Scientific Notices.

Comprehending Notices of new Discoveries or Improvements in Science or Art; including, occasionally, singular Medical Cases; Astronomical, Mechanical, Philosophical, Botanical, Meteorological, and Mineralogical Phenomena, or singular Facts in Natural History; Vegetation, &c.; Antiquities, &c.

ANATOMICAL DISSECTIONS.

Some recent committals for disinterring human bodies, for anatomical dissection, have reminded us of our pledge to transfer to the *Kaleidoscope* the whole of the valuable article from the *Westminster Review*, —the first portion of which we now proceed to lay before our readers.

An Appeal to the Public and to the Legislature, on the necessity of affording Dead Bodies to the Schools of Anatomy, by Legislative Enactment. By William Mackenzie.

Every one desires to live as long as he can. Every one values health "above all gold and treasure." Every one knows that, as far as his own individual good is concerned, protracted life and a frame of body sound and strong, free from the thousand pains which flesh is heir to, are unspeakably more important than all other objects, because life and health must be secured before any possible result of any possible circumstance can be of consequence to him. In the improvement of the art which has for its object the preservation of health and life, every individual is, therefore, deeply interested. An enlightened physician and a skilful surgeon are in the daily habit of administering to their fellow men more real and unquestionable good than is communicated, or communicable, by any other class of human beings to another. Ignorant physicians and surgeons are 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; theirs are constant, silent, secret; and it is while they are looked up to as saviours, with the confidence of hope, that they give speed to the progress of disease, and certainty to the stroke of death.

It is deeply to be lamented that the community, in general, are so entirely ignorant of all that relates to the art and the science of medicine. An explanation of 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. In consequence of this want of information, persons neither know what are the attainments of the man in whose hands they place their life, nor what they ought to be; they can neither form an opinion of the course of education which it is incumbent upon him to follow, nor judge of the success with which he has availed himself of the means of knowledge which have been afforded him. There is one branch of medical education in particular, the foundation, in fact, on which the whole superstructure must be raised, the necessity of which is not commonly understood, but which requires only to be stated to be perceived. Perhaps it is impossible to name any one subject which it is of more importance that the community should understand. It is one in which every man's life is deeply implicated: it is one in which every man's ignorance or information will have a considerable influence. We shall, therefore, enter into it with some detail: we shall show the kind of knowledge which it is indispensible that the physician and the surgeon should possess: we shall illustrate, by a reference to particular cases, the reason why this kind of knowledge cannot be dispensed with: and we shall explain, by a statement of facts, the nature and extent of the obstacles which, at present, oppose the acquisition of this knowledge. We repeat, there is no subject in which every reader can be so immediately and deeply interested, and we trust that he will give us his calm and unprejudiced attention.

The basis of all medical and surgical knowledge is anatomy. Not a single step can be made either in medicine or surgery, considered either as an art or a science, without it. This should seem self-evident, and to need neither proof nor illustration; nevertheless, as it is useful occasionly to contemplate the evidence of important truth, we shall show why it is that there can be no rational medicine, and no safe surgery, without a thorough knowledge of anatomy.

Disease, which it is the object of these arts to prevent and to cure, is denoted by disordered function: disordered function cannot be understood without a knowledge of healthy function; healthy function cannot be understood without a knowledge of structure; structure cannot be understood unless it be examined.

The organs on which all the important functions of the human body depend are concealed from the view. There is no possibility of ascertaining their situation and connexions, much less their nature and operation, without inspecting the interior of this curious and complicated machine. The results of the mechanism are visible; the mechanism itself is concealed, and must be investigated to be perceived. The important operations of nature are seldom entirely hidden from the human eye; still less are they obtruded upon it; but over the most curious and wonderful operations of the animal economy so thick a veil is drawn, that they never could have been perceived without the most patient and minute research. The circulation of the blood, for example, never could have been discovered without dissection. Notwithstanding the partial knowledge of anatomy which must have been acquired by the accidents to which the human body is exposed, by attention to wounded men, by the observance of bodies killed by violence; by the huntsman in using his prey; by the priest in immolating his victims; by the augur in pursuing his divinations; by the slaughter of animals; by the dissection of brutes; and even occasionally by the dissection of the human body,—century after century passed away, without a suspicion having been excited of the real functions of the two great systems of vessels, arteries and veins. It was not until the beginning of the 17th century, when anatomy was ardently cultivated, and had made considerable progress, that the valves of the veins and of the heart were discovered; and, subsequently, that the great Harvey, the pupil of the anatomist who discovered the latter, by inspecting the structure of these valves, by contemplating their disposition, by reasoning upon their use, was led to suspect the course of the blood, and afterwards to demonstrate it. Several systems of vessels in which the most important functions of animal life are carried on—the absorbent system, for example, and even that portion of it which receives the food after it is digested, and which conveys it into the blood, are invisible to the naked eye, except under peculiar circumstances; whence it must be evident, not only that the interior of the human body must be laid open, in order that its organs may be seen; but that these organs must be minutely and patiently dissected, in order that their structure may be understood.

The most important diseases have their seat in the organs of the body; an accurate acquaintance with their situation is, therefore, absolutely necessary, in order to ascertain the seats of disease; but, for the reasons already assigned, their situation cannot be learnt, without the study of anatomy. In several regions, organs the most different in structure and function are placed close to each other. In what is termed the epigastric region, for example, are situated the stomach, the liver, the gall bladder, the first portion of the small intestine (the duodenum) and a portion of the large intestine (the colon;) each of these organs is essentially different in structure and in use, and is liable to distinct diseases. Diseases the most diversified, therefore, requiring the most opposite treatment, may exist in the same region of the body; the discrimination of which is absolutely impossible, without that knowledge which the study of anatomy alone can impart.

The seat of pain is often at a great distance from that of the affected organ. In disease of the liver, pain is generally felt at the top of the right shoulder. The right phrenic nerve sends a branch to the liver: the third cervical nerve, from which the phrenic arises, distributes numerous branches to the neighbourhood of the shoulder: thus is established a nervous communication between the shoulder and the liver. This is a fact which nothing but anatomy could teach, and affords the explanation of a symptom which nothing but anatomy could give. The knowledge of it would infallibly correct a mistake into which a person who is ignorant of it would be sure to fall: in fact, persons ignorant of it do constantly commit the error. We have known several instances in which organic disease of the liver has been considered, and treated, as rheumatism of the shoulder. In each of these cases, disease in a most important organ might have been allowed to steal on insidiously until it became incurable: while a person, acquainted with anatomy, would have detected it at once, and cured it without difficulty. Many cases have occurred of persons who have been supposed to labour under disease of the liver, and who have been treated accordingly: on examination after death, the liver has been found perfectly healthy, but there has been discovered extensive disease of the brain. Disease of the liver is often mistaken for disease of the lungs: on the other hand, the lungs have been found full of ulcers, when they were supposed to have been perfectly sound, and when every symptom was referred to disease of the liver. Persons are constantly attacked with convulsions—children especially; convulsions are spasms: spasms, of course, are to be treated by antispasmodics. This is the notion amongst people ignorant of medicine: it is the notion amongst old medical men: it is the notion amongst half-educated young ones. All this time these convulsions are merely a symptom; that symptom depends upon, and denotes, most important disease in the brain: the only chance of saving life, is the prompt and vigorous application of proper remedies to the brain; but the practitioner whose mind is occupied with the symptom, and who prescribes antispasmodics, not only loses the time in which alone any thing can be done to snatch the victim from death, but by his remedies absolutely adds fuel to the flame which is consuming his patient. In disease of the hip-joint pain is felt, not in the hip, but, in the early stage of the disease, at the knee. This also depends on nervous communication. The most dreadful consequences daily occur from an ignorance of this single fact. In all these cases error is inevitable, without a knowledge of anatomy: it is scarcely possible with it: in all these cases error is fatal: in all these cases anatomy alone can prevent the error—anatomy alone can correct it. Experience, so far from leading to its detection, would only establish it in men's minds, and render its removal impossible. What is called experience is of no manner of use to an ignorant, and unreflecting practitioner. In nothing does the adage,—that it is the wise only who profit by experience, receive so complete an illustration as in medicine. A man who is ignorant of certain principles, and who is incapable of reasoning in a certain manner, may have daily before him, for fifty years, cases affording the most complete evidence of their truth, and of the importance of the deduction to which they lead, without observing the one, or deducing the other. Hence the most profoundly ignorant of medicine are often the oldest members of the profession, and those who have had the most extensive practice. A medical education, founded on a knowledge of anatomy, is, therefore, not only indispensible to prevent the most fatal errors, but to enable a person to obtain advantage from those sources of improvement which extensive practice may open to him.

To the surgeon, anatomy is eminently what Bacon has so beautifully said knowledge in general is: it is power—it is power to lessen pain, to save life, and to eradicate diseases, which, without its aid, would be incurable and fatal. It is impossible to convey to the reader a clear conception of this truth, without a reference to particular cases; and the subject is one of such extreme importance, that it may be worth while to direct the attention, for a moment, to two or three of the capital diseases which the surgeon is daily called upon to treat. Aneurism, for example, is a disease of an artery, and consists of a preturnatural dilatation of its coats. This dilatation arises from debility of the vessel, whence, unable to resist the impetus of the blood, it yields, and is dilated into a sac. When once the disease is induced, it commonly goes on to increase with a steady and uninterrupted progress, until at last it suddenly bursts, and the patient expires instantaneously from loss of blood. When left to itself, it almost uniformly proves fatal in this manner; yet, before the time of Galen, no notice was taken of this terrible malady. The ancients, indeed, who believed that the arteries were air tubes, could not possibly have conceived of the existence of an aneurism. Were the number of individuals in Europe, who are now annually cured of aneurism, by the interference of art, to be assumed as the basis of a calculation of the number of persons who must have perished by this disease, from the beginning of the world to the time of Galen, it would convey some conception of the extent to which anatomical knowledge is the means of saving human life.

The only way in which it is possible to cure this disease is, to produce an obliteration of the cavity of the artery. This is the object of the operation. The diseased artery is exposed, and a ligature is passed around it, above the dilatation, by means of which the blood is prevented from flowing into the sac, and inflammation is excited in the vessel; in consequence of which its sides adhere together, and its cavity becomes obliterated. The success of the operation depends entirely on the completeness of the adhesion of the sides of the vessel, and the consequent obliteration of its cavity. This adhesion will not take place unless the portion of the artery to which the ligature is applied be in a sound state. If it be diseased, as it almost always is near the seat of the aneurism, when the process

of nature is completed by which the ligature is removed, hemorrhage takes place, and the patient dies just as if the aneurism had been left to itself. For a long time the ligature was applied as close as possible to the seat of the aneurism: the aneurismal sac was laid open in its whole extent, and the blood it contained was scooped out. The consequence was, that a large deep-seated sore, composed of parts in an unhealthy state, was formed: it was necessary to the cure, that this sore should suppurate, granulate, and heal; a process which the constitution was frequently unable to support. Moreover, there was a constant danger that the patient would perish from hemorrhage, through the want of adhesion of the sides of the artery. The profound knowledge of healthy and of diseased structure, and of the laws of the animal economy by which both are regulated, which John Hunter had acquired from anatomy, suggested to this eminent man a mode of operating, the effect of which, in preserving human life, has placed him high in the rank of the benefactors of his race. This consummate anatomist saw, that the reason why death so often followed the common operation was, because that process which was essential to its success was prevented by the diseased condition of the artery. He perceived that the vessel, at some distance from the aneurism, was in a sound state; and conceived that, if the ligature were applied to this distant part, that is, to a sound instead of a diseased portion of the artery, this necessary process would not be counteracted. To this there was one capital objection, that it would often be necessary to apply the ligature around the main trunk of an artery, before it gives off its branches, in consequence of which the parts below the ligature would be deprived of their supply of blood, and would therefore mortify. So frequent and great are the communications between all the arteries of the body, however, that he thought it probable that a sufficient supply would be borne to these parts through the medium of collateral branches. For an aneurism in the ham, he, therefore, boldly cut down upon the main trunk of the artery which supplies the lower extremity; and applied a ligature around it, where it is seated near the middle of the thigh, in the confident expectation that, though he thus deprived the limb of the supply of blood which it received through its direct channel, it would not perish. His knowledge of the processes of the animal economy led him to expect that the force of the circulation being thus taken off from the aneurismal sac, the progress of the disease would be stopped; that the sac itself, with all its contents, would be absorbed; that by this means the whole tumour would be removed, and that an opening into it would be unnecessary. The most complete success followed this noble experiment, and the sensations which this philosopher experienced when he witnessed the event, must have been exquisite, and have constituted an appropriate reward for the application of profound knowledge to the mitigation of human suffering. After Hunter followed Abernethy, who, treading in the footsteps of his master, for an aneurism of the femoral, placed a ligature around the external iliac artery; lately the internal iliac itself has been taken up, and surgeons have tied arteries of such importance, that they have been themselves astonished at the extent and splendour of their success. Every individual on whom an operation of this kind has been successfully performed, is snatched by it from certain and inevitable death!

The symptom by which an aneurism is distinguished from every other tumour, is, chiefly, its pulsating motion. But when an aneurism has become very large, it ceases to pulsate; and when an abscess is seated near an artery of great magnitude, it acquires a pulsating motion, because the pulsations of the artery are perceptible through the abscess. The real nature of cases of this kind cannot possibly be ascertained, without a most careful investigation, combined with an exact knowledge of the structure and relative position of all the parts in the neighbourhood of the tumour. Pelletan, one of the most distinguished surgeons of France, was one day called to a man who, after a long walk, was seized with a severe pain in the leg, over the seat of which appeared a tumour, which was attended with a pulsation so violent, that it lifted up the hand of the examiner. There seemed every reason to suppose that the case was an aneurismal swelling. This acute observer, however, in comparing the affected with the sound limb, perceived in the latter a similar throbbing. On careful examination he discovered that, by a particular disposition in this individual, one of the main arteries of the leg (the anterior tibial) deviated from its usual course, and instead of plunging deep between the muscles, lay immediately under the skin and fascia. The truth was, that the man, in the exertion of walking, had ruptured some muscular fibres, and the uncommon distribution of the artery gave to this accident these peculiar symptoms. The real nature of this case could not possibly have been ascertained, but by an anatomist. The same surgeon has recorded the case of a man who, having fallen twice from his horse, and experienced, for several years, considerable uneasiness in his back, was at length afflicted with acute pain in the abdomen. At the same time an oval, irregularly circumscribed tumour, made its appearance in the right flank. It presented a distinct fluctuation, and had all the appearance of a collection of matter depending on caries of the vertebræ. The pain was seated chiefly at the lower portion of that part of the spine which forms the back, which was, moreover, distorted; and this might have confirmed the opinion that the case was a lumbar abscess with caries. Pelletan, however, who well knew that an aneurism, as it enlarges, may destroy any bone in its neighbourhood, saw that the disease was an aneurism, and predicted that the patient must perish. On opening the body (for the man lived only ten days after Pelletan first saw him) an aneurismal tumour was discovered, which nearly filled the cavity of the abdomen. If this case had been mistaken for lumbar abscess, and the tumour had been opened with a view of affording an exit to the matter, the man would have died in a few seconds. There is no surgeon of discernment and experience whose attention has not been awakened, and whose sagacity has not been put to the test, by the occurrence of similar cases in his own practice. The consequence of error is almost always instantaneously fatal. The catalogue of such disastrous events is long and melancholy. Richerand has recorded, that Ferrand, head surgeon of the Hotel-Dieu, mistook an aneurism in the armpit for an abscess; plunged his knife into the swelling, and killed the patient. De Haen speaks of a person who died in consequence of an opening which was made, contrary to the advice of Boerhaave in a similar tumour at the knee. Vesalius was consulted about a tumour in the back, which he pronounced to be an aneurism; but an ignorant practitioner having made an opening into it, the patient instantly bled to death. Nothing can be more easy than to confound an aneurism of the artery of the neck with a swelling of the glands in its neighbourhood; with a swelling of the cellular substance which surrounds the artery; with abscesses of various kinds; but if a surgeon were to fall into this error, and to open a carotid aneurism, his patient would certainly be dead in the space of a few moments. It must be evident, then, that a thorough knowledge of anatomy is not only indispensible to the proper treatment of cases of this description, but also to the prevention of the most fatal mistakes.

(To be continued.)

Miscellanies.

METAPHYSICAL BOTHERATION.

MODERN LEARNING EXEMPLIFIED BY A SPECIMEN OF COLLEGIATE EXAMINATION.

By the late Professor Porson.

The following article is stated to have been written some years since, by Mr. Professor Porson, in ridicule of the mode of examination at Oxford:—

METAPHYSICS.

Professor. What is a salt-box?

Student. It is a box made to contain salt.

P. How is it divided?

S. Into a salt-box, and a box of salt.

P. Very well: show the distinction?

S. A salt-box may be where there is no salt; but salt is absolutely necessary to the existence of a box of salt.

P. Are not salt-boxes otherwise divided?

S. Yes, by a partition.

P. What is the use of this division?

S. To separate the fine salt from the coarse.

P. To be sure: to separate the fine salt from the coarse. But are not salt-boxes otherwise distinguished?

S. Yes, into possible, probable, and positive.

P. Define these several kinds of salt-boxes?

S. A *possible* salt-box is a salt-box yet unsold, in the joiner's hands.

P. Why so?

S. Because it hath not yet become a salt-box, having never had any salt in it, and it may possibly be applied to some other use.

P. Very true; for a salt-box which never had, hath not now, and perhaps never may have any salt in it, can only be termed a possible salt-box.—What is a *probable* salt-box?

S. It is a salt-box in the hand of one going to a shop to buy salt, and who hath sixpence in his pocket to pay the shopkeeper. And a *positive* salt box is one which hath actually and *bona-fide* got salt in it.

P. Very good: what other divisions of salt-boxes do you recollect?

S. They are divided into *substantive* and *pendent*; a substantive salt-box is that which stands by itself on the table or dresser, and the pendent is that which hangs by a nail against the wall.

P. What is the idea of a salt-box?

S. It is that image which the mind conceives of a salt-box when no salt is present.

P. What is the abstract idea of a salt-box?

S. It is the idea of a salt-box abstracted from the idea of a box, or of salt, or of a salt box, or of a box of salt.

P. Very right: by this means you acquire a most perfect knowledge of a salt-box: but tell me, is the idea of a salt-box a salt idea?

S. Not unless the ideal box hath the idea of salt contained in it.

P. True: and therefore an abstract idea cannot be either salt or fresh, round or square, long or short; and this shows the difference between a salt idea and an idea of salt. Is an aptitude to hold salt an essential, or an accidental property of a salt-box?

S. It is *essential*: but if there should be a crack in the bottom of the box, the aptitude to spill salt would be termed an *accidental* property of that salt-box.

P. Very well, very well indeed: what is the salt called with respect to the box?

S. It is called its contents.

P. And why so?

S. Because the cook is content, *quo ad hoc*, to find plenty of salt in the box.

P. You are very right. Let us now proceed to

LOGIC.

P. How many parts are there in a salt-box?

S. Three; bottom, top, and sides.

P. How many modes are there in salt-boxes?

S. Four; the formal, the substantial, the accidental, and the topsy-turvy.

P. Define these several modes?

S. The *formal* respects the figure or shape of the box, such as round, square, oblong, &c. The *substantial* respects the work of the joiner; and the *accidental* depends upon the string by which the box is hung against the wall.

P. Very well: what are the consequences of the accidental mode?

S. If the string should break, the box would fall, the salt be spilt, the salt-box broken, and the cook in a passion; and this is the *accidental* mode, with its *consequences*.

P. How do you distinguish between the top and bottom of the salt-box?

S. The top of a box is that part which is uppermost, and the bottom that which is lowest, in all positions.

P. You should rather say, the uppermost part is the top, and the lowest part the bottom. How is it then if the bottom should be uppermost?

S. The top would then be the lowermost, so that the bottom would become the top, and the top would become the bottom; and this is called the *topsy turvy* mode, which is nearly allied to the *accidental*, and frequently arises from it.

P. Very good: but are not salt-boxes sometimes single, and sometimes double?

S. Yes.

P. Well, then, mention the several combinations of salt-boxes, with respect to their having salt or not.

S. They are divided into single salt-boxes, having salt; double salt-boxes, having no salt; double salt-boxes, having salt; and single-double salt-boxes, having salt and no salt.

P. Hold! hold! you are going too far.

Governor of the Institution. We can't allow further time for logic; proceed, of you please, to

NATURAL PHILOSOPHY.

P. Pray, Sir, what is a salt-box?

S. It is a combination of matter, fitted, framed, and joined by the hands of a workman, in the form of a box, and adapted to the purpose of receiving, containing, and retaining salt.

P. Very good: what are the mechanical powers concerned in the construction of a salt-box?

S. The axe, the saw, the plane, and the hammer.

P. How are these powers applied to the purpose intended?

S. The axe to fell the tree, the saw to split the timber.

P. Consider: it is the property of the mall and wedge to *split*.

S. The saw to *slit* the timber, the plane to mooth and thin the boards.

P. How? Take time; take time.