arduous in the extreme. But there is yet a portion of the dark side of the picture still undisclosed.

The anxious student might at this period of his studies commence his professional career, but to his mortification knows not where to fix his residence amongst an overstocked profession, where the avenues to public patronage, favour, and support, are grouped with anxious expectants. Thus situated, I would recommend him to engage himself as visiting assistant for a time to an established practitioner, particularly if no good opportunity offered of establishing himself; he would thereby derive many advantages, and from the additional experience thus obtained, might reasonably expect to succeed more rapidly when he took upon himself the responsibilities of independent practice.

It is notoriously true, that "envy, hatred, malice, and all uncharitableness," which exist to a deplorable extent in the world at large, appear to have taken up their chief abode amongst the members of the medical profession—a profession in which we should naturally expect to find quite the reverse,—one truly ennobled and exalted by its very office—the God-like function of removing or alleviating disease, preserving health, and prolonging life.

Strange it may appear, that men who have obtained a liberal education, remarkable alike for talents and acquirements, should take such narrow, unchristian, and uncharitable views. If this had arisen solely from the arbitrary and unfounded distinction between Physician and Surgeon, that very distinction, although nominal, would still afford some grounds for difference and dispute. But far otherwise,—the members of the same body,—the several bodies themselves taken, collectively, are influenced by jealousies, motives, and objects unworthy of a liberal profession, and calculated to depreciate and degrade the whole fraternity in public estimation. Hence it would seem that envy, selfishness, and the mammon of this world, are the chief roots of this vile evil. The picture I have drawn of the state of our profession, I regret to say, has been the result of long and painful observation.

Consider now, young friends, whether your tastes, pursuits, and habits, should induce you to adopt or decline the healing art. Should you choose the profession, notwithstanding all its demerits, it becomes necessary to consider what are the moral, physical, and pecuniary requisites, required for the successful prosecution of so noble and respectable a pursuit. Under these diversified circumstances, the moral requisite most necessary to keep in mind is, a strict observance of the golden rule of practice,—the consciousness of

rectitude, "*mens conscia recti;*" "And as you would that men should do to you, do ye also to them likewise." This is the grand and sure guide, whether in relation to your professional brethren, to patients, or to the every-day concerns of life. This is the powerful, mind-searching corrective, and moral test, which makes that innate, predominant love of self, the measure of the love we should bear to our neighbours. From this virtuous principle will flow that kindness of manner, that benevolence of purpose, which warms the heart of the poor sinking patient, and raises his drooping and desponding spirits; while it withholds every thought, word, or act, that might possibly tend to injure, in the remotest degree, our professional brethren. The exercise of this Christian virtue will shed a lustre around you. It will bring with it the most consolatory feelings under the most trying circumstances. It is also the fruit of energy, patience, and perseverance,—attributes essential in the discharge of our professional duties, both to our brethren and to society.

Let me request a young practitioner to stand at the bedside of a poor patient in a hospital or dispensary, labouring under a contagious fever, separated from all he holds dear, his home, his family. Feel his throbbing temples, his burning forehead; observe his flushed cheeks, and suffused eyes,—mark his anxious looks to his medical

attendant, as the ministering agent of health and comfort.

Disease is a very Proteus in its nature,—it requires to be watched with lynx eyes; general rules and principles may be laid down in books and lectures; and, no doubt, they are useful, nay, often indispensable;—but come to practice, and attempt to apply the rigid rule to half a dozen cases of the same disease, even in the same stage, and you will find that it proves injurious, nay, it may be fatal to some. There is a knowledge as extended as the varied phases of disease, which words or reading cannot convey, or at best but very imperfectly. The acquisition of such knowledge is to be gathered by ourselves, at the bedside of the sick, by observing things seen,—or perceiving things felt; and of sagaciously discriminating, and taking into account what circumstances are essential, and what are accidental in the diagnosis, as well as the treatment and progress of disease.

Without a devoted attachment to authority of any kind in Medicine or Surgery, beware how you repudiate the old doctrines, and adopt many of the new. Remember that the several systems have successively risen on the ruins of each other, and that the infallible doctrine of one age becomes an object of ridicule in the next.

Let the student always keep accurate and copious records of the cases he has time to attend

to, revise such records at stated periods, and make memorandums of what seems worthy of observation; preserving such notes arranged in alphabetical order, without which, or some such precaution, the more your manuscripts increase, the greater will be their confusion. Do not attempt to read many volumes without great attention, or distract yourselves with countless authorities, related in the medical journals of the day. With a few of the ancient authors, and such as I have elsewhere pointed out, I should wish you to be familiar. But, in general, I would say, read little, observe carefully, and think much.

Accustom yourselves to note such remarks, as seem to you to be new, or otherwise worth preserving; never defer doing so longer than your avocations will admit. All men, it is allowed, are accountable for their time, but none more so than the medical practitioner. You will no doubt be hereafter called upon, in your sphere of practice, to act unassisted, or to assist others, in cases of sudden and great danger; and on your state of knowledge, and previous preparation, as well as on the state of temper of mind, it must often depend whether the result of the case be life or death. Do not suffer yourselves to become sceptical of the powers of Medicine; these powers are indeed limited, but by no means visionary. Let the student bear in mind, that the leading characters of all the most serious

diseases have been the same from the earliest era of which we have any authentic medical records; the susceptibilities and the functions of the body, the properties of medical substances, the state of the earth, and of the air, have undergone no sensible change; the faculties of the human mind, the springs of human affection and passion, (with all which enlightened Medicine has to do,) have ever been the same, except in some epidemical diseases. The treatment, therefore, of disease ought not to be wavering, theoretical, and uncertain; nor to present a broad and unnatural contrast to this great uniformity and constancy of nature.

Be assured, Gentlemen, that when exercised with judgment, Medicine will enable you to exert more control over disease than you sometimes have reason to expect. Many acute, as well as chronic affections, may be subdued with a prospect of certainty; the insidious progress of morbid formations of structure of the most serious kind may be suspended, if not wholly checked or absorbed; whilst, in almost every case, sufferings may be lessened, life rendered comfortable, and death averted for a time. Such, even at present, is the power of Medicine and manual means, that if we look at the apparent structure of the most formidable morbid processes, and consider the exhaustless stores of nature, and the daily productions of scientific Pharmacy, we

shall see much reason to believe that the powers of medicine may yet be greatly amplified; that some diseases, now considered the most intractable, may hereafter become curable by art.

There are a many young practitioners who would rather give a new medicine than an old one; but I would advise you to pursue a different course. First make yourselves masters of the old remedies, and if they fail, and you are at a stand, then, and not till then, have recourse to the new ones. If you always begin with new remedies, you throw away all the valuable results not only of your own experience, but of the experience of those who have gone before you.

You have to begin, as it were, *de novo*, and the first consequence of this will be, that you will not cure your patients, and the second, that you will have none to cure.

Every young surgeon should be systematical in all his proceedings,—all things should have their own time and place; this is a most admirable rule, by the observance of which will follow the habit of punctuality as a duty; and you will be preserved from that besetting sin, procrastination, so truly named, the "Thief of time." It is a truth well understood, that with all the accumulated learning and researches of past ages and present times, we have still to discover how "man lives, moves, and has his being:" and although the phenomena of life are constantly

before us, yet still we know not the nature of the vital principle, save from its manifestations.

It may, in this place, be requisite to draw the attention of the young student to the course of the circulation of the blood, as discovered by the great and immortal Harvey; in doing so, we shall find that we are, to this important function, greatly indebted for the conveyance of nutriment to the various parts and organs of the body. By this are all the secretions formed, which are so necessary, so essential to life; and to its instrumentality is it that the warm blooded animals are indebted for their elevated temperature. In all warm blooded animals there is, it may be said, a double heart; one of these hearts being intended to drive the blood through the system, the other to propel it through the lungs. These two hearts are of course intimately connected together, and each contains two cavities: the one (the auricle,) to receive the blood from the system, or from the lungs; the other (the ventricle,) to transmit this important fluid through the lungs, or through the system. The right auricle receives the blood collected by the veins from every part of the body, and transmits it to the right ventricle; by this propelling power it is driven through the pulmonary artery, and its minute ramifications in the lungs. In these ramifications, called capillaries, immediately before they terminate in the pulmonary veins, an exposure to the influences

of the atmosphere takes place. The blood, thus aërated, returns through the four pulmonary veins to the auricle of the left heart, to be by it sent into the corresponding ventricle, by the powers of which it is to be propelled through the system; in its passage through which it becomes again impure, and is returned by the veins to the right side of the heart, to be by it again sent to the lungs to be re-purified. Lest the blood retrograde in its onward way, valves are provided at the entrance to, and egress from, each ventricle; which, whilst they afford a ready passage to the blood, when it is proceeding in the course in which the Author of Nature has destined it to flow, permit not a single drop to return, or thus obstruct the progress of the circulating fluid. That this is the course of the circulation of the blood, as was proved by the celebrated Harvey in the fifteenth century. First, by the examination of those animals whose hearts are transparent, and in whom the course of the sanguineous current could consequently be distinctly seen. Secondly, by putting ligatures on the great vessels which convey the blood from the heart, and perceiving the distention on the side near that organ, the flaxid state on that which was furthest from it; and, lastly, by the structure of the valves of the heart.

Having now, Gentlemen, briefly described this wonderous and most extraordinary function, I will next, for your instruction, examine the

great propelling agent, the great forcing pump by which so vast a power is exerted, and by which so important a function is performed. The heart contains, in warm blooded animals, four cavities, the walls of which are composed of contractile fibres, strongly laced together, and arranged with extraordinary regularity; many animals, however, have but a single heart, as frogs, fishes, &c.: in these the blood is driven by the single ventricle through the lungs or gills, and through the system, and is thence returned into a single auricle.

Some animals have three hearts, two for carrying on the pulmonary, and one for accomplishing the systematic circulation: I could adduce, as examples of this organization, many of the moluscœ tribe; such are among the rest, the cuttle fish, &c. In man, the heart, is said, at every contraction, to expel about two ounces of blood, and calculating that there are eighty such contractions in a minute, there must be one hundred and sixty ounces of blood sent forth by it in that space of time; and, in the course of about three minutes, the whole blood in the circulation, (on an average, about thirty pounds,) must pass through the heart; and, in the space of one hour, this must, by consequence, take place twenty times.

What must be the feelings of that man, who can think of these things without wonder! On

reflecting on the tissues to be permeated, the functions to be discharged, the secretions to be formed from, and the nutritious substances to be taken into, the circulating fluids; and reflecting upon how soon each particle, each atom of blood, after being deteriorated in its constitution, and rendered unfit for the discharge of its important duties, is again driven through the lungs and aërated: who, I repeat, can, on reflecting upon all these things, retire from the investigation of the course of the blood in our frames, without feeling ennobled with a mind improved, and the whole man rendered better by his researches. But, to carry this interesting investigation one step further, let us suppose that two ounces of blood will occupy a cylinder eight inches in length; then it will pass through six hundred and forty inches in a minute, and thirty-eight thousand four hundred inches, or three thousand two hundred feet in an hour.

If then we are so ignorant of life as to know man only in his normal condition, simply from the results of this mysterious agent acting upon and through our organization, how difficult and elaborate must be the task of studying his abnormal condition, or man in the state of disease. It is obvious that we must first study the mechanism and functions of man in a healthy state;—in other words, his Anatomy and Physiology, before we undertake the study of the

complicated changes and deviations from this condition, which occur in disease, in reference both to action and structure.

Anatomy, then, is to Physiology as means to end: the former points out "how fearfully and wonderfully we are made!" Look at the mechanism of the heart—the singleness of its function in fœtal existence—its double office in adult life. How wonderfully—how admirably—how exquisitely contrived, to secure the required result of living action! A knowledge of Anatomy and Physiology is the grand essential for the attainment of the ultimate object—the scientific and successful treatment of disease.

The study of Medicine should be well attended to in every branch of the profession, and the practitioner should, on all occasions, be able to prescribe with judgment and certainty; he should, also, well understand the great influence of local disease on the constitution, as well as the origin of local disease from constitutional irritation and derangement of the system. Without such knowledge, he knows but half his duty.

On the other hand, a *mere* Physician cannot be a good judge of surgical cases; and, therefore, should not interfere with patients of this description; but I do not mean to say, that one profession is to be upheld at the expense of the other; far

from it,—indeed, they should mutually assist in the exercise of the great duty of preserving human existence.

With regard to local affections, depending on constitutional diseases, much light may frequently be obtained, by inquiring into the duration and history of the case. First, what has preceded the occurrence of the local symptoms; under what circumstances they first appeared, and what mode of treatment has been already pursued? In the first volume of Dr. Gregory's *Conspectus Medicinæ Theoreticæ*, may be found many useful remarks on the mode of detecting both local and constitutional complaints.

Local diseases themselves are to be examined, either by the eye or the hand, or both. I would urge the necessity of accustoming yourselves to the feel of diseased parts, by which you will acquire a knowledge of what has been called, the *tactus eruditus*, so indispensably necessary in a Surgeon, that he will be able to distinguish well between things which have the same, or similar visible appearances.

In learning Anatomy, the student should pay great attention to the relative situation of parts, with respect to each other, in dissection, so that every organ or part divided, may put him in mind of its neighbour; and whatever part of the body be injured or diseased, he may know all the parts which are connected with it. How else

will he be able to remedy the accidents to which those parts are exposed, or venture with his knife to operate upon them. Not a single step can be made, either in Medicine or Surgery, when considered as an art or science, without such acquirement.

The structure of the joints should be closely attended to,—not only the surfaces which come in contact with the joints, but likewise the ligaments by which they are connected together; and the muscles, tendons, and processes of bone by which they are surrounded. But the chief attention should be directed to the blood vessels, and their ramifications.

The arteries must be studied, not merely in dried injected preparations, but as they lie in the recently dead body, with the contiguous nerves, veins, and glands.

It will be found a useful employ, whenever an opportunity offers, on a dead subject, to cut down, in a limb, upon those arteries, nerves, veins, &c., which you may, in practice, be called upon to tie, or to divide, or avoid, in peculiar accidents or operations.

The knowledge of the situation and texture of the arteries, veins, and nerves, will render it easy to distinguish them from each other; and this exercise, in dissecting the blood vessels in their natural state, (without previous injection,) and learning to know them by their texture,

appearance, and ramifications, forms the best foundation for Practical Surgery. I should, however, recommend that the veins and arteries of the neck be injected with different coloured materials; and the student should make drawings and models of the parts which he has dissected. Outline drawings, with accurate references, should accompany the models. The student should not only study the bones, but their connecting ligaments, with relation to fractures and dislocations in particular. In short, he should make himself well acquainted with all the parts concerned in the great operations of Surgery; for example, Hernia, Lithotomy, Trepanning, Amputation, Couching, &c., &c.

In order to acquire dexterity and neatness in surgical operations, it is essential that every aspiring Surgeon should be accustomed to mechanical exercises and tactile manœuvres; aided by these adjunct means, he will acquire an accordance of adaptation between the eye and hand, which every Surgeon should attain,—and which but few acquire.

But it may be remarked, that, in some obscure cases, it is impossible, by a single examination, to be able to form a just and satisfactory decision of the nature of the case; thus situated, I would recommend a due and deliberate comparison with others, of a similar appearance, recorded by surgical writers of talent and fidelity; or from self-

observation. Perusing the works of eminent authors, is essentially requisite for a young surgeon to acquire a knowledge of the various improvements which have of late years greatly added almost to every branch of Surgery. The records of surgical cases, duly studied, will much aid the inquiring student, and impress his mind with facts, which no other resource can equal.

The life of man, however long, and how extensive soever his opportunities have been, is much too short, and his powers too limited, to investigate every thing for himself. Hence, it appears, we are greatly indebted to the labours of our predecessors, in almost every branch of science. More especially is it then incumbent on the young practitioner, to gain all the information he can from this source, and supply his own want of experience by this means; and thus store his mind with the knowledge acquired by authors of established reputation. Reading and theory, acquired without practice and observation, will do very little; but, if studiously combined, they may furnish resources for extensive acquirements. The fallibility of human judgment is universally known, and I have lived too long not to be acquainted with its weakness and imbecility,—too long, also, not to have discovered, that science, if not still in its infancy, has not yet attained perfection; and stands in need of the united

exertions of all who endeavour to nurture, to strengthen, and to mature it.

Let me, in this place, state that I contemplate, with great satisfaction, those rising abilities among the profession, of which such promising earnests have, within the last few years, been shewn amongst us. I here allude to the Provincial Medical and Surgical Association. My intention, in making these observations, is chiefly to excite and encourage, as far as I can, the industry, the perseverance, the inquiry and usefulness of those who are pursuing our laborious science.

Young Gentlemen, there is yet much to be done: many, who have gone before you, have done much; but let not this consideration lull you into inactivity; rather let it excite you to additional exertions. There is a void which yet remains in our science to be filled up; and we ought all of us, however, to labour and make such additions and improvements to it as our abilities and opportunities may enable us; and direct our most ardent studies to the works of Him, who has ordained the production and disposal of every substance in nature, from the thin and almost intangible gossamer that floats on the feeblest breath of the air, to the massy and immoveable rock that withstands the most boisterous tempests of the ocean.

The young Surgeon should, on all occasions, compare his mode of treatment, whether in Surgery or Medicine, with that of other eminent authors or practitioners; he should also embrace every opportunity in his power, to examine all morbid parts in the dead body, or after they have been removed by dissection; for many diseased structures soon become so far altered in appearance, as to defeat the object of surgical inquiry. Nevertheless, let it not be overlooked, in morbid investigation, that disorder of the system does not always necessarily involve structural change, but is not unfrequently only an alteration of vital condition, not to be detected in the dead body by ocular and anatomical investigation.

Many diseases, which come under the care of the Surgeon, are remediable by internal measures, and others by an operation. Hence the Surgeon should endeavour to attain a knowledge of the requisite mode of treatment, and the way by which such curative effects are attained.

Most assuredly, if medicines be improperly or unnecessarily exhibited, they will disappoint the prescriber, and avail nothing to the patient, but he will become disgusted, and cast that blame on the science of physic, which ought to be thrown on the medical attendant.

But whoever will devote due attention to such cases as fall under his notice, and will make himself properly acquainted with surgical or

medical cases, will find himself amply repaid by the aid he will acquire in his future practice, and will often see his way in the management of cases, which would otherwise prove perplexing. The intelligent student feels, indeed, that by becoming thoroughly acquainted with any one disease, he gains a greater insight into Medicine, than by a superficial survey of a great number; or by running over a whole volume of maladies, without due reflection. Knowledge, thus acquired, is for ever afterwards remembered: it becomes an inalienable part of your recollections,—infixed during life in the mind.

By the careful study of a single disease, as has been before mentioned, you will be more advanced in Pathological knowledge,—that is to say, in the knowledge of the actual nature and tendencies of disease, than by a brief, imperfect, superficial attention to dogmatical precepts, concerning all the diseases which the Nosologist can enumerate. I dwell with so much earnestness on the value of what is learnt of the symptoms of diseases, which are to be found at the bedside, or from the study of diseased actions, which accompany those symptoms, because I well know the advantages to be gained by such observations.

Without the knowledge to be acquired there, your Anatomy, your Physiology, your Materia Medica, and the utmost acquaintance with morbid

appearances, either recent or as shewn in preparations and drawings, will not make you an able practitioner. These alone are but the materials,—practice comprises the workmanship. These are but the instruments, which do not explain their own application; but practice at the bedside, and study, is their actual application to a just end.

Hence the chief use of observation and of reading, and of hearing lectures and dissecting, is to furnish materials for thinking; so the great end of all thinking is acting,—the conversion of knowledge into practical wisdom.

The young Surgeon should embrace every opportunity of performing operations on the dead subject himself whilst in the dissecting-room. By this means, his hand will acquire a dexterity, facility, and neatness, in holding and using the knife, tying ligatures on the arteries, and every other requisite connected with operative Surgery, and which can only be attained by frequent practice and close attention. In performing operations on the dead subject, I would not have you content yourself with merely making incisions at random, and sawing off bones; the right method to be pursued, is to go through all the various steps of each surgical operation, beginning with every thing preparatory to it, and ending with the proper dressings and bandages; and in every instance, as you proceed, place the

body in the same position that the living subject should be placed in, and conduct each operation as though it was alive. You will thus imprint on your mind the different steps of each operation, and acquire a readiness and method, which will be of future advantage in practice, as it will enable the Surgeon to avoid that hurry and confusion, at the time of an operation, which we observe frequently to occur, and by which an operator becomes embarrassed, and the minds of the patient and bystanders are greatly disturbed. Method, facility, and dexterity, in doing what is necessary to be done, without fulsome parade, are essential requisites for the Surgeon to bear in mind; and if attended to, will invariably produce a favourable impression of his knowledge and skill on all present, and greatly add to the confidence and tranquillity of the patient during the subsequent treatment of the case.

There are, however, many circumstances in which an operation, on the dead subject, differs from the same operation on the living; and which should not be overlooked, (as books on Surgery are comparatively barren on the subject.) One important matter is, that in many cases the structure of parts is greatly altered or obscured, and their appearance changed by the disease or accident which has rendered an operation necessary. Suppose, for instance, that during an operation an artery becomes wounded by the

scalpel, and the blood makes its way into the cellular membranes, or internally, it will so obscure the parts and course of the wounded vessel, that without great patience, coolness, and recollection of your anatomical knowledge, you will either be foiled in your attempt to secure the vessel by ligature, or be obliged to make a desperate plunge with an armed needle, which, being thrust at random, may probably include parts, or puncture other vessels that ought to be avoided, and thereby excite inflammation and danger.

There is another circumstance worthy of notice, in which operations on the living body differ materially from those on the dead, namely, hemorrhage, which, in some instances, requires peculiar management to restrain, and in many instances frustrates the progress of the operation. It may be remarked, that the most troublesome hemorrhages generally arise either from vessels, whose action has been much accelerated by existing inflammation, or from those which supply parts preternaturally formed, and which, being enlarged from the effects of disease, will often continue to pour out blood, from their divided orifices, in an alarming degree.

In chronic diseases, when the practitioner has time to reflect upon the nature of the malady, and the remedies which are usually employed, and time allowed to consult written authorities,

he is assisted by circumstances which are greatly wanting in cases of emergency, where the information, derived from actual observation, is now needed in one moment; and if there be a lack of promptitude and skill, the patient expires, and the reputation of the Surgeon is lost, not to be retrieved. Let the Surgeon, therefore, keep a watchful eye upon every case or accident falling under his notice, or admitted into the hospital; and in cases requiring an operation, should the student feel some slight fear or embarrassment, when the knife of the Surgeon is employed in the operating theatre, let him reflect what will be his misgivings, what his apprehensions, when the responsibility is thrown upon his own shoulders. This is the criterion, by which a young Surgeon may discover his competency to the fulfilment of the duties of a Surgeon.

Without visiting the sick, all lecturing and reading will avail little. Clinical Lectures, along with practice, are useful; but the knowledge of disease can be acquired only by seeing and touching diseased structure, and attentively observing the multitudinous symptoms which maladies present.

I would, nevertheless, recommend the aspiring practitioner to lay in a store of knowledge, acquired by perusing the well authenticated cases and works written by authors of esteemed eminence, in the different departments of medical

knowledge. At the end of this essay, I have inserted a list of such works as I should particularly recommend for the student's perusal.

Previous to the commencement of a Surgical operation, the operator should pay great attention to the patient's comfort; he should be placed in an easy and eligible position to a good light, and every Surgical requisite at hand. These are among the things about which the attention of the student should be engaged; nor should he be too hasty in passing criticisms on the person operating, either with regard to the manner, or time of its performance; for it does not always happen, that an operation, when executed quickly, is done well: and there is a great difference between a person seeing a thing done, and actually doing it himself.

Having slightly adverted to some things which should be attended to by a Surgeon, respecting his own conduct and qualifications, (as a Surgeon;) let me now advert to what is required for him to do, regarding his patient's welfare. The state and condition of a patient, when under the immediate care of a Surgeon, is a matter of the first importance, particularly when about to undergo an operatiou. The age and sex of the patient should always be a primary inquiry, together with the state of constitution and general health, whether strong or debilitated, irritable or otherwise; whether he appears fully

equal to undergo an operation, or whether there be any probability of his dying sooner in consequence thereof. With regard to the disease itself, not only its nature is to be studied, but also its particular situation; the length of time it has been generating, and whether it be simple, or complicated with any other morbid affections, which may make a difference in the mode of operating, or method of treatment.

Why the operation should be performed, is another consideration. Is it absolutely necessary? Is any risk likely to be incurred by it? and if there be, is the advantage expected fully equal to the risk, and is the probability of success sufficient to warrant such exposure to it? When should the operation be undertaken? is it immediately required, or how long may it be delayed with safety? and what advantages are to be gained by delaying it, or what by performing it early? No operation should be undertaken by the Surgeon, without first having free consent of the patient: and the patient should always exercise his own judgment regarding the choice of the operator. Let not the Surgeon, when reflecting on these important points of practice, become timid and scrupulous in his views; this self-distrust can only happen in weak minds, and is soon perceived by others.

He who is habituated to reflect on these important matters, with due care, will not be, on

that account, less prompt, bold, or firm, when occasion requires. The faculty of the mind, in considering and judging of cases, though complex in their nature, renders the decision comparatively easy, when fully attained; and the different steps of proceeding pass through the mind with wonderful ease and rapidity, and greatly aid the Surgeon in his proceedings. Supposing, then, an operation to be clearly indicated, and the period for performing it fixed, the next thing necessary, is to tranquillize the mind and body of the patient for it, with becoming delicacy and firmness. But as all human judgment is liable to error, it is most proper, especially in dangerous or complicated cases, to have a consultation; but this should be with a person of fair and liberal character, and approved practical abilities. This is more necessary, in cases of a serious nature, as two opinions give more satisfaction than one. In cases of great emergency, the Apothecary is generally the precursor of the Physician; and being acquainted with the rise and progress of the disease, with the hereditary constitution, habits, and disposition of the patient, he may furnish very important information. Hence it is always expedient to consult with the Apothecary, before any decisive plan of treatment is adopted, to have his account of the malady, of the remedies which have been administered, of the effects produced by them, and of his candid opinion on the case.

To subserve these important views, the Physician should occasionally make his visits in conjunction with the Apothecary, and regulate the mode of treatment accordingly. This friendly expediency among medical men would greatly enhance the medical character. Consultations should be promoted, in difficult or protracted cases, as they give rise to confidence, energy, and more enlarged views in practice.

No good reason can be adduced why a practitioner should, at any time, oppose the inclination of the patient to obtain additional advice.

Nor should you wait for the proposal originating with the patient or his friends, but candidly and fairly state your doubt as to the event of the case, and, without hesitation, solicit a consultation with some practitioner of eminence.

When an operation is determined on, it is always desirable to have the patient's bowels in a free state, and also the patient as free from fever as possible. He is not to be heated by taking cordials, under the idea of keeping up the spirits, and warding off pain, as is too frequently done; while, on the other hand, he is not to be incautiously lowered by bleeding, purging, or other debilitating measures. It is, however, generally useful to have the bowels gently emptied, that all irritation and febrile action be avoided. It may, in some cases, be proper to

give an opiate, either before or soon after the operation, and the Liquor *Opü. Sedativus* is preferable to *Tinct. Opü*, in not producing costiveness, thirst, or headache.

It is the duty of the operator himself to see that all the necessary instruments and dressings are in ample readiness, such as Lint, Tow, Armed Needles, Scalpels, Ligatures, Sponge, Bandages, Plaster, Ointment, Probes, &c., &c., and methodically arranged on a table, but out of the sight of the patient, and to avoid all unnecessary parade.

The Surgeon should always bear in mind, that instruments are only auxiliary supplements to the hand, and depend wholly on its guidance for their use. The more simple a Surgeon's instruments are, the better; our fingers are our first and principal instruments; and that capacity and knowledge by which they are to be guided, is the universal adjunct, without which all the rest will be useless.

Sometimes, during the performing of an operation, accidents occur which greatly try the firmness, patience, and ability of the Surgeon.

The division of a large artery unexpectedly occurring, may tend greatly to confuse and embarrass the mind, and agitate the nerves. But at the moment when such occurrence happens, he should endeavour to recollect that time is not to be wasted by regretting what is

past, or thinking how it might have been avoided; he must now be prompt, and at once determine what is to be done for the safety of his patient, and security of his own character. Supposing an operation to be now finished, still the task of the Surgeon is not at an end. He is next to consider what symptoms may be expected to result from the operation, and to guard against any unfavourable appearances, by remedies adapted to such occurrences, aided by attention to diet, position, and other measures of management.

The student should take down, in his case book, every important symptom and occurrence connected with the operation and subsequent treatment, with the utmost care and attention; for these early impressions will furnish him with points of practice, around which all his future acquisitions are necessarily arranged. To this source he will have recourse in after life, as presenting testimonials of diligence and proficiency. The most essential qualifications in a Surgeon, are self-composure, confidence, and undeviating steadiness; the head should always direct the hand, otherwise the operator is unfit to handle the requisite instruments. Without these essential qualities, a man may occasionally do well in trifling and ordinary cases, but can do little in cases of importance, where unexpected emergencies occur. A Surgeon, possessed of these mental and bodily requisites, inspires

confidence, and tends greatly to insure success, and establish his reputation with the public.

I trust I have said enough to convince you, that to learn Surgery in all its bearings, is an important undertaking, demanding your close and undeviating attention. He who expects to arrive at excellence in any branch of the profession, must walk, without deviation, in the way to excellence.

The science of Medicine, to use the words of an elegant writer, "like every other branch of natural knowledge, is not the production of a vigorous imagination, nor a lively invention, but it is the offspring of long and diligent experience; and if man attempt to learn it in any other way, than by going to his patient's bedside, and returning thence to his study again, he will find himself mistaken." The human mind may be dazzled by the boldness of her flights, or gratified by the keenness of her speculations; but the subtilty of nature can alone be penetrated by those who submit to become her patient and vigilant servants. It is very true that some Surgeons, by bluster and artifice, get forward, if it be but for a season,—they make a figure and get money, and all ends in disgrace. But I would gladly believe that my readers will be of a very different character, who, I trust, aim conscientiously to fit themselves for their destined station in life, and endeavour to deserve,

as well as to enjoy, the confidence of those around them.

On a young Surgeon commencing his professional career, all his powers, all his resources, and all the labours of his past life, are called forth at once; for on the event of a single hour, may depend the fame or the infamy of his own character, or perhaps the honour or the disgrace of his professional acquirements. If these qualifications in a young Surgeon are once lost, they never can be retrieved; and this indelible disgrace may eventually fix where permanent honour, by study and application, might otherwise have been achieved.

Let me assure you, that the habits of diligence and attention, when once acquired, are full as easy, and far more pleasant, than superficial or negligent observations; so that the whole attainment, which once appeared so irksome and formidable, will eventually become natural, easy, pleasant, and every way to be preferred. In short, he who will persevere, with patient steps, to tread the path of knowledge, will find the difficulties diminish as he advances: only let him go on; and if there be no peculiar defect from intellectual capacity, connected with ebriety, avarice, frivolity, immorality, or ill manners, he will ultimately succeed,—he will gain the approbation of the enlightened and the wise; and, what is still more important, the approbation of

the community, and the satisfaction of his own conscience. He will learn by the experience of every day, and his past errors will instruct him in his progress, and he will eventually enjoy a life of usefulness to others, and of credit and advantage to himself.

The young Surgeon should peruse the works of those who have deserved and attained eminence in the profession. Let him be slow to censure his brother practitioners. Let him aim at high excellence, by deserving esteem; but let him bear in mind, that talent, rank, and station, however elevated, do not preclude the possibility, nay, the probability of incidental error in practice, or moral fortitude. Above all, let the student be deeply impressed with this important truth, that mere scientific attainments, however exalted, will avail but little, unless supported by upright and worthy conduct.

The conduct of the Surgeon should be characterized by habits of accurate attention, of persevering exertion, of sobriety, and active benevolence to all who employ him. The mean jealousies of professional rivalship, and the mercenary arts of a lucrative profession, are unworthy of the medical character,—the real dignity of which consists not in empty titles and distinctions; but in soothing the distresses, and alleviating the sufferings of mankind. Let him be governed by the invaluable gratifications, and

integrity, united with zeal to promote the welfare of others,—in short, to follow, to the utmost of his power, the simple but comprehensive precept, "to do unto others as you would they should do unto you."

It is by your conduct in the faithful performance of the arduous but honourable duties of your profession, that you may emulate those illustrious ornaments of the age in which they have lived, whose names and examples have descended to posterity, as benefactors to the human race. Such are Harvey, Haller, Boerhaave, Locke, Friend, Sydenham, Akenside, Armstrong, Fothergill, Mead, Linnæus, Linacre, Gregory, Garth, Blackmore, Darwin, Pringle, Percival, and Dr. William Hunter.

The science of Medicine embraces the corporal and mental constitution of man himself, as its great study, and we may expect to meet with occasional flights of fancy, and theories in its pursuits, as well as the most extravagant reasonings, and the most discordant opinions. The medical student should, however, be guided by the unerring light of truth, reason, and sincerity, and be studious, at all times, to preserve himself within her sacred precincts. The medical philosopher looks on these flights of fancy as mere chimeras, and as rocks and shoals, which have frequently proved destructive to even the brightest and purest minds.

It has been well observed by an elegant writer, that "no high point of excellence was ever attained, but by a laborious exercise of the mind." Truth, indeed, should be the grand object in all our researches after knowledge,—to the attainment of which every thing else must be willingly sacrificed. Some men say that "wealth is power," and some, that "talent is power," and some, that "knowledge is power," and others, that "authority is power;" but there is a maxim that I would place on high above them all, namely, truth. From the most violent conflicts of opinion, truth has nothing to fear,—to her a thousand years are but as one day—a point, a nothing in the eternity of her duration. Surrounded as we are by a multitude of human follies and errors, in every department of science, yet encompassed with falsehood, depravity, and all these evils, truth will reign supreme.

Gentlemen, in all your studies, in all your speculations, in all your researches and pursuits, recollect, that to discover truth and to do good, are, of all things in this world, alone worthy of your labour, consideration, and care.

You are but, in this, following others in the great path of human exertion; adding your names to a long catalogue of men, who had the same hopes and fears, the same ambition and desires, as yourselves. Pressing closely upon you will follow another generation, succeeded by other

generations, equally busy and equally short-lived. Be able to say, then, whilst you live, as the immortal Harvey said, when reviled by his unworthy enemies, "I follow truth alone;" and no little obstacles, no narrow opposition, no worldly disappointments need discompose you. And if you live to find that your exertions are rewarded by fame and gratitude, let it be your honest pride, in that advanced age when your ear will be becoming dull to the voice of praise, and your feeble grasp must soon let go its hold on all influence, that you did not reach either one or the other by mean arts, or mischievous policy; but that all your dealings and conversations were governed by truth, and no less fair and open than your intentions were pure and honest, and kept pace with your years.

Medicine, then, viewed as an intellectual and moral duty, is calculated to improve and elevate the mind, though an opinion has been pronounced and entertained against us by many, who have denounced our profession, as leading us to deny the existence of a Supreme Being, and charging us with universal scepticism. If such an opinion were just, it would pass a sentence of condemnation on all our proceedings and pages, and stamp a criminality on our very foreheads. But the records of Medical history, as well as the living examples of the present day, show us, that all who have ever attained the rank of eminent men,

have been equally conspicuous for their moral worth, as their professional productions in literature, at once overthrow any argument or reflection, which would tend to clothe us with infamy and disgrace.

How can the study of Anatomy and Medicine, if properly cultivated, plunge us into such a dangerous error? Can the contemplation of man—the noblest monument of creative power—lead us to doubt the existence of an Omnipotent Being? Can the knowledge of that inimitable mechanism, by which every part is fitted for its office—of that structure, which not only enables us to feel and move, but is the temporary abode of our intellectual faculties—of those laws by which life itself is carried on, or by their subversion extinguished—can the knowledge of these, we ask, convert us into infidels? assuredly not. Let me, in this place, advert to Galen, a celebrated Physician, who lived in the reign of the Emperor Adrian: he studied Anatomy at Alexandria, during which period, and whilst engaged in dissecting human bodies, (though a Pagan,) he became converted to Christianity; and, on contemplating the order, structure, and uses of the different parts of the human body, exclaimed, "herein I acknowledge and praise our Creator, that he has been pleased to adorn his works beyond the power of art."

Whoever contemplates, in this bony frame, (the human skeleton,) the outline of the living man's figure, and recognises its proportions, stature, and position, must acknowledge that it is truly edifying and interesting to examine the several parts of so remarkable a scaffolding; and the more minute the examination is—as in all the works of nature—the more worthy of observation is this bony fabric to behold. Tracing it up from its earliest formation, and viewing it as it advances in its growth, we are presented with a splendid illustration of the wise and wonderful workmanship of Omnipotence.

If time and space were allowed for detail, or if it were my intention to enter upon particulars, every separate bone would be found to shew contrivances deserving of remark. The singular unions of the bones, by joints, cannot but arrest the attention. The shoulder, the elbow, the wrist, the fingers, the thigh, the knee, the ankle, the toes, and the bones of the spinal column, all present peculiar arrangements in this respect. In all, we see a masterly union of great capability of motion, with great security; great strength without great weight: and the freedom of movement which the united bones, with the ligaments, permit; nay, the agile and graceful motions which they are destined to obey in the living body, offer matter for reflection, and not only so, but are connected with knowledge very

essential to the Surgeon in many parts of his practice.

I might allude to the admirable structure of the foot, on which the body is placed so firmly, and yet moves so readily at will; or, of the adaptation of the hand and arm, to which man is so indebted for dexterity, for protection, and for the means of preserving his existence. In the bones of the skull and face, where each is isolated by the framework on which it stands, is exhibited to us an instance of extraordinary osseous complication, productive at first of some embarrassment to the student, and greatly contrasted with the simplicity and conformity of the rest of the skeleton.

This seeming complexity is connected with the very important parts to which these bones subserve; for they protect the brain, allow blood vessels to pass to it, by foramina or perforations, through the solid wall, or bone case; and also numerous nerves, including the nerves of the senses. They contain and guard the eyes, in a deep socket; the ear, in a thick and excavated bone; and the organs of smell, taste, and speech; besides constituting materials for masticating the food. They also give attachment to a class of muscles, concerned in deglutition and speech, and several motions of the head; and to other muscles, the various actions of which, covered with the integuments and skin, and

known to common observers only in their effects, clothe all that appears ghastly in the skeleton, with what is expressive, and often highly attractive, in the living countenance.

The hollow parts of the statue are also seen to be filled up with organs essential to life; so admirably arranged, that all the motions of the powerful muscles, and all the movements of the hard bones, and even all the occasional contortions of the body, are performed without discomposing any of them. Yet these Osteological observations yield, in interest, to what is demonstrated in the system of vessels, by which blood is circulated, from the first moment of life to the last, through all parts of the body. This system of vascular ramifications is so numerous, so minute, and so exquisitely delicate, as to fill the mind with astonishment.

I have dwelt longer, in this place, on the structure and functions of the human body, than may appear necessary, seeing that our profession has been generally stigmatized with atheism. I trust what has been advanced, will tend to avert a charge so illiberally made against the profession.

It is deeply to be lamented, that the community, in general, are so entirely ignorant of all that relates to the art and science of Medicine; that a general knowledge of Anatomy, and the functions of the animal economy; of their most common and important deviations from a healthy

state; of the remedies best adapted to restore them to a sound condition; and of the mode in which they operate, as far as that is known, ought to form a part of every course of liberal education. The profound ignorance of the people, on all these subjects, is attended with many disadvantages to themselves, and operates unfavourably on the medical character generally.

In consequence of this want of information, persons neither know what are the attainments of the practitioner, in whose hands they place their lives, nor can they form an accurate opinion of the course of education which it is incumbent on every one to follow, who exercises the healing art.

Such a desideratum, in popular education, would greatly tend to enlarge the minds of people, in their views of general knowledge; and would be found particularly useful to the members of the other professions, in their intercourse with society.

The results of these inquiries undoubtedly enable the Medical practitioner to trace the hand of unerring wisdom, on such firm ground, as to render doubt absurd, and atheism ridiculous.

Indeed, it appears to me, that the study of the human articulated skeleton, in *situ*, would be the most effectual means of removing atheistical doubts, and exciting a just conception of the views of Providence, in the design and order of

creation. Another charge has also been brought against the profession, on the score of apparent want of feeling, which is displayed amongst us, towards those who are directly under our care, chiefly when undergoing an operation. On this point, I conceive, our line of conduct is clearly marked out. The Surgeon ought not to be, or appear to be, affected in the same manner or degree as a common observer; and if he attempts to smother the feelings of nature, he may inadvertently lose the power of self-possession and command, and thereby render himself totally unqualified for the work he is about to perform.

A Surgeon, who is occasionally pre-disposed to Syncope, should never attempt to perform any important operation, as this is an affection of the system, over which he has no control. It has fallen to my lot to witness several instances of this nature, where the assistant became, from an affection of Syncope, incapable of rendering me the necessary assistance in the operation. This circumstance I mention, as it shows the necessity of having more assistants than one, in all operations of importance.

The poor form that class of society, whose condition often urges them to implore Medical assistance, and are the individuals amongst whom the young Surgeon can best attain a practical knowledge of his profession, and thereby get into

notice: to their wants and necessities he should be ever ready to lend an indulgent ear.

From these scenes of deep distress, turn not aside without affording every assistance in your power, to administer medical relief gratis, and do not attempt to wring from their hands the small pittance they could not well spare.

All officious interference, in cases under the charge of another practitioner, should be studiously avoided.

No meddling inquiries should be made, either directly or indirectly, concerning the patient; no unnecessary hints given relative to the nature or treatment of his disorder, or to the mode of operating in Surgical cases, nor any selfish measures taken, that may, in any way, tend to diminish the trust reposed in the patient's medical attendant.

The officious intermeddling professional busy-body, is a character of the most infamous nature that exists in society; it is but too true to say, that the profession abounds with such, who are daily insinuating themselves with the public, and boasting of a superiority of ability, which they do not possess, and casting reflections on individuals, whose practice rather deserves commendation.

I need not remind the Medical student, that his success through life depends mainly on his own efforts and conduct.

This is a matter of every day experience and observation, about which there can be no doubt.

It is worthy of remark, that most of the great men who have ever lived, whether in our profession or in others, obtained their rank in life by their own perseverance, industry, and liberality.

If I, on this occasion, encourage you to study, and the employment of your time with diligence, let me assure you, that during my professional career, I have uniformly availed myself of the same resources.

Observation shows, that the vast field of Medical science opens more and more widely, as the industrious practitioner advances in his application. Hence I feel deeply convinced of this important truth, that no pupil has any time to throw away.

I may venture to say, (though it is with reluctance,) that from what I have observed of the utility and application of our sciences, when taken collectively for a series of past years, my firm conviction is, that the healing art has fallen short of producing that benefit to the sick, which might be expected; this may arise either from the imperfection of Medical, or the errors of abusive practice, or both, when combined with quackery.

It is, also, my fixed opinion, that the study of Medicine in all its departments, preparatory to practice, is in England most miserably conducted. We see, every year, numbers of young men

entering upon all the responsibilities of practice, and obtaining responsible situations, secured by mere friendly influential motives, and by persons who are incompetent to judge of the requisite abilities of the person whose cause they warmly espouse. Such are the students, who are actually either not sufficiently versed in the pharmaceutical part of their profession, or not able to conduct the minor departments of Surgery with safety to the patient. This is a lamentable evil, and calls for parliamentary aid.

The experienced Surgeon cannot open his eyes and look around, without perceiving the degraded state into which the profession of Medicine has fallen, though this is generally considered to be a period of vast improvement, and march of intellect.

The young Surgeon should let no obstacle whatever damp his energies, for the acquirement of knowledge has been accomplished in defiance of the greatest difficulties, even under the most embarrassing engagements, and the chilling arm of adversity.

The man who, with unwearied assiduity, pursues his studies, possesses a happiness within himself denied to others; the cares which rankle in the bosom of the ignorant and unamiable, touch not his conscience.

The aspiring practitioner cannot but feel deeply wounded, both at the numerous obstacles

set up to deter him from his professional pursuits, and the unprincipled manner in which many places of honour and preferment are forestalled by undue interest, and surreptitious manœuvre. We see the humble and unpretending man of science despised, neglected, and left to struggle with the iron rod of poverty, while the daring and shameless impostor is not only allowed to rear his head, but is welcomed and flattered, and admitted to the enjoyment of every artificial distinction which wealth, and rank, and ignorance can together confer.

This is the protection and march of intellectual improvement, of which our country vainly boasts. Is this, I would ask, the kind of remuneration which our profession deserves at her hands? It is much to be regretted that the old system, by which Medical relief was provided to the sick poor, should be changed to a worse form, in our modified poor laws. It is far from my intention, on any occasion, to enter the perplexed region of politics, which indeed, in the words of Lord Bacon, "is no olive ground or vineyard, but an intricate wood of thorns and briars, into which they who wander find many scratches, but no food." It is not my object to criticise the general character of the measure; but I cannot refrain from reprobating those parts of the plan, which directly affect the Medical management of the poor; since they seem to me

calculated to sacrifice life to a niggardly economy. I sincerely hope, when the subject is brought fully and temperately before the legislature, they will abandon the vile and contemptible system of tender, and apportion the work to be performed to the physical capabilities of the regular Medical practitioner, and make such alterations as the interests of science and humanity justly require.

But under the present poor-laws, the system of Medical management is peculiarly calculated to train our young practitioners to ignorance; tempting them to use the words of a great moralist, "to practice by chance, and grow wise by murder;" or I would rather say, to practice by chance, and murder without growing wise.

"Men are not left," Dr. Price * remarks, "as they might have been, to perish irretrievably by the calamities that casually happen to them; but it is put into our power, in numberless cases, to help one another, and thereby to prevent the fatal effects that would follow particular calamities."

Thus a provision is made, in the spontaneous agency and benevolence of our fellow creatures, for a great addition to the happiness of life, and diminution of its sufferings. And this itself becomes a still higher display of Omniscient goodness, beyond which we cannot easily enlarge our ideas. Let me not omit to mention, that the

* See Price on Providence.

room in which a patient is placed after an operation, must be well ventilated, and great attention be paid to a tranquil state of mind, and vigilant attention during the whole time of confinement.

In the course of this inquiry, it has been my aim to show the kind of knowledge which it is indispensable that the Physician and the Surgeon should possess; and I have made occasional reference to facts, cases, and incidents, which at present oppose the acquisition of Medical knowledge, chiefly as it relates to the junior practitioners in their early studies.

In the improvement of our art, which has for its object the preservation of health and life, every individual is therefore deeply interested. Ignorant Physicians and Surgeons may be classed amongst the most deadly enemies of the community: the plague itself is not so destructive: its ravages are at distant intervals, and are accompanied with open and alarming notice of its purpose and power of devastation; theirs are constant, silent, and secret; and while they are looked up to with hope and confidence on one hand, the stroke of death appears on the other. I earnestly hope that the day is fast approaching, when we shall bid a long farewell to every species of partiality, undue power, authority, and injustice; when we shall see these corrupt evils laid at rest, and the chains

with which they fetter us, for ever rent asunder; and all petty privileges will dwindle into insignificance, and avail their supporters nothing; when man will not be preferred to man, from the mere influence of self-interest or partiality.

We yet hope to see that generous literary emulation and impartiality, which form so noble and intellectual a brotherhood, yet slumbering in the bosom of the nation, breathing their fervent spirit over all our institutions, and sending their quickening influence into every seat of learning.*

Then will the right road to fame be opened, and merit receive its due reward; and then, and then only, will science prosper, and mankind reap the benefit.

Feeling as I do, at this advanced period of life, I may perhaps appear to be over solicitous to impress your minds with principles which I should wish to see pervading our whole profession.

Valuing science much, I ardently wish that you should be skilful and amiable practitioners; and I no less desire, that you should also exert your influence to form an age of liberality and usefulness.

Having acquired a liberal education, you cannot but sometimes reflect on the origin, end, and intention of this our bodily and mysterious fabric of existence, assigned by Providence to man.

* See the Transactions of the Provincial Medical and Surgical Association.

In hours of cool reflection, when tracing the organs and actions of the living system, which conduce to life the great problem of animation; doubts and uncertainties, which no philosophy can solve, will sometimes occur to you, (if such home reflections are not strangers to your thoughts,) that all true and ennobling ambition, —all for which life is really valuable or useful— resolves itself into the duties of self-improvement and self-government, and the communication of means of instruction to others.

These duties comprehend every social, every professional, every private duty; and enter into every comprehensive design which man can conceive. In proportion to the advantages you have enjoyed, your engagements to these great duties are the stronger; and they are the only duties for which no worldly circumstances can possibly disqualify you.

I have thus endeavoured to give you a short view of the several subjects comprised in the field of your future labours, to point out to you the way in which they are to be cultivated, and to demonstrate the vital connection that subsists between them: to show that this connection is not merely that of a progressive series, but one of reciprocal dependence, and may be most fitly represented, not by a straight chain, but by a circular arrangement, in which each link may be considered either as the beginning or the end.

I shall, therefore, conclude by offering my best wishes to those Gentlemen who are about to enter on the most interesting of all studies—the study of man; that they may hereafter apply in practice the knowledge they have acquired, both to their own honour and advantage, and to the benefit of their fellow creatures.

LIST OF WORKS AS REFERRED TO IN PAGE 81.

Monro's Anatomy, 3 *vols.*; *Cooper's (Bransby) Anatomy*, 4 *vols.*; *Fife's System of Anatomy*, 3 *vols.*; *Cooper, (Saml.) First Lines of Surgery*, 6*th edit.*; *Cooper, (Sir Astley,) on Surgery*, 3 *vols., by Lee*; *Cooper, (Sir Astley,) on Hernia*; *Cooper, (Sir Astley,) on Fracture and Dislocations*; *Bell, (Sir Charles,) Institutes of Surgery*, 2 *vols.*; *Bell, (Jno.) on Surgery*, 4 *vols.*; *Warren on Tumors*; *Hodgson on Diseases of the Arteries*; *Lawrence on Ruptures*; *Lawrence on the Eye*; *Beck on Jurisprudence*; *Christison on Poisons*; *Medico-Chirurgical Transactions*, 21 *vols.*; *Brodie on Diseases of the Joints*; *Brodie on Urinary Diseases*; *Prout on Urinary Diseases*; *Denman's Midwifery*; *Burns's Midwifery*; *Ryan's Midwifery*; *Barlow on Surgery and Midwifery*; *Blundell's Midwifery*; *Goods' Study of Medicine*, 5 *vols.*; *Gregory's Practice of Physic*, 2 *vols.*;

Churchill on Diseases of Females; Mackenzie on Diseases of the Eye; Harrison on the Arteries; Bourgery's Minor Surgery; Cullen's Materia Medica, 2 vols.; Cooper (Saml.) Surgical Dictionary; Littell on Diseases of the Eye; Bell, John, on Wounds; Medical Records and Researches; Duncan's Annals and Commentaries; Monro's Morbid Anatomy of the Gullet, &c.; Dublin Transactions and Hospital Reports; Gooch's Surgery, 3 vols.; Hay's Surgery; Medical Facts and Observations, 8 vols.; Medical Observations and Inquiries, 6 vols.; Davis' Obstetrics, 2 vols.; Warner's Surgery; Latta's Surgery, 3 vols.; Pott's Surgery, 3 vols.; Dermott's Illustration of the Arteries; Allan's Surgery, 3 vols.; Ashwell on Parturition.

CASE OF CÆSAREAN OPERATION.

In compliance with the request of several Friends, I have been induced to republish the case of Cæsarean Operation, which I performed upon Mary Forrest, residing a few miles from Blackburn, the particulars of which were inserted in the London Medical and Surgical Journal, vol. 4th, 1833, edited by Dr. Ryan, from which the following is a transcript.

Mary, the wife of Edmund Forrest, resided about three miles from Blackburn, was a poor decrepit woman in the thirty-fifth year of her age, who had suffered greatly from an accession of rheumatic pains of the loins for a series of years, which eventually produced a state of malacosteon and deformity, which rendered her unable to walk without support for the last three years of her existence. She also laboured under anasarca, with an ulceration of the lower extremities, troublesome cough, and difficulty of breathing.

Unfortunately, in this situation she became pregnant of her fifth child, and when at the expiration of the period of utero-gestation, she was seized with labour pains, and Mr. Cocker,

pupil to Mr. Pickop, surgeon of this town, was called to attend her on Monday, the 21st of August, 1826. Mr. Cocker stayed with her all night, and occasionally made the necessary examinations, to ascertain the progress of labour and position of the fœtus, but found, to his surprise, the apertures of the pelvis so unusually distorted, that he concluded she could not be delivered in the ordinary way, though the pains were rather strong and frequent.

The following morning (Tuesday), Mr. Pickop visited her ; at this period labour had made little progress, the liquor amnii had not escaped, though the pains were more powerful than before, and the woman's sufferings greatly aggravated by a distressed breathing, a quick and irregular pulse, scarcely numerable, together with obvious constitutional debility.

On a strict examination per vaginam, the distortion of the apertures of the pelvis appeared to Mr. Pickop so contracted, that he was unable to attain a knowledge either of the state of the os uteri or presenting part of the fœtus. An aperient clyster was administered, and Mr. Pickop left her, with strict injunctions to be sent for on the advance of labour ; in the course of a few hours he was recalled, and on his way solicited my assistance on the case ; we set out together, and arrived at the patient's dwelling about nine o'clock the same evening, and found

her laid on a bed, with her head and shoulders supported by her husband, gasping for breath, and apparently in a dying state. On seeing me she earnestly begged that I would release her from her misery, as she could not live long in her present state.

Without delay I made the necessary examination, and soon discovered the deformity of the pelvis and impediments to delivery in the natural way to be as had been stated to me previously by Mr. Pickop; and though I took much pains to ascertain the situation and state of the os uteri, as well as position of the fœtus, by making pressure on the abdominal region with one hand, while the index finger of the other was employed in the vagina, yet I could not, even by this manœuvre, attain my object, owing to the evident distortion of the pelvic apertures and pendulous state of the abdomen, yet during this research I was enabled to predict the living state of the fœtus by the motion conveyed to the hand through the medium of the uterine and abdominal parietes. The woman's pulse was irregular, and too quick to be enumerated; her breathing oppressed and interrupted, attended with rattling of the throat; and countenance exhibiting a ghastly appearance, all of which symptoms indicated approaching dissolution, and from Mr. Pickop's account were greatly aggravated since he left her in the morning.

In this perilous state a question arose, whether to have immediate recourse to the Cæsarean section, or abandon any further interference in the case. But, on being urged to the operation by the supplications of the woman and her attendants, and knowing the fœtus to be alive, I more readily yielded to their entreaties, believing it to be a professional duty rather than sacrifice the child by unnecessary delay and timidity.

The management of the case having been resigned to me, I had the woman removed from the bed and laid on her back upon a table, with her head and shoulders slightly raised with pillows, to assist her breathing, and while the requisite dressings, &c., were preparing, Mr. Pickop introduced the catheter into the bladder and evacuated its contents.

I commenced the operation about two inches above, and a little to the left of the umbilicus, by making an incision in a longitudinal direction to the extent of six and a half inches, and parallel with the fibres of the linea alba, through the distended parietes of the abdomen, which were very thin. The peritoneum being laid bare, a small opening was next made therein, which admitted the point of the finger, and served as a director to the probe-pointed bistoury, by which this membrane was divided upwards and downwards, to the full extent of that of the

integuments. The uterus next arrested my attention, and was divided in the same way, and to the corresponding extent with the other tunics, and its parietes were observed not to exceed in thickness the edge of a half-crown in any part of the incision.

A portion of the placenta was found adhering to this part of the organ, and its membranes being ruptured with the fingers, the liquor amnii was allowed to escape by the abdominal wound rather than become diffused among the intestines. An incision was then made through the vascular substance of the placenta, which exposed the left shoulder of a female infant to view, with its head situated at the fundus uteri; the child was extracted alive, and on the funis umbilicus being tied and divided, it was resigned to the care of a female attendant.

The placenta and membranes were then detached from their connexions, and extracted without difficulty, and the uterus contracted as speedily as is usual in ordinary deliveries, and the incision became nearly closed; consequently there was very little blood lost during the operation, except what escaped from the divided edges of the placenta, whilst attached to the surface of the uterus.

This part of the operation occupied only a few minutes; but the joy produced on the occasion excited great agitation of the system,

with laborious breathing, and a considerable portion of the bowels became forced through the abdominal wound, though every effort was exerted to retain them in their place.

During this interval the poor woman seemed almost exhausted, but having a little wine allowed her, the breathing and throbbing of the chest became more tranquil, which greatly aided our efforts in replacing the intestines *in situ*, on which she gratefully expressed her thanks at the event of the operation.

Mr. Pickop now supported the sides of the abdomen with the palms of his hands, and pressed the incised edges of the integument in contact, whilst I secured them by means of several sutures placed about an inch apart, over which were applied pledgets of dry lint and strips of adhesive plaster, and the whole surface was finally protected by a broad bandage passed a few times round the body so as to keep the abdomen and its contents steady, and the interrupted sutures from being too much extended.

Her pulse, which before the operation could not be distinctly counted, had now subsided to 108, with the breathing less laborious, and mind more tranquil. Twenty-five drops of tinct. opii were given in a little wine, after which we left her about eleven o'clock to the care of her sister, with strict injunctions to be kept quiet, and such regimen allowed as her condition required.

The following morning (Wednesday) Mr. Pickop visited her, and was informed she had passed an easy night, and slept at intervals. The bowels being constipated, an aperient enema was administered, but without much effect. She had passed urine freely.

Mr. Cocker saw her in the evening; pulse regular, and about 110, and she was free from pain or fever. On Thursday morning I called upon her, and she said she had got some refreshing sleep during the night, and appeared cheerful and communicative.

The temperature of the skin was not increased, and there was a slight moisture; pulse 110, firm and regular; tongue moist and perfectly free from fur, she nevertheless complained of thirst and sickness, with occasional vomiting. The bowels not having acted since the operation, the clyster was repeated, but without effect. I prescribed a saline mixture, a dose of which to be taken at short intervals in the act of effervesence, and eight grains of calomel made into pills with two drops of croton oil, which soon produced several copious evacuations. I now removed the superficial dressings from the wound, together with each other strip of adhesive plaster, so as to inspect the healing process, and was pleased to find, that the incision of the integuments was completely united, and the dressings dry and scarcely stained with discharge from the part.

The abdomen felt, on pressure, rather tense, but did not excite pain; the lochial discharge was uninterrupted, and appeared, in every respect, as is usual after natural parturition.

On Friday morning she was visited by Mr. Cocker, who was informed that she had passed a quiet night, her pulse 115 in the minute; tongue moist and clean; breathing more laborious than before; urine evacuated naturally, and in sufficient quantity.

In the evening Mr. Pickop saw her, when she was evidently much changed, with pulse 160 in the minute; great tremor and distressed breathing; thus she passed a restless night, and died about eight o'clock the following morning (Saturday), being rather more than three whole days subsequent to the operation. It is now nearly seven years (1833), since the operation was performed, and the child is at present enjoying a good state of health, and resides in this neighbourhood.

It is necessary to remark, that this case of Cæsarean section excited among the Surgeons of of our dispensary a groundless suspicion of its having been unnecessarily performed, in consequence of which the body was clandestinely disinterred, and the following is a correct copy of the report taken down in writing, by a medical pupil, Mr. Higham, (deceased), during the dissection, and the dimensions of the pelvis

(which is now in my possession) will convince any one who reflects on the space allowed for the passage of the fœtus, that the operation was in this instance imperatively called for. The deformity of the pelvis in the instance previously related, it may be necessary to state, was produced by malacosteon.

Post-mortem examination of the body five days after death.—The abdomen was not unusually distended, and the muscles had apparently regained their natural form. From the violence used in removing the body from the grave to the place of dissection, the wound in the integuments of the abdomen was slightly separated, and there was every appearance of its edges having been recently lacerated.

On removing the sutures and extending the incision, the intestines and uterus were exposed, upon neither of which was there the slightest mark of inflammation.

The peritoneum was not at all inflamed, but on the contrary was very pale, as were also the intestines.

The uterus was remarkably small and contracted; the incision in this organ was scarcely two inches in extent, its edges three quarters of an inch in thickness, were in perfect apposition, and had so firmly united that it required considerable force to tear them asunder. There was, perhaps, an ounce of coagulated blood

effused upon that part of the peritoneum which was in contact with the wound in the uterus, it was evidently undergoing the process of absorption.

The liver was very small, and the gall bladder was greatly distended with about thirty stones of various sizes.

It is worthy of remark, from the appearances of the uterus, as stated on dissection, that in all probability this woman would have recovered from the operation had she been afflicted with no other disease than malacosteon.

Diameters of the superior apertures of the pelvis.—The transverse diameter measures $4\frac{5}{8}$ inches, taken from one sacro-iliac symphysis to the other.

The distance from the right acetabulum to the projecting lumbar vertebra, is only half an inch.

The distance on the opposite side, one inch and a quarter.

The largest circle that can be formed in any part of the superior aperture does not exceed one inch and a half.

The antero-posterior, or sacro-pubic diameter of the brim is two inches.

The coccy-pubic, or long diameter of the outlet is two inches and a half.

The bis-ischiatic, or short diameter from one tuberosity of the ischium to the other, is two inches.

[Mr. Barlow, when in town during the autumn, did us the favour of showing us the pelvis referred to in the preceding remarks; and the admeasurements are exactly as he has stated. —Ed. M. S. J.]

P. S.—Perhaps it may not, in this place, be unacceptable to the reader, to refer him to the history of three other cases of Cæsarean Section, published several years ago in my Essays on Surgery and Midwifery, from which, and the case above related, it will be seen that the lives of three children and one mother were thereby preserved,—the mother, Jane Foster by name, died in October, 1829, and was interred at Bolton-le-Moors, having survived the operation 36 years.

THE END

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