the confusion which still seems to exist in the mind of the most recent writers on this subject.

The patient was rather an intelligent woman for her class, who, having undergone the terrible experience involving her first operation, had obtained a fairly full knowledge of the nature of the accident, and what had been the condition as a consequence. Yet, with this dreadful experience, and the knowledge of it when the same condition recurred, so little did she suffer that, up to the moment of rupture, knowing she was pregnant, she never thought of asking for medical assistance, and this was the case also in her first tubal pregnancy. There were no symptoms whatever to draw attention to her state until the rupture occurred; indeed, there were no symptoms even calling for examination.

The strangest thing of all to me is that, in the enormous experience I have now had of tubal pregnancy, I have never but once been called upon to make an examination until the rupture had occurred, and in that case there was neither history nor symptoms which enabled me to do more than determine that there was tubal occlusion; not, indeed, until the rupture occurred and the abdomen was opened was a diagnosis possible. Under these circumstances, I think I may be excused for maintaining a somewhat sceptical attitude concerning the correctness of the diagnoses of those gentlemen who speak so confidently of making certain diagnosis in cases of tubal pregnancy before the period of rupture, and who speak with equal confidence of curing the cases by a puncture either simple, medicated, or electrolytic.

The great bulk of the utterances in these directions may stand very well in "society discussions" or in "library papers," but they will not stand the test of bedside experience. Upon these points I have been much misrepresented, and am glad to have an opportunity of clearly stating my views; but I wish to state that after the period of rupture a diagnosis can be, and has in my own experience been, made correctly in the majority of instances.

Another point in connection with this interesting case is the fact, made abundantly clear by the preparation, that, no matter what the symptoms had been previous to rupture, physical examination could not have permitted any diagnosis other than that of normal pregnancy of about four months and a half.

This is my solitary experience of interstitial tubal pregnancy, but it so closely resembles a number which I have seen in museums that I take it to be quite typical of its class. I am, therefore, disposed to believe that from physical examination interstitial tubal pregnancy could not be diagnosed, and I can imagine no symptoms which would help us to recognise it before rupture.

If we were to assume that in such a case as this a diagnosis could be made, much ingenious speculation might be indulged in as to what would have been best to do for the patient. If a correct estimate of the relation of parts could have been made, clearly what ought to have been done was to dilate the cervix, divide the septum freely, and empty the cornual cavity. To have attempted to destroy the child would not have benefited the patient one bit. The placenta would have gone on growing; and, even if it had not, putrescible material would have been left, which must have burst into the peritoneal cavity. At the time of rupture, if surgical assistance could have reached the woman with sufficient promptitude, she might have been saved by a hysterectomy; and, from the appearances at the *post-mortem* examination, there is no doubt that this could have been easily accomplished.

THE VIENNA MEDICAL FACULTY.—The prospectus of the Vienna Medical Faculty for the summer semester shows that 192 lectures, courses, and demonstrations will be held during this semester by 19 ordinary professors, 36 extraordinary professors, and 70 *dozenten* and assistants. During the past semester, there were 6,157 students in the different faculties, distributed as follows:—(1) Theology, 225 ordinary and 17 extraordinary students; (2) law, 1,927 ordinary and 256 extraordinary students; (3) medicine, 2,287 ordinary and 836 extraordinary students; (4) philosophy, 438 ordinary and 353 extraordinary students. A comparison of these numbers with those of the winter semester of last year shows an excess of students in the law faculty and an increase among the extraordinary medical students. The number of the ordinary medical students, on the other hand, shows a slight decrease. The extraordinary students were this year, for the most part, foreigners, of whom 109 were Americans, 39 Russians, 36 Englishmen, 28 Prussians, 11 Swiss, 16 Roumanians, 12 Belgians, 7 Greeks, 5 Australians, and 4 Turks.

AN ADDRESS ON THE VALUE OF PRACTICAL STUDIES.

Delivered at the opening of the Summer Session in the School of Practical Physiology, Edinburgh, May 1st, 1888.

By WILLIAM RUTHERFORD, M.D., F.R.S.,
Professor of Institutes of Medicine in the University of Edinburgh.

GENTLEMEN,—Before proceeding to the ordinary work of the session, I should like to direct your attention to some ideas regarding the value of Practical Studies. A short discussion of that subject may be of service to you who are still on the threshold of a life of study. It may help you to perceive the principle that has led your teachers to develop methods of practical study, and to extend them in all the departments of natural science and in those of medicine.

We can acquire a knowledge of Nature in two ways: in a direct way by observing Nature by means of our own senses, and in an indirect way by listening to and by reading an account of the observations of others. All natural science springs from the observation of Nature. To assist our observation various instruments have been invented, and various experimental methods devised to induce Nature to reveal her secrets. The facts so discovered and the laws deduced from them have been marshalled in the orderly array that forms the characteristic feature of science.

The first and obvious duty of the student is to gain a knowledge of what is already known. He is not immediately concerned with the advancement of science, but with the attainment of a knowledge of its facts and principles, and the methods by which a scientific knowledge of Nature has been gained. The old method of instruction in too many departments of natural and of medical science consisted in the mere absorption of statements made by lecturers and authors, without production of the necessary evidence of their truth, and with imperfect illustration and explanation of the methods by which the evidence has been obtained. The result of such modes of teaching could not be satisfactory. The student's interest in the subject was not sufficiently awakened. The knowledge he gained was superficial, as, indeed, it could not otherwise be on a method so imperfect. The mode of instruction now aimed at in all departments of natural science is to bring the student as directly as possible into contact with Nature, so that he may have not a mere description or exposition such as may be found in a book, but may, as far as possible, study phenomena directly by the use of his own senses, so that when an object is described he may, if possible, see it with his own eyes, touch it with his own hands, listen to it with his own ears, and, if necessary, smell it and taste it. On such a method of instruction the student is not treated as a mere absorber of the statements of others, but as an independent observer, requiring a demonstration of the truth of what is said, expecting that structure will be shown to him, that the properties of things will be revealed by experiment, that methods of observation and experiment will be demonstrated and explained, and that he will, as far as possible, be allowed to observe and experiment for himself. This practical study of Nature is attractive to all, but especially so to young minds. The mind at any age, but especially in youth, is apt to grow weary of abstract statements, and to lose sympathy with a subject so treated. The young mind is enthusiastic, it is eagerly expectant, and keenly on the outlook for new impressions. It is not satisfied with mere descriptions of phenomena. It desires to realise them by direct inspection. Such desire is so natural that one can only wonder why so many years elapsed before a serious effort was made to satisfy it. This method of studying Nature by contact with it inspires a confidence that is not otherwise attainable. The mind feels the solid support given by the direct study of phenomena; it feels itself on solid ground, and can advance with firm step. When by this method the student criticises and tests anew the observations made by others, they become to him living impressions printed on his mind in a way they never can be by merely listening to, and still less by reading descriptions of them. The student soon comes to feel that this practical method of study is the surest way to acquire definite

and accurate knowledge of scientific facts. But in his eagerness to learn the facts, he is apt to lose sight of another mental process that is being cultivated while his category of facts is growing: he is apt to overlook the fact that a great and leading object in practical studies is to quicken and increase the power of making accurate and independent observations.

To any student of Nature the exercise of such power is important, but it is doubly so to a student of medicine. The practice of medicine largely consists in an exercise of observing power. The correct diagnosis of disease requires this power to be acute and highly trained. It not infrequently happens that the early stage of a disease passes undetected because the physician has failed to observe some symptom that is imperfectly developed, and, therefore, apt to escape attention, unless his power of observation be acute and highly trained. It is often the case that a practitioner does not sufficiently use the ophthalmoscope, the laryngoscope, the microscope, and other appliances which would help him in the diagnosis of disease, but of which he cannot with confidence avail himself, because in his student days he had no opportunity of learning how to make reliable observations with such instruments.

I need scarcely remind you how greatly men differ in their power of observation. If you listen to travellers giving an account of the impressions they have received in the countries and cities they have visited, you will find they vary very much in the use they have made of their eyes; some men let few things escape their notice, others have only vague impressions of what they have witnessed. Some men have that power of precision which enables them to fix their attention firmly on an object until they have thoroughly scrutinised it, and have obtained from it a deep and lasting impression. Such men apply their minds thoroughly to the subject on hand. They proceed methodically; they avoid flitting rapidly from one subject to another, knowing that by such butterfly method an abiding impression is not attainable. On the other hand, there are many whose minds have no firm grasp; their eyes are open but they fail to see; their impressions are vague and indefinite; they hesitate to describe what they have seen because they cannot exactly recall the impressions. The usual explanation is that the mind was not firmly fixed on the object, and the mental vision was not steadily turned towards it.

We shall not require to travel very far to have such experience of the difference in men's powers of observation. It is soon obtained when a number of observers put their eyes to the microscope: all may be looking at objects precisely similar, but if the different observers be called upon to describe what they see, we quickly find great differences in observing power. I assure you, gentlemen, that this is a subject of great moment to every one of you—especially great to those who intend to pursue medical science and practice. Your power of observation must be carefully and widely trained. You must strive to fix the mind so firmly on every object your teachers place before you that the power of acute and accurate observation may grow steadily; it is sure to grow steadily if you will only refuse to be satisfied with impressions that are vague and indefinite. The power of precise and accurate observation depends far more on the mind than on the organs of sense. Most men's eyes are good enough, the relative acuteness of their vision is mainly the result of a mental cause.

Again, in relation to the exercise of the power of observation, there is a principle of no small importance from an educational point of view. There are some practical studies which from their nature must be undertaken by the student working in an isolated manner; practical anatomy is one of these. As you know, it is necessary in the dissecting-room for each student to pursue his own way without reference to his fellows. He works out the subject with a book of reference by his side, and with the help of a teacher at intervals. There are several other subjects, of which practical physiology and practical pathology are illustrations, in which a collective system of study is adopted. On that system the teacher treats his pupils like a regiment, directing them all to perform the same operations and to observe the same facts at the same time. That system has been to so great an extent originated and developed in this university that it might almost be called the Edinburgh method of practical teaching. This method has now been adopted in a number of other schools, yet I have heard it adversely criticised by teachers in the South, who prefer the system of isolated study, on the plea that a student who is quick in thought and movement ought not to be hampered and held back by those less rapid, and that self-reliance is fostered by isolated effort. Well, gentlemen, I believe our regimental system

of practical teaching has for you great advantages that far outweigh any drawbacks. Taking work with the microscope as an illustration, it is for you and still more for the teacher a great saving of time to be collectively told how to prepare an object for the microscope, and how to observe its several characters. You save a great deal of time by keeping your eye at the microscope while information regarding the object is not being sought for in a book, but is reaching you through another organ of sense which more than any other stimulates the mind and keeps it vividly awake.

Microscopic study is apt to proceed very slowly if information is being searched for in a book. But it proceeds smoothly and quickly if the information come through the ear. To you who have so much to acquire in a limited period, any method that economises your time is important. But our regimental system has another great advantage that isolated study never can have; it creates at once a congenial mental atmosphere; each hourly section of our class becomes a miniature scientific world, in which one mind reacts upon another, and stimulates it by sympathetic rivalry. In such an atmosphere the observer is at once thrown on his guard, for he knows that the same object is being looked at by many eyes, and that the accuracy of his description is being keenly scrutinised. Such an atmosphere seems to me of great value to young minds, for we all know that a characteristic feature of youth is desire for sympathy and love of generous rivalry. That mental glow we call "enthusiasm," which in youth is so readily kindled and fanned by the sympathy of other minds, is an invaluable help in study; it lightens labour, it carries the mind up different paths to high attainments, and induces it to forget its fatigues; therefore, it is our duty to do what we can to enable you to foster a spirit so helpful.

At the same time, gentlemen, I must guard myself against misapprehension in thus commending to you what I have termed the regimental system of practical study. That system must not be pushed too far. It is particularly suitable for beginners, and should for them be adopted in all subjects that permit of it. But for the advanced student the method of isolated study is preferable, in subjects characterised by elaborate practical details, requiring much time and thought for their execution, and for the full apprehension of their significance.

But practical studies carry with them another advantage especially important to students of medicine, namely, cultivation of the power of manipulation. You have all, no doubt, felt how rapidly manipulative dexterity is cultivated by the practice of dissection, and you know that, from a surgical point of view, it is nearly as important to acquire a dexterous use of the knife as it is to gain a knowledge of anatomy. Not a few medical practitioners make no use of the laryngoscope, because the use of a mirror at the extremity of a handle and the management of the light thrown upon it require considerable manipulative dexterity. Many a practitioner would refuse to perform such operations on the eye as iridectomy and extraction of the lens because he may have had no opportunity of practising such operations on dead eyes, under the supervision of a teacher. And I have heard not a few medical men bitterly complain that in their student days there were no arrangements by which on suitable models they could acquire the manipulative dexterity so essential in many obstetrical operations. It is a matter of common observation that men differ greatly in manipulative power. Some men are clever with their hands, quick and precise, and delicate in movement, accomplishing a practical result fluently; in others the hands accomplish their task with difficulty, there is lack of precision, and the result may be failure. Such difficulties are always diminished, and sometimes entirely overcome, by practical studies.

The Medical School of Edinburgh can lay claim to no small share in the development of practical teaching. In former years the development was denounced as a needless innovation by those who were victims of the curious popular delusion that the old times were good enough, and required little improvement. Believe me, the Medical School of Edinburgh goes far better now than it did twenty years ago; some of us have often turned the eye back to our student days and have marvelled at the change. Practical teaching has been developed in nearly every department, and every year adds something to its efficiency, for though much has been accomplished, we have to keep in mind that the principles and methods of education are problems full of difficulty and perplexity, and that a perfect system can only grow by degrees. But while pointing out the great development of practical

teaching in Edinburgh, I would not have you suppose that in this respect we stand alone. Many teachers have gone from this to other medical schools and have carried with them our methods, and have planted them there. And indeed all the medical schools of England and Ireland, as well as those of Scotland, have been making rapid progress in the attempt to raise the standard of attainment in every student of medicine by providing him with increased facilities for study in every department. To those of us who are familiar with the results both of the old and of the new systems of medical education, the great benefit of the newer method is apparent.

But although we have taken the right way in bringing the young mind more and more into direct contact with Nature, we must ask you not to fall into the error of supposing that a practical mode of study can ever supersede the older method by means of lectures. It would be impossible for one mind to observe independently all the facts of any science, even if it had all the means at its command. How much more impossible must it be for any one of you to observe independently the great mass of facts in the many sciences you have to learn within a limited period of time. In practical studies salient points have to be selected and many others omitted. The systematic lecture must always remain as a systematised exposition in which facts and principles are arrayed, not in the order that might be necessary for practical study, but in the order required to produce a lucid conception of the subject. Both methods are necessary to enable the mind to gain a definite knowledge of detail, and a sufficiently wide conception of any science that deals with physical nature.

I have now seen a good many years of student life, and have watched the results of a good many educational experiments, and as the result of the experience, the advice I offer you is to attend all the practical classes you can. Give no heed to their being compulsory or non-compulsory, for with their help you can obtain a kind of education which you never can find in books or get from lectures; and when you leave the university and pass into medical practice you will find the opportunity gone.

NOTES OF A CASE OF CHOLECYSTOTOMY: RECOVERY.

By RUTHERFORD MORISON, F.R.C.S., M.D. Edin.,
Late Visiting Medical Officer, Hartlepool Hospital, Newcastle-upon-Tyne.

H. P., aged 45, married, was the mother of six living children, and had had four miscarriages. The patient was an active, intelligent-looking woman, with nervous complexion and features, black hair and bright brown eyes. She was in good condition, though thinner than formerly. She had been occasionally intemperate. The organs, with the exception mentioned below, were healthy. Menstruation had been irregular lately, and for the last four years profuse. The tongue was furred, appetite poor, and bowels irregular.

She had never felt well since a miscarriage, her last pregnancy, eight years ago, and had had pain in her right side from that date. So far as she could judge, the pain had always been of the same nature as that of which she now complained. The attacks of pain started in the right side over the liver, and extended to the right shoulder and epigastrium. They were accompanied by vomiting and shivering, and made her so ill that she was obliged to stay in bed. Latterly the attacks had increased in number and severity, so that three or four days of each week had been spent in bed. The bad fits always terminated by diarrhoea. Exercise brought on these attacks.

The lump was first discovered by herself four years ago. It was tender then, and had remained so throughout, but was worse sometimes than others. She said that it became decidedly less and not so sensitive after the purging.

Examination discovered a round, hard swelling in the position of the gall-bladder, about the size of an orange, and moving freely up and down with respiration. Puncture with a hypodermic syringe showed its contents to be the ordinary opalescent mucous fluid of a distended gall-bladder.

The operation was performed on February 29th, the tumour being exposed by a vertical incision through the abdominal parietes, immediately over it, from two to three inches long. After placing a couple of small sponges behind the distended gall-bladder, an aspirator needle was introduced at the fundus, and six ounces of opalescent fluid removed. The front wall of the

gall-bladder was now drawn forwards by two pairs of ordinary artery forceps, and opened sufficiently between them to admit easily my forefinger. Between fifty and sixty small round stones, the largest being no bigger than a pea, were scooped out with my finger, and washed out with a Higginson's syringe. The gall-bladder was sponged dry, the bile-ducts explored without finding anything, and the sponges removed from the abdominal cavity.

The only serious difficulty in the operation occurred at this time. One of the sponges was lost amongst the intestines, and before I could find it I was obliged to enlarge the incision. In future the sponges shall be under my control with ligature or forceps. The difficulty of finding them has to be experienced to be believed. The edges of the thickened gall-bladder were now fixed to the abdominal wall, including the peritoneum, by a continuous suture, the edges of the wound brought together above and below with interrupted sutures, a rubber drainage-tube left in the bladder, and the wound dressed with carbolic gauze and a wood-wool pad. The operation throughout was conducted with antiseptic precautions.

The after-progress was uneventful. The patient got up on the ninth day, and went home some distance by rail on the seventeenth day. The wound was entirely healed at the end of five weeks, and her health is now as good as it ever was, and better than it has been for years.

A CASE OF TRAUMATIC CEPHAL-HYDROCELE.

By F. A. SOUTHAM, M.B. Oxon., F.R.C.S.,

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As cases of traumatic cephal-hydrocele—the term now applied to a tumour formed by an accumulation of cerebro-spinal fluid beneath the scalp, occurring as a complication of simple fracture of the vault of the skull—are somewhat rare, the following instance is perhaps worthy of record.

The patient, a male child, aged 6 months, was admitted into the hospital under my colleague, Mr. Heath, on December 28th, 1887, suffering from an injury to the head, the result of a fall down a flight of stairs the previous evening. The mother stated that when taken up the child was in an unconscious state, and re-

mained so during the night. On admission the following morning he was sensible, though somewhat drowsy; there was right ptosis, with slight conjugate deviation of the eyeballs towards the right side; the pupils were equal, neither contracted nor dilated. On examining the head a fracture was found running obliquely across the parietal and occipital region on the right side, causing a deep, oval, gutter-shaped depression, two inches and a half in length, one inch in width. There was no bruising of the skin, and no