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AN
INTRODUCTION
TO A
COURSE OF LECTURES
ON THE
OPERATIONS OF SURGERY.

BY
THOMAS CHEVALIER, A.M. F.L.S.
SURGEON EXTRAORDINARY TO THE PRINCE OF WALES,
SURGEON TO THE WESTMINSTER GENERAL DISPENSARY,
AND LECTURER ON THE PRINCIPLES AND PRACTICE
OF SURGERY.

SECOND EDITION.

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COURSE OF LECTURES

OPERATIONS OF SURGERY

THOMAS CHEVILLIER, A.M. M.D.

SECOND EDITION

Printed by W. Smith & Son,
King Street, Seven Dials.

PREFACE.

THE following pages contain the substance of an introductory lecture in a course delivered by the author, on the Operations of Surgery, when he first undertook the office of a public teacher. Having afterward been compelled to enlarge the plan of his Lectures, so as to include the other branches of that science, he found it necessary to vary his preliminary address, and published this, in hope that the remarks it contains would be found of service to students.

South Audley Street,
May 1, 1806.

PREFACE

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AN
INTRODUCTION,
&c.

SURGERY is usually understood to be that branch of the healing art, which undertakes the relief or cure of diseases by manual operation; and this definition may be received as tolerably exact; for though it does not immediately convey to the mind the whole duty of a surgeon, it nevertheless includes that by which he is chiefly distinguished, and which he should therefore labour most diligently to attain.

The term **MANUAL OPERATION**, however, in this definition, is by no means intended to be confined to the use of the knife, and other chirurgical instruments; it includes every thing that is done by the hand for the relief or cure of a disease. Hence it is a term of

very wide extent; and equally comprehends the most simple dressing of a sore, with the operation for the Stone, or Bubonoccele.

Indeed no one who would apply himself to the study of Surgery with effect, must disdain to pay a careful attention to those lesser things, about which he is generally first employed, and to begin his practice by making himself master of them. His education must commence, so to speak, by learning the letters of his alphabet. For it is by an exact and ready performance of what is easy, and always to be done, that his mind and his hand are to be first prepared for that which is of higher importance. When that which is simple is fully attained, that which is more complex will be easier understood, and better performed; and it will often be found that the final success of that which is great, very much depends on the accurate execution of that which is little.

But though manual operation is that by which Surgery is chiefly distinguished from Physic, operation itself, considered as a mere mechanical act, is only a small part, and that by no means the most difficult, of the Surgeon's art. Much more is necessary to be known and done, in order to obtain success from an operation, than merely to perform it
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with dexterity. Ability to do this, is undoubtedly a desirable qualification; but to know when it should be done, and why it should be done, as well as how it should be done, and what is necessary to precede it, to accompany it, and to follow it—these are matters both of greater extent, and greater importance, though, I fear, too much neglected by the generality of students. There is a degree of splendor and consequence usually attached to the performance of the greater operations, which powerfully excites the curiosity, and interests the feelings of younger minds: so that students are not unfrequently induced to go about from place to place to see these great sights, which so much amuse them, and fill them with a vain conceit of their own attainments, to the hurt of their most important and necessary studies, and to the neglect of those very things, in which the future exercise of their profession must chiefly consist. I would strongly caution you, at the entrance on your studies, to guard against this propensity. I have elsewhere observed, and I beg leave to press it on your attention, that “to investigate the nature of those diseases in which operations are needful, and to distinguish them from those which are conquer-

able by more gentle means; to ascertain the moment when the knife should be employed, and to determine under what circumstances, and with what medical treatment, it may be used to the greatest advantage; to know precisely in what the operation itself should consist, what should be attempted before it, and what ought to follow after—this is the surgeon's longest, and his hardest task."

I propose therefore in this introductory lecture, to enter somewhat fully into this subject; and as I shall define surgery to be that branch of the healing art which undertakes the relief or cure of diseases requiring manual operation, I wish to premise what I have to say on the operations themselves, by considering what is necessary to enable a surgeon to perform his operations (I will not say with success, for that cannot always be in his power) but at least with full justice to his patient, and honourable satisfaction to himself. I conceive this will be more useful at present than giving you a detail of the history of surgery, which might amuse you more, but would instruct you less, and would therefore be less worthy of your attention and remembrance.

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In every operation, two persons at least are concerned—the surgeon, and his patient,—Let us therefore enquire what is requisite in a surgeon, first with regard to his own personal qualifications, and secondly, respecting his attention to the patient who is under his care.

It cannot, I think, be justly denied, that some personal endowments, which it is not the lot of every man to possess, are necessary to form an accomplished surgeon. A sound understanding, a keen eye, a steady hand, and an intrepid mind, are qualifications of great importance. These must, in some measure, be natural gifts; but they are greatly improveable by study and use.

Indeed I would have no man who enters fairly and zealously on the study of his profession, to be discouraged by an apprehension of his deficiency in natural endowments. The best surgeons, or the best men in any other order of society, are not always to be found among those who set off with an high-flown opinion of their own superior genius. These generally start too quick at first to win the race, and are often obliged at last, like the hare in the fable, to give place to those whom they formerly despised. Care, industry,

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patience,

patience, and perseverance, will surmount very formidable obstacles. They made the once stammering Demosthenes shine forth as the greatest orator of polished Greece, and have often raised the most obscure to eminence and honour. Science is not to be taken by storm; and medical science, above every other, will yield to nothing but vigilance and reflection.

In some degree then, the talents I have mentioned are to be acquired. A man's eye, indeed, must be such as it has pleased God to give him; so also must his understanding: but the eye may be greatly improved by constant use, and application to any particular class of objects; as those who are versed in naval and military tactics remarkably evince. The understanding, we all know, requires cultivation, which includes the collection of knowledge, and avoiding dissipated habits. The hand is considerably influenced by temperance, and improved by use; and both it, and the resolution of the mind will be greatly governed by previous information, and the operator's knowing what he is about.

A liberal, and if possible, a classical education, is highly desirable for a surgeon. No man knows his own profession thoroughly,
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who knows nothing else. The mind is enlarged, and fitted for the fuller comprehension and more perfect combination of ideas, in any one science, by having gained an insight into others. Indeed the more a youth in early life has attained of that information which suited his years, the more vigorously, generally speaking, and the more successfully, will he afterwards apply his talents to any single pursuit to which he may attach himself. —In the study of surgery a knowledge of chemistry, and of natural philosophy in general, will be found highly useful; and especially a knowledge of mechanics. This is a branch of science from a good degree of acquaintance with which, much assistance is frequently to be derived, and much adroitness acquired, in the relief of many accidents and diseases to which a surgeon may be called. Optics likewise should be studied with care, that the structure, use, and diseases of the different parts of the eye, may be thoroughly comprehended, and proper modes of relieving them ascertained.

I would not however be thought, for a moment, to encourage a roving and unsettled turn of mind, which should make amusement a very prime object. Nothing can be more

destructive to the usefulness and advantage of a surgeon. He should indeed endeavour so far to obtain an acquaintance with science at large, that he may derive from it all the light it can throw on any part of his profession, that he may associate with comfort and respect among scientific men, and that he may be able to ensure a certain degree of confidence and respect from his patients; such of them at least, whose respect is worth having. But after all, his business must be his business. No collateral attainments will compensate for deficiency in that. However men may be prepossessed in favour of a surgeon from the brilliancy of his conversation, or the sprightliness of his wit, they will at last judge of him, and will also speak of him, according to the discernment he discovers in the treatment of their complaints.

From these observations I think it will appear, that the first qualification a surgeon should aim to possess, is a knowledge of those diseases which it is his province to remedy: and in order to this, in addition to what I have already mentioned, the following things are principally necessary—A knowledge of human anatomy—Sufficient opportunities of seeing the diseases themselves—An habit of accurate

accurate observation—And careful reasoning on the facts which come before him.

It cannot appear strange that I should place a knowledge of human anatomy as the first requisite to a knowledge of diseases.—Who can thoroughly understand the derangement of any compounded machine, that is unacquainted with its proper and ordinary structure? Or if by chance, or in imitation of what he has seen others do, he should detect, or relieve a disease, how confined and unsatisfactory must his knowledge be! How little is he to be depended upon in those trying emergencies of pain and alarm, to which the weakness and mortality of human nature so often expose us, and in which the help of the surgeon is anxiously looked up to, as the patient's only resource!

On this subject, I beg leave to observe to you, that attendance on anatomical lectures, though indispensably necessary, is yet of itself insufficient to teach you anatomy. You must dissect with your own hands, and find out the parts as they lie, that you may be able to know and distinguish them, when surrounded with the fat, membrane, and other substances with which they are naturally connected, but from which they must necessarily be cleared

cleared before they are brought up for demonstration in a lecture room. In learning anatomy, for chirurgical purposes especially, it is highly necessary to pay great attention to the relative situation of parts with respect to each other, so that each one may put you in mind of its neighbour, and that whatever part of the body be injured, or diseased, the neck, for instance, or the wrist, or any other, you may know all the parts which are contained in it, and how they lie, and how they are connected. How else will you be able to remedy the accidents to which those parts are exposed, or venture with your knife to operate upon them?

In learning anatomy, although every part should be studied, and none can be wholly useless, or unimportant, some are more essential to be thoroughly and minutely understood, than others. A physician would perhaps interest himself most particularly about the viscera, the contents of the cranium, and the fauces: but a surgeon, in addition to these, should pay particular attention to many other parts, some of which are in common too superficially studied; for example, to the structure of the joints. I do not mean merely to the bony surfaces which come in
contact

contact with each other in the joints, but likewise to the ligaments by which they are connected together, and the muscles, tendons, and processes of bone by which they are surrounded. Study also the projecting points of the bones with great care, and make yourselves familiar with the lines that may be drawn from one point to another. But most of all attend carefully to the blood-vessels, especially the arteries. These should, as Mr. John Bell has well observed, “ be as familiar “ to the surgeon as his name; he may else “ do, or neglect to do, things which he will “ all his life afterward tremble to think of.” The arteries must be studied not merely in preparations dried, or ready dissected, but as they lie in the recent body, with their contiguous nerves, veins, glands, &c. The course of the principal nerves should also be thoroughly known, and the minuter branches of several of them, particularly traced.

It will be found an useful practice, whenever an opportunity offers, to cut down in an entire subject, or limb, upon those arteries, nerves, &c. which you may be called upon to tie, or to divide, or to avoid, in peculiar accidents and operations. By this means you will become more familiar with them, and
more

more perfectly recollect their situation, as they lie naturally, under the integuments, in the living body.

I would further recommend that in dissecting you should make frequent use of the left hand. It will often be found convenient to use it in operating, and an ease and readiness in using it, can only be attained by frequently employing it.

It has been said by some persons, that so much minuteness in learning anatomy is superfluous; that the occasions are very rare indeed where a very accurate acquaintance with it is required; nay, that perhaps such occasions never occur to a great majority of surgeons; that it is therefore sufficient to learn the general outline, and the more important parts, and leave all the rest to lecturers. Now although I cannot admit this reasoning, yet supposing it to be just, it will form no objection against the necessity of accurately studying anatomy at first. For who ever remembered all he learned? The mind of no man can retain all that it receives. A considerable part will always be forgotten, except the impressions be frequently renewed. He therefore who only learns the outline of anatomy, will certainly forget a
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part of that outline, even though he make himself ever so thoroughly acquainted with it at first. But if he will carry his attention further, and make himself master of the minuter structure, he will indeed forget a part of this, but the great features will be fixed in his remembrance, with a degree of precision and permanence they would never otherwise have acquired.

The science of physiology is so intimately connected with anatomy, that I need scarcely press it upon your notice. Indeed physiology is so bewitching a thing, that it is very apt to take up too great a proportion of the attention of students; especially of such as possess a lively and warm imagination. So that I would rather caution you against too hastily attempting to become physiologists. Be anatomists first: physiology, in its most important branches at least, will follow of course, and the rest may afterward easily be learned. But if you amuse yourselves too early by indulging physiological speculations, you will find you are getting on enchanted ground; your attention will be diverted from facts; real substances and things will escape your notice, and you will become theorists, but not practitioners.

Having

Having gained a just idea of the anatomy of the human body, you will enter with great advantage on the study of its diseases. Those which you may have seen before, you must now consider over again; and those which you have not, you will of course more watchfully examine. To this end, large hospitals, and other public charities must be visited; not merely to walk through them, and glance at the patients, but to go to their bedsides, and enquire diligently into the history, symptoms, progress, and circumstances of their complaints, and into the effects of the remedies employed for their relief. Of all the more important particulars take regular and accurate notes. Do not trust too much to memory. Memory is a good faculty; but it will be nothing the better for being too much confided in. Sensible impressions fade if they be not often repeated, or revived by proper memoranda. These, when well made, are of service through life. But let each student take notes for himself, and not be content with merely copying those of others: because it is from his own individual observation that his knowledge must be increased, and from his own individual attainments that

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He must expect his future character will be estimated.

The next requisite therefore to a knowledge of diseases, I have said to consist in the habit of accurate observation. Without this, opportunities will avail but little; and therefore many old practitioners die unexperienced. A man may know very little the more of a disease from having repeatedly seen it: for seeing is not observing, although it is essential to it. Among the thousands who see the flowers of the field, how few know the parts of which any one is composed, or could give an intelligible description of it? Not from any difficulty in the object, or want of capacity in themselves, but merely for want of observation. So it is with diseases. Their phenomena will not enter the mind by mere intuition: they must be marked, distinguished, and compared. To some this task will be easier than to others, but it is nevertheless essential to all. And this shows the great advantage to be derived from an able and experienced tutor, who has trod this ground before, who can point out to the student those things which are most important, and explain those which appear intricate. How-
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ever to assist you in this useful labour, allow me to suggest the following hints.

Observation is observation of something; and observation in surgery, is observation of those things by which the opinion and conduct of the surgeon should be directed, and of those things which they direct him to do. The opinion and conduct of the surgeon must be directed by the local circumstances of the case under his consideration, and by that state of the constitution with which they are connected, or on which they depend.

In what way diseases of the constitution are to be detected, it is not necessary for me here particularly to enquire, as this is generally taught in lectures on the practice of physic. Suffice it therefore to say, that as the diseases of any *part* of the body may be often discovered by reflecting on the functions natural to that part, and comparing them with it's present incapacity to perform them, so the disorders of the system are to be judged of by the derangement we find to have taken place in the functions of the system; and particularly in the circulation of the blood, and what are usually called the *natural functions*.

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With regard to local affections depending on constitutional diseases, much light may frequently be obtained, by enquiring into the duration and history of the case; 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 ideas 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; and I would recommend it to you to accustom yourselves, as far as proper consideration for a suffering patient will allow you, to pay particular attention to the feel of parts under various circumstances of disease, that you may acquire what has been called the *tactus eruditus*, and thus be able to distinguish well between things which have the same, or similar visible appearances.

Among other local marks of disease, it is of great importance for a surgeon to have carefully remarked and distinguished the various appearances produced by what is called inflammation, both on sound and ulcerated

ated surfaces. Inflammation, as we shall afterward have occasion more fully to shew you, is a term not appropriated to one single state of disease, but comprehends many states, which require different management; and in well knowing and discerning the difference between them, and the difference in the mode of treatment by which they are severally removeable, will consist no small part of the knowledge of an able surgeon.

If the time allotted to a single lecture would permit, I might say much more on this subject; but I hope it is not altogether necessary, as from these few remarks you will be able to discover how a student should employ himself in the examination of patients. When we come to treat of the diseases requiring operation, the peculiar circumstances to be enquired into concerning each will be more fully specified. I shall therefore only add, at present, that accuracy of observation, when acquired in the particulars I have named, will naturally extend itself to others, and will at length become quite as easy as a cursory and superficial notice. An accustomed eye will see with one glance a great number of things which are necessary to be remarked, but which escape

escape the attention of an inexperienced, or careless observer.

But all the circumstances which can be noticed by immediate observation, will not in some cases be sufficient to enable the surgeon to form a just decision; I have therefore pointed out the necessity of CAREFUL REASONING, in addition to accurate observation. By reasoning, I now mean a due comparison of the circumstances of the case with each other, and with those facts in anatomy, physiology, and therapeutics, which are applicable to it, and drawing proper conclusions from thence, both as to the opinion you are to form, and the method of treatment you are to adopt. And here you will find reading of similar or analogous cases, recorded by writers of adequate talents and fidelity, of singular assistance; and also those descriptions of single diseases, which have been given by authors who have paid particular attention to them. Our systems of surgery are in many respects defective, yet they often may be perused with advantage, especially under the direction of some intelligent friend, or during large opportunities of comparing the assertions of the writer, with facts and the general practice. Some there are who despise reading, and it

must be confessed that there are many writers on all the branches of medicine, whose works are not worth the perusal; so that a man who should undertake to read every thing, would employ much of his time to a very unprofitable purpose. It is therefore proper for a student to have the advice of some person able to inform him what books he should read, and what parts of them are most worthy of remark. For reading is essential to much improvement. *Ars longa; Vita brevis*—The life of one man, however long, and how extensive soever his opportunities, is much too short, and his powers are much too limited, to investigate every thing for himself. We all are, and all must be, indebted to the labours of others. More especially is it incumbent on the young practitioner to gain all the advantage he can from this source, and to supply his own want of experience by collecting that of other men, and thus storing his mind with the knowledge they have acquired. It is true that reading, without personal and careful observation, will do but very little for practice; but joined with it, it may do very much, and furnish you with resources you could not derive solely from yourselves. Rules are laid down by the most esteemed writers
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on Logic, and by Locke, in his *Thoughts on the Conduct of the Understanding*, for discriminating truth from falsehood, and detecting fallacy in argument, which it will be very beneficial to know and apply, in the perusal of medical writers.

The advantage to be derived from reading will be much increased by attendance on lectures, in which diseases are described, their treatment faithfully detailed, and the operations they render necessary, exhibited; and also by conversation with persons of superior information, and attendance on the meetings of those societies where cases are related, and commented on by persons of sound judgment and ability. In Watts's *Treatise on the Improvement of the Mind* may be found a number of judicious rules, pointing out the best mode of obtaining the advantages peculiar to each of these methods of instruction, and of supplying the defects to which they are severally liable.

In addition to all these modes of acquiring a knowledge of diseases, I must on no account forget to mention the embracing every opportunity to examine morbid parts in the dead body, or after they are removed by operation. For many diseases consist in a

real alteration of structure, the nature of which can only be fully detected by anatomical investigation.

Next to attaining a knowledge of diseases, the surgeon should endeavour to attain a knowledge of remedies, and the way in which they produce their effects. Nor is his attention to be confined to external applications alone; he ought also thoroughly to understand the internal exhibition of medicines, without which, the best external treatment must often fail of its effect. Many diseases which come under the care of the surgeon, are removeable by internal remedies chiefly; some entirely: and in many which can only be cured by an operation, much is to be done by these means, in order to bring the part, or the constitution, into a proper and favourable state, to guard against subsequent symptoms, and to re-establish the health and vigour of the patient.

I cannot therefore agree with those surgeons who consider medical treatment, except in its most obvious branches, as wholly conjectural and uncertain. I have sometimes been so uncharitable as to suppose, they can only do this because they do not understand it. As far as my observation has gone, too little at-
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tention has been hitherto bestowed on this subject, by the major part of students in surgery: and hence, in former and less enlightened times, when men's views were more contracted, and their sentiments in general more illiberal and jealous than now, physicians and surgeons have lived in perpetual warfare: the former considering the latter as their inferiors, and almost their subjects, and treating them with a degree of contempt, which could never have been upheld so long, had not the surgeons exposed themselves to it by their ignorance of the general principles and practice of medicine, and the consequent mistakes into which they fell. In fact, they for a long time so shamefully neglected the medical part of their education, that they were almost unable to do any thing else than apply dressings and perform operations; so that they were continually obliged to call in physicians to their assistance, when any internal medicine was to be prescribed, and too commonly advised operations in cases, where the disease was removeable by a proper use of internal remedies. Certainly, if medicines be improperly, or unnecessarily exhibited, they will disappoint the prescriber, and hence he may become disgusted, and throw that blame on

the science of physic, which he ought to throw on himself. But whoever will devote sufficient time and attention to it, and will make himself properly acquainted with general and internal diseases, as well as local and external ones, will find himself amply repaid by the assistance it will afford him in his future practice, and will often see his way through circumstances, which would else be puzzling and untractable. Medicine, like every other branch of science, has its limits; it is only within these that it can be expected to be useful; nor is it to be despised, or neglected, because it avails nothing beyond them.

But as, after all, many diseases are remediable only by operation, (and in the remaining part of this lecture I shall confine that term to the use of the knife, and other surgical instruments) the student must on no account neglect, in addition to all that has been mentioned, to see operations performed; and must take every opportunity of performing them himself, under proper directions, on the dead body. By this mean his hand will acquire a dexterity and neatness in holding and using the knife, which is of great importance, but which can only be attained
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by practice. In performing operations on the dead body, I would recommend that you should not content yourselves with merely making the incisions: go through all the parts of each operation, beginning with what is preparatory to it, and ending with the proper dressing and bandage. Place the body in the same position that the living subject should be placed in, and make every thing as nearly as possible alike. You will thus imprint the different steps on your memory, and acquire a readiness and method which will be of great advantage to you in your future practice, as it will enable you to avoid in yourselves, and to prevent in others, that confusion and hurry at the time of an operation, by which an operator is sometimes embarrassed, and the mind of his patient disturbed. Facility and order in doing what is necessary to be done, are very essential to the comfort of the surgeon himself, and generally produce a favourable impression of his knowledge and skill on the by-standers.

There are, however, many circumstances in which an operation on the dead subject differs from the same operation on the living; and it will perhaps be of service to you if some of these particulars be pointed out, as it is
highly

highly necessary you should be aware of them, and be prepared for the difficulties they may occasion you.

One important circumstance is, that in many cases the structure of parts is considerably altered or obscured, and their appearance consequently changed, by the accident or disease which has rendered an operation necessary. Suppose, for instance, in a retention of urine, occasioned by a stricture in the urethra, its internal membrane should break, or ulcerate, and the urine be diffused through the surrounding cellular membrane, so that you are obliged to make an opening through the perinæum, into the urethra, behind the stricture, to procure a drain for that which is so effused, and give another exit for a time to what will still be secreted; you will probably find the parts rendered so different in their appearance and depth, from the effusion itself, and the inflammation it has induced, that if you should not be able, on account of the stricture, to pass any instrument along the canal far enough to be a guide for the knife, it will require more steadiness and consideration by far than you might at first have expected, to enable you to perfect your operation. So also in a wound of a large artery,

artery, the blood getting into the cellular membrane will sometimes so obscure the course of the wounded vessel, that without great coolness, patience, and recollection of your anatomical knowledge, you will either be foiled in your attempt to secure it by ligature, or be obliged to make some desperate plunge with the needle, which thus passing, as it were, at random, may probably include parts that ought to be avoided, and produce great future inconvenience to the patient. Indeed when parts have not undergone any particular alteration from disease, there is still a great difference between their apparent depth in the living and in the dead subject: the fulness of the vessels, and the elasticity of all the solids in the living body, give a greater degree of thickness and substance to them, than they can possibly retain when deprived of life.

Another circumstance in which operations on the living body differ from those on the dead, is the hæmorrhage, which in some instances requires peculiar management to restrain it, and in many renders the surface on which the operator is cutting, slippery and indistinct. On this account, as well as from the danger in many cases to be apprehended from loss of blood, pressure should generally
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be applied to the principal vessel or vessels supplying the part on which the operation is performed. When this cannot be done conveniently, or effectually, an assistant should be at hand with soft sponges, gently and neatly to wipe away the blood, as fast as the surface to be cut upon becomes obscured by it. It is worthy of remark, that many smaller arteries which bleed freely when first divided, soon contract and give no further trouble, provided they be in a healthy state. The most troublesome hæmorrhages generally arise, either from arteries whose action has been much augmented by inflammation, or from those which supply parts preternaturally formed, and which, not possessing so perfect a muscularity of structure as the original vessels of the body, are less capable of being stimulated to contraction, and will often continue to pour out blood from their divided orifices in a very troublesome degree.

A living body moreover is susceptible of pain, and is generally, at the time of an operation, rendered still more sensible by the alarm and anxiety which affect the mind. It therefore becomes necessary for a surgeon to pay all proper attention, previous to the commencement of an operation, to secure the
 patient

patient in a proper position, so that he may not injure himself; and to treat him, during its continuance, with all the tenderness that can be shown without sacrificing any thing essential. It has been said, a surgeon should have an eagle's eye, a lion's heart, and a lady's hand—Justice to the case of his patient is certainly his first duty; tenderness the second: they should always, if possible, go hand in hand; but the latter must never take place of the former.

All these hints will tend to show you the necessity of being frequently present at operations on the living body; of endeavouring particularly to see the best operators; of being occasionally near to them, so that you may observe every part of the operations, especially of the more delicate ones; compare them with what you yourselves are able to execute on the dead subject, and thus gain an opportunity of remarking every circumstance which takes place, both before and after, as well as during the actual performance of them. These are the things about which the attention of the student should be employed at such times; nor should he too hastily suffer his mind to be occupied in passing criticisms on the operator; for there
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is a great difference between seeing a thing done, and actually doing it. The same operation too must often vary in many particulars in different cases, and require a different management in some, from what is admissible in others. Concerning all these things, experience alone can enable men to form a correct judgment: so that there is great truth in an observation of Lord Bacon, —*Oportet discentem credere; oportet tamen jam edoctum iudicio suo uti.*—The learner must at first believe what is told him, and concluding whatever he sees done to be right, should mark it carefully, and endeavour thoroughly to understand it, and fix it in his memory: but when he has been fully instructed, he must then throw aside the shackles of education, review the notions he has acquired, consider the reason of all these things, and judge for himself. In short, I do not know which is likely to prove the most superficial practitioner—the student who immediately sets up for a censor of his teachers, or the proficient who takes every thing upon trust.

Having said so much on those things which
should

should be attended to by a surgeon respecting his own qualifications, let us now consider what is necessary for him to regard respecting his patient.

Before undertaking any important operation several things are to be considered. These have been briefly expressed in the following latin verse, which our forefathers have handed down to us:

Quis, quid, ubi, quibus auxiliis, cur, quomodo, quando.

The state, or condition of the patient is a matter of great importance, especially in those operations which are rendered necessary by previous disease, and are not suddenly required by serious accidents. It is proper especially to attend to his age, constitution, and to the present state of his general health: whether he be strong, or debilitated, irritable and low; whether he appear fully equal to the operation, or whether there be any probability of his dying sooner in consequence of it.

With regard to the disease itself, not only its nature is to be taken into the account, but also its particular situation; the length of time it has continued, and whether it be simple, or accompanied with any peculiar circumstances

circumstances, which render a difference in the operation, or in the treatment, necessary.

Why the operation should be performed is another consideration. Is it absolutely necessary? Is any risk incurred by it? and if there be, is the advantage expected fully equal to that risk, and is the probability of success sufficient to justify the exposure to it?

In what is the operation itself to consist, and in what manner may it be most advantageously executed? By what instruments? With what dressing and bandage? Is any preparation by medicine needful? What attendants will be required to do all that is to be done, without confusion and embarrassment?

What situation is most proper? On a bed, a table, or a chair? How should the patient and the operator be placed with respect to each other, and with respect to the light? And to what situation should the patient be removed afterward, that he may be kept quiet, and under circumstances the most favourable to success?

When should the operation be done? Is it necessary immediately, or how long may it be safely delayed; and what advantages are to be

be gained by delaying it, or what by performing it early?

Let it not be thought that by considering these questions, an operator must become hesitating, timid, or unsettled. By no means. This can only happen to weaker minds. He who is habituated to reflect on these points with care, will not be on that account less prompt, bold, or firm, where promptitude, boldness, and firmness are required. The faculty of considering and judging, though complex and numerous in its operations, is comparatively easy when fully attained. Its different steps pass through the mind with wonderful rapidity. Like a new language, it consists of many parts, many words, and many idioms, which must first be learned by much application, pains, and practice; but when it is once acquired, the use of it is as easy, as it is agreeable and useful.

Supposing then an operation to be clearly indicated, and the period proper for performing it sufficiently evident, the next thing necessary is to prepare the mind of the patient, and to communicate to him the opinion that is formed on his case, with sufficient delicacy, and yet with firmness. Let it be considered that the patient is an human being, possessed

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of the faculty of reason, alive to the sense of pain, who has the greatest burden of the case to bear, and demands all that tenderness from the surgeon which the surgeon would himself desire in like circumstances. If therefore the patient should chance to be hesitating and irresolute, if at the same time he should be intelligent and judicious, the nature of the case may as far as possible be explained to him, and he may be reasoned with respecting the necessity and urgency of the operation. But in reasoning with a patient on such a subject, the surgeon, who before has weighed all the circumstances of the case, must not waver to the caprices of his patient, nor appear as though he were in doubt, merely because his patient is so. Having once clearly, and on mature judgment, stated his opinion, unless any thing turn up really to demand a reconsideration of it, he will only diminish the respect and confidence which ought to be reposed in him, by appearing over candid and pliable.

But as all human judgment is liable to error, it is seldom proper, especially in dangerous, or complicated cases, to refuse a consultation with any person of fair character, and approved abilities. In most cases, before
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any of the more serious operations, particularly when the patient is a person of rank, or of large connections in life, two opinions are more satisfactory than one. The blame which illiberal and uninformed people are always ready to throw on the want of success, and the suspicions which may sometimes arise in the minds of persons of a more honourable character, who may hear the case but imperfectly detailed, and yet be asked for their opinion, will be more effectually precluded by the concurrence of two persons, than by the single judgment of one; especially if he be young, comparatively of but little experience, or but little known.

When an operation is determined on, it is always desirable to have the patient in as tranquil a state, and as free from fever, and the causes of fever, as the nature of his case will allow. He is not therefore to be heated by cordials, under the idea of keeping up his spirits; while on the other hand he is not to be incautiously lowered by bleeding, or purging, or other debilitating remedies. It is however generally proper to have the bowels gently emptied, that all irritation from them may be prevented, and that you may give opium, if it should be needed, after the

operation, without apprehension of disadvantage ensuing from the costiveness it is apt to induce, for the first day or two afterward, when opening medicines cannot always be so properly exhibited. But the purging should rarely be carried to a greater extent than this.

It is proper for the operator himself to see that all his instruments, lint, needles, ligatures, bandages, compresses, &c. are in readiness, and are conveniently arranged, and also that his attendants are properly furnished with sponges, basons, towels, warm and cold water, or whatever else is likely to be wanted, before the patient is placed on the table, or bed, or whatever situation is made choice of for the operation. But he should nevertheless above all things guard against all unnecessary fuss, and parade of instruments and preparations; especially in sight of the patient, who naturally enough supposes, if a great deal is to be made ready, a great deal is to be done, and he is of course to suffer it all. Quietness, regularity, and dispatch, are on no occasion more commendable than on this.

In his choice of instruments, a surgeon should always remember, that instruments are only supplements to the hand; that they depend on the guidance of the hand for their whole

whole utility, and ought therefore not to encumber, but to assist it. On this account all complicated, and oddly shaped instruments are to be avoided, if possible. For as no instrument can operate by itself, the more complicated it is, the more unmanageable and uncertain it will generally prove. Consider the end to be answered by an instrument; what it is to do for you, and what kind of help your hand requires to do what is to be done with the greatest certainty, accuracy, and ease to yourself: for, *cæteris paribus*, that which is easiest to you, will, upon the whole, be easiest and safest to your patient.

In perusing the works of some of the older surgeons, one is almost frightened to see the load of instruments they have delineated; and can scarcely help sighing over the miserable patients who were so unfortunate as to be screwed, and bored, and mangled, with what look more like machines for torture, than instruments of relief. No doubt, in many of their contrivances, they totally lost sight of the difference between a dead and a living body, and reasoned like carpenters, rather than surgeons. They were also too fond of parade, and a pompous appearance. If a knife were not crooked, and its handle carved, and

its case of a certain formal make, they would almost have disdained to use it. But “ the
 “ more simple our instruments are, the better.
 “ Our fingers are our first and principle in-
 “ struments; and that capacity and know-
 “ ledge by which they are to be guided, is
 “ the universal instrument, without which all
 “ the rest will be useless.”*

Sometimes during the performance of an operation, accidents occur, which greatly try the firmness, patience, and ability of the surgeon. The division of a large artery unexpectedly, or the discovery of new circumstances in the disease, tend naturally to confuse and agitate the mind. But at the moment when these things occur, he should endeavour to recollect that time is not now to be wasted by regretting what is past, or thinking how it might have been avoided—All that will be proper afterward ; but now, he must promptly and at once consider what is actually the case, just as if he were then first called to it, and act according to the present exigency. In this power of suddenly turning the mind off from the former appearance of the case to the present, just as it would be turned to the case

* *LASSUS. Traité de la Medecine Operatoire—Introd.*

of another patient who might present himself, consists much of that skill and self-possession, which has usually distinguished great operators. It is said of that most accomplished admiral, Sir Francis Drake, who experienced the greatest reverses and difficulties in his profession, perhaps, of any man on record, that when thrown into a new and perplexed situation, his mind immediately, and almost instinctively, went to work, contriving how to extricate himself from it; and that he was never heard on such occasions to spend a moment in reflecting what was past, or speculating on what might come, but was at once, instantaneously, as it were, and wholly employed in thinking what was to be done under the existing circumstances, just as though he had expected them to happen. Such a disposition I would recommend every surgeon to cultivate; but if he would succeed in this attempt, he must remember, it can only result from a thorough knowledge of his profession, and is not to be the reward of ignorance, or rashness.

The most troublesome hæmorrhages, as I have already observed, generally arise from arteries in a diseased state, or arteries supplying new formed parts, which are generally of

a more imperfect texture, and less contractile than those originally forming a part of the aortic system. It is therefore sometimes found more difficult to compress them effectually, or to secure them by ligature, than might at first have been expected. In these cases the application of astringent substances, such as vitriolated lint, sponge, agaric, or spirit of turpentine, will often be useful. But all arteries that continue to bleed, and can be secured by ligature, or by pressure, should be trusted with nothing else. When pressure is employed, it will be a great advantage if it can be applied with equal effect on the outside of the wound; because the intervention of any extraneous substance within it effectually defeats union by the first intention, on every part of the surface over which it extends. Many styptic applications are likewise often productive of the same disadvantages; but cold water may always be safely used, and in many cases with great effect, and is not liable to this objection.

It may be given as a general rule in operations attended with loss of substance, to preserve as much skin as will be necessary to cover the sore, provided it can be done with safety; that is to say, provided it be not in a diseased, or at least, in a suspicious state.

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It is a great labour, comparatively speaking, to the constitution, to form new parts, and especially new skin. It should therefore be saved this labour as much as possible, that the strength may not be too severely tried. It must also be remembered, that skin, distended by a tumour, will often contract very speedily when the distension is removed from it. So that this contraction must be allowed for, and the parts which were exposed, covered, in such cases, if possible, with skin that will lay easily and smoothly over them, and in contact with them, without its being necessary to pull the edges together with a needle and thread, which necessarily introduces an extraneous substance into the part. This, however, must be resorted to in many instances; and adhesive plaister, compress, and bandage are for the most part indispensable: For it is almost always desirable to unite all that can be united by the first intention, and to save the constitution the expence and fatigue of a large suppuration, and of that inflammation by which it must be preceded and accompanied. I know that our brethren of the old school condemned this doctrine, and were wonderfully fond of keeping the sores open, and keeping up a discharge, in
almost

almost every case; as though they thought a disease was always to be ascribed to some secret reservoir of mischief, which would dribble away from the wound. This has most unfortunately been the practice of many in cases of scirrhus and cancer; I am persuaded to the great hurt of their patients. For where a disease is first produced by irritation, as is generally the case with these, it is seldom likely to be subdued by keeping up irritation in the same part: While on the other hand, nothing seems, *a priori*, more likely to prevent a reproduction of it, than healing the sore left after its extirpation, in the speediest and easiest possible manner; a practice now completely justified by ample experience. In diseases of this kind, the sore when it has been allowed to suppurate, will often heal up to a very small compass, and will then begin again to spread, and harden, or shoot out a fungus, which reproduces the disease, and not only defeats the operation, but actually hastens the death of the patient, whose strength has already been so severely tried. Such an occurrence will be more probably, and more effectually prevented by covering the part entirely with skin, and healing it as much as possible by the first intention, which,

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as I have already stated, gives less disturbance both to the part, and to the constitution, than any other curative process.

During an operation, or soon after it, a patient may faint: and where this faintness is to be attributed chiefly to agitation of mind, it may in general be sufficiently counteracted by taking a little cold water, or wine and water, or smelling to vinegar, or volatile salts, and especially by assuring the patient, when he recovers himself a little, that all is going on as it should do:

levantes

———— animum spe finis dura ferentem.

But except where much blood has been lost, or the patient has been previously extremely reduced, or is fatigued by the length of the operation, I do not recommend the practice of giving brandy, or other heating cordials. For though **their** immediate effect may be beneficial, their immediate effect is not their whole effect: they remain, it should be remembered, some time in the system, and will act as a stimulus afterward, when perhaps no stimulus will be wanted.

But supposing an operation to be now happily finished, still the task of the surgeon is
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not at an end. He is next to consider what symptoms may be expected to result from the operation, and to guard against their excess, by proper remedies, suitable diet, position and management.

One unavoidable effect of an operation is pain, arising from the violence done to the nervous fibrils in dividing or stretching them, and also in the subsequent inflammation in which they partake. Now as this pain can be productive of no good, and often is productive of much harm, it is right, as much as possible to prevent and to overcome it. Happily we are possessed of a most efficacious remedy for this purpose, in opium, which may on these occasions be given rather freely. Immediately after any severe operation, it is better to exhibit it in the tincture, than solid; as it acts somewhat more quickly in solution than undissolved. But at some distance of time, when a more gradual and constant effect from it is to be produced, it may frequently be better to give it in the latter form. After an operation of much magnitude, and where a great deal of violence is necessarily committed, such as an amputation, the extirpation of a large tumour, or lithotomy, from forty to sixty, or an hundred drops of the tincture, may

may probably be required for an adult within the first twelve or fifteen hours. If indeed less will quiet the pain, so much need not be given; so that the quantity I have mentioned should not be all given at once, but you may direct twenty, thirty, or forty drops at first, and repeat some afterward, at longer or shorter intervals, as the pain, or restlessness may require. In general, small doses, where large ones are called for, rather increase than lessen the pain, by making the nervous system more irritable, stimulating the vascular system, and producing thirst, and hardness of the pulse.

When large trunks of nerves are divided, as is the case in amputation, it is very common for the muscles, or remaining parts of muscles, supplied from those trunks, to be affected with spasmodic contractions; especially for the first three or four nights. These are to be overcome by a free exhibition of opium, and endeavouring to determine its action to the skin, by joining it with gentle diaphoretics; such as the common saline draught, the *Aqua ammoniæ acetatæ*, *Pulvis contrayervæ compositus*, or a judicious combination of these with other medicines of the same class. Camphor is also, in many instances, of great service,

service, both as it promotes a gentle diaphoresis, and itself counteracts spasm in a considerable degree, without producing that heat, which might, *a priori*, be expected from a medicine of so warm a flavour.

But the free use of opium, however necessary, is sometimes followed with inconveniences, which claim the attention of the surgeon. These are principally head-ach, costiveness, and thirst. The former is often relieved by taking strong coffee; and all its unpleasant effects generally subside when the bowels are gently moved, either spontaneously, or by art. For this purpose a mild glyster may be given with great advantage; and tea may be drank, which generally abates the thirst better than any other beverage, and is itself a sort of antidote to opium. When opium does not occasion perspiration, it frequently produces a tight, hard feel in the pulse of persons not accustomed to it. This must not be mistaken for an inflammatory hardness of pulse: it in general goes off in twenty-four hours, especially if saline medicines, or small doses of *Vinum antimonii*, can be given. With attention to these circumstances, however, opium proves a most valuable

able remedy, the want of which could not be supplied by any other drug.

Another effect of an operation is fever, which is greater or less, according to the magnitude of the operation, and the state, and constitution of the patient. It will likewise, on many occasions, vary somewhat in its character from the remaining influence of the prior disease, and will not therefore always be removed by pursuing one and the same mode of treatment.

In this fever, or rather febrile stage, which follows an operation, two things are to be regarded—the local inflammation of the wounded part, and the alteration which takes place in the state of the circulation. Inflammation of the wounded part must always take place to a certain degree, in order to bring about the healing process, whether that be adhesion, or suppuration; although it is much less in the former than in the latter. This is likewise usually accompanied by some increase of strength or of frequency in the pulse, which is not to be regarded as an unfavourable symptom. When an old disease, which has exhausted the vigour of the patient, and brought on hectic symptoms, is removed by the knife, the constitution frequently feels
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the relief in a few hours; and a great source of irritation being removed, the pulse becomes less frequent, and increases in strength and steadiness. If circumstances of a different nature have preceded, and the patient has been in tolerably good health, and especially if he be of a full and athletic habit, both the frequency and fulness of the pulse become increased by the operation. In the former case little need be done at this time, except to keep the patient quiet, and wait the natural progress of things. In the latter, it is necessary to use means to moderate the inflammation, and even sometimes to take away blood. It happens, however, occasionally, in hectic patients also, that the pulse becomes more frequent after the operation, than it was before. This is not in general a favourable symptom, as it denotes a high degree of irritability in the constitution, which is usually very difficult to overcome, and is very unfavourable to the union of the wound by the first intention. The frequency of the pulse in this case, will not bear the use of the lancet: it requires, in common, somewhat of a middle plan of treatment, neither strictly antiphlogistic, nor cordial. The disturbance excited in the constitution is to be soothed

soothed by proportionate doses of opium, with saline medicines, camphor, &c. Sometimes after the first two or three days, a combination of the decoction or powder of bark with the Aqua ammoniæ acetatæ, or the common saline draught, repeated at proper intervals, will agree best of any thing; for the end to be kept in view, is to diminish the increased irritability of the constitution, without exhausting it's powers. The bowels should be kept free from costiveness, but not purged. The room in which the patient is must be well ventilated, and great attention be paid to quiet, and a tranquil state of his mind. Unnecessary visits from friends are to be forbidden; nor should the patient be allowed to fatigue himself by much conversation. After a day or two, light animal food, and a little wine, or malt liquor, may perhaps be allowed. When the symptoms which come on are of the true inflammatory cast, some of the preparations of antimony, especially the pulvis antimonialis, and the vinum antimonii, will be found very serviceable remedies. But well to distinguish and manage all the modifications of these various symptoms, will require great and vigilant attention, and can only be

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thoroughly taught by experience, and extensive observation.

Another frequent effect of operations in which the knife has been employed is secondary hæmorrhage; a very troublesome, perplexing, and sometimes alarming occurrence. To guard against this, the air of the bed-chamber should be kept of an equal and moderate temperature, and should seldom exceed fifty-five, or at most sixty degrees of Fahrenheit's thermometer. The bed clothes also should be light, and so regulated, both as to quantity and position, that the impulse of the circulation in the wounded part may not be augmented by the stimulus of pressure, or external heat. In dressing up the sore when an operation is finished, it will often tend very much to prevent these after bleedings, if the trunks of the arteries supplying the wounded part, be lightly supported for some length by gentle compression, so that the impulse of the blood may be moderated, and in part lost, before it reach their divided ends. But when, in spite of all these precautions, hæmorrhage does occur, it is to be treated like hæmorrhage under any other circumstances.

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The dressings should not be removed too soon from the part wounded in the operation. Three or four days, or even a longer period, may frequently be suffered to elapse before they are taken off, especially when it is intended to heal any part of the wound by the first intention; unless any particular circumstance should render it necessary to examine the sore earlier. But if there be much discharge, all the dressings must not be allowed to remain on so long as for the discharge, or the bandage, or lint, or plaister which has absorbed it, to become putrid and offensive, which it will do in some instances in a short space of time. In this state it becomes highly acrimonious and irritating, and sometimes produces irrevocable mischief; totally defeating a speedy union, and inoculating the part, as it were, with a new cause of irritation and disease. Great attention should always be paid to the cleanliness of these sores. Nothing is more injurious than filth, which creates a putrid atmosphere about the part, and obstructs all the salutary efforts of nature. A sore that is foul, inflamed, and exceedingly painful from this cause, will often in a sound constitution, put on a clean healthy appear-

ance, and become perfectly easy, in twelve hours, or less, merely from changing the dressings. A sufficient quantity of lint, or rag, or tow, should be applied, if possible, at every dressing, to absorb whatever discharge there is, that it may not run about the surrounding skin, and soil the linen and bed-clothes. But dry lint, when put in contact with a sore of this, or any other description, where it is not intended to continue on for several days, and to form a kind of artificial scab, should not extend over the edges of the sore, except where you are sure it will be sufficiently moistened with the discharge to be removed easily at the next dressing. For if there be not pus enough secreted to answer this purpose, the lint becoming dry and hard cannot be taken off without pain; and where cicatrization has begun, this often tears the tender skin, and obstructs the cure. Guarding the edges with narrow slips of lint spread with ointment, is often a good practice, especially in very irritable sores, and in those where it is necessary to apply some stimulating liquid, that might otherwise run about so as to injure the newly healed, and yet tender edges.

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When suppuration is once fully established, and the febrile stage has subsided, nourishing diet, with a due proportion of wine, or some other fermented liquor, will often greatly promote the cure: and where these are found sufficient, and all is going on well, it will be better not to harass the patient with much medicine. This, however, must frequently be employed; the bark, and other tonics being often indispensable, where the patient is of a weak or irritable habit, and has been much reduced. But where the constitution is of a plethoric or inflammatory cast, light, wholesome diet, and fresh air are generally sufficient, without having recourse to tonics, or cordials of any kind. Indeed they are the best tonics; and those which are taken from the *Materia Medica*, are of little use, nay, they do much harm, where they sicken the patient's stomach, and indispose him to take necessary food. As soon as rest and ease can be enjoyed without opium, it also should always be left off; though not till then. If it be continued longer, it impairs the appetite, increases the irritability of the system, and does much more harm than good. —A change of air will often heal an obstinate
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and irritable sore, remaining after an operation, when all other methods fail of their effect.

I have thus, Gentlemen, gone over the principal circumstances I thought it would be necessary to mention respecting operations in general. Those things which are peculiar to each will be specified as we treat of them afterward. I have said enough, I hope, to convince you, that to learn surgery is a serious undertaking; demanding your close and persevering attention. I would have represented it to you in an easier light, if I could honestly have done so; but I should do you great injustice if I were to persuade you that is easy, which I know to be laborious. As Aristotle once told Alexander the Great, “There is no royal way to geometry,” so I may tell you, there is no royal, or privileged way to surgery. He who expects to arrive at excellence, must walk in the way to excellence. “The science of healing,” to use the words of an elegant writer, “like every other branch of natural knowledge, is not the production of a vigorous imagination, nor

nor a lively invention, but it is the offspring of long and diligent experience; and if a man attempt to learn it in any other way than by going from his study to his patient's bed-side, and returning from thence to his study again, he will find himself mistaken. The human mind may be dazzled by the boldness of her flights, or wounded by the keenness of her speculations; but the subtilty of nature can only be penetrated, by those who submit to become her patient and vigilant servants." *

It is very true that some men by bluster and artifice do get forward. They make a figure, at least for a while, and they get money; and if I could entertain so mean an opinion of you, as to suppose this were ALL you wish, I certainly would not persuade you to take much pains, or to spend much money, in the pursuit of knowledge. But I flatter myself I have been addressing Gentlemen of a very different description; who aim conscientiously to fit themselves for their station in life, and to deserve, as well as to enjoy, the confidence of their fellow creatures. But

* Introduction to Pearson's Principles of Surgery.

this can only be reasonably expected by those, who have laboured to qualify themselves for every exigency. As M. de Rivarol has well observed, “ the great difference between the foolish and the wise, is to be seen in the different methods they take to obtain the very same end. All men wish for success, but few take the way to succeed”.* I have often been inclined to compare a surgeon to some naval or military officer, who has for many years been labouring both with his mind and his hand, to make himself master of his profession: hitherto it has been without any very distinguished effect; he has done what many others about him have done, and but little more; he begins to repent of his toil; but at length he is fixed on to undertake some chief command, and soon the enemy comes in sight—Now all his powers, all his resources, and all the labour of his life, are called forth at once; for on the event of a single hour depend the fame or the infamy of his own character, and perhaps the honour or the disgrace of his country; an hour this, never to be gained by vanity and presumption, and if once lost,

* Disc. Prel. du nouveau Dict. de la Langue Française.
p. 103.

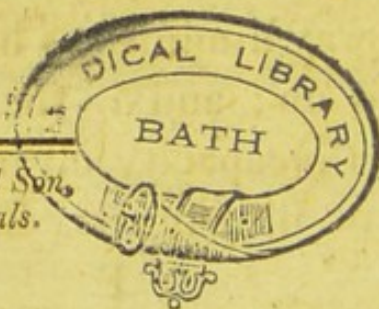
never to be retrieved. Thus in our own art—Knowledge may be long possessed, before it be called forth, but except it be possessed, it will then be called for in vain, and indelible disgrace may at last fix, where permanent honour might have been gained.

To conclude, I beg leave to re-assure you, that the habits of diligence and attention I have recommended, when once acquired, are full as easy, and far more pleasant, than superficial or negligent observation. The principal difficulties are at first. As I observed before, it is like learning a new language; much is to be done, and acquired at the beginning, but when it is learned, and its principles are established in the mind, it is learned for ever—Practice then is all that is required; and this, time and opportunities will furnish. So that the whole which once appeared so formidable, will become natural, easy, 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 of the way diminish as he advances. Only let him go on; and if there be no peculiar defect from incapacity, avarice, frivolity, immorality, or ill-manners, he will at last suc-

ceed. He will gain the approbation of the enlightened and the wise; and what is still more important, the approbation of his own conscience. He will learn by the experience of every day. Even his errors will instruct him: he will recover from their effects, and will enjoy a life of usefulness to others, and of credit and advantage to himself.

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