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KINGSTON MEDICAL QUARTERLY.

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NO. 3

INTERPROVINCIAL REGISTRATION.

WE have received a copy of the Report of the Committee appointed by the Canadian Medical Association to consider and report upon the question of Interprovincial Registration. The Report is an evidence that the Committee has given this important question full and careful consideration, and displays a desire upon the part of the members to arrive at some basis of agreement satisfactory to all the Provinces, and thus do away with the anomalous, we were about to say absurd, state of affairs now existing. Perhaps this desire to please all has led the Committee to adopt a Report which it would not have adopted had it been unhampered by the regulations of the various existing Provincial Councils. In this belief any criticism which we now make upon the Report is prompted not by a desire to find fault with the Committee's work, but in what we consider the best interests of the profession and the public. We propose to consider the Report first, and then we will offer some suggestions upon the general question of a License to practise Medicine in this country.

The report is divided into three sections. We will deal with each in order.

1. Matriculation. The subjects of study upon which a candidate for matriculation is required to pass an examination are such as no doubt would be accepted by all the Councils. Were we to offer any criticisms upon this part of the Report it would be that the standard is not high enough. Here, however, the Committee evidently desire to make a recommendation which would

be acceptable to all. We have always felt that the matriculation examination might well be raised. As the Committee later on recommends that diseases of the eye and ear be a compulsory part of the course, would it not be well to include in the matriculation the elements of optics and acoustics? The Committee has included in the matriculation, elementary chemistry. Why not go a step farther and make the chemistry required for matriculation equivalent to what is now required on this subject during the first year of the student's professional studies? In this way the time required for purely theoretical work during the course would be reduced and thus more time could be devoted to practical work.

The standard for passing recommended by the Committee viz. 50%, is none too high and ought to be accepted by all.

It is recommended that a degree in Arts from any University in Her Majesty's Dominions be excepted in lieu of the matriculation. With this all will agree. The matriculation examination of the same universities, however, it is proposed shall not be accepted. Why? If the matriculation examination of any of these universities does not include the subjects recommended by the Committee well and good. Such examination ought not to be accepted. But why not accept these examinations in so far as they are the same, or perhaps even of a higher standard than that recommended? Were this done, then a candidate for matriculation in medicine would be required to pass an examination only upon those subjects upon which he had not been required to pass for his Arts matriculation. Surely this is reasonable, and in no way would impair the standard of matriculation set up by the Committee.

One point more regarding this matriculation. By whom is this examination to be held? By the Councils of the various Provinces, we infer. What guarantee is there that the examination would be of a uniform standard? The subjects of examination, it is true, would be the same in all cases, but, as everyone knows, one set of examiners could give a very easy examination, and another set a very difficult one. If then, we are to accept the matriculation examination as conducted by half a dozen differ-

ent Councils, why not accept, as we already said, the examination upon these same subjects as conducted by the universities?

2. Professional education. The course of studies recommended by the Committee is practically that already by the various Councils with two exceptions. The first exception is that the course adopted is limited to four years. Ontario now requires five. We must confess that in this we are with the Committee and against Ontario. We favour raising the standard of matriculation rather than lengthening the course. The vast majority of the people of this country are not wealthy and cannot afford to keep their sons at college for five years. Many of the medical students of to-day are earning the money to prosecute their studies. These are the very men who make the best students, and we think, we may say, the best practitioners. Why, then, hamper them in their laudable ambition by increasing their difficulties financially?

The other recommendation to which we wish to call attention is that the session shall be eight months long. We must emphatically disapprove of this recommendation. As we have already dealt with this matter in the January number of *THE KINGSTON MEDICAL QUARTERLY*, we will content ourselves by simply entering our protest and referring any one who cares to know our objections to that publication.

3. Examinations: It is recommended that all candidates for license be required to pass examinations upon all the subjects of the curriculum and attain the standard of 50% upon each subject. To this there can be no objection. Here, however, as in the case of matriculation, the examinations are to be held by the various Councils. Will those examinations be uniformly difficult? If not, will the Councils continue to accept the licenses of each other when it is felt that a license is more easily obtained in one Province than in another?

So much for the report of the Committee. To the Committee we would further say we recognize the difficulty of the task upon which they have been deliberating, and our criticism has not been made with the idea of finding fault with their work, but rather with the object of showing the difficulties attending any scheme which aims at the obtaining a license good for the whole Domin-

ion, where these licenses are granted by a number of independent bodies. This brings us to a larger question of a Dominion License. We are aware that matters of education are in the hands of the various Provinces, and that the various Provinces have established each a Council of its own. Even if these various Councils should to-day accept a common standard for license, would each be content to remain stationary? If not, and any one Council wished to make an advance, would the others be willing to advance to a similar degree? If not, would to-day's agreement hold back the Council desiring to advance, or would the agreement be broken, leaving us just where we are now? These, it seems to us, are pertinent questions, and till they are satisfactorily answered we fear an Inter-Provincial License is still in the dim future. Can a Dominion Council be established? If so many, if not all, of the difficulties would vanish and a practitioner holding such a license would be free to practise his profession in any part of the Dominion. A Dominion Council could be established only by the consent of the Provincial Councils, or upon the petition of the members of the profession throughout the Dominion to have the Constitution changed so as to permit such a step. Would it not be well for the "Canadian Medical Association" to drop this question of Inter-Provincial Registration which is so beset with difficulties both present and future, and consider the wider, and to our mind, the more feasible question of a Dominion Council with a Dominion License.

CLINICAL NOTES IN SURGICAL PRACTICE.

DIAGNOSTIC DIFFICULTIES IN PELVIC SURGERY.

NOT very long ago I heard an abdominal surgeon, whose reputation is beyond reproach, say that when he was younger he could always make a diagnosis before the abdomen was opened, but as his experience grew greater he did not feel quite so sure in every case. About the same time I heard an equally good surgeon, when speaking of pelvic tumors, remark, that with our present knowledge of pathology we ought to be able to say with certainty what will be found before the abdomen is opened.

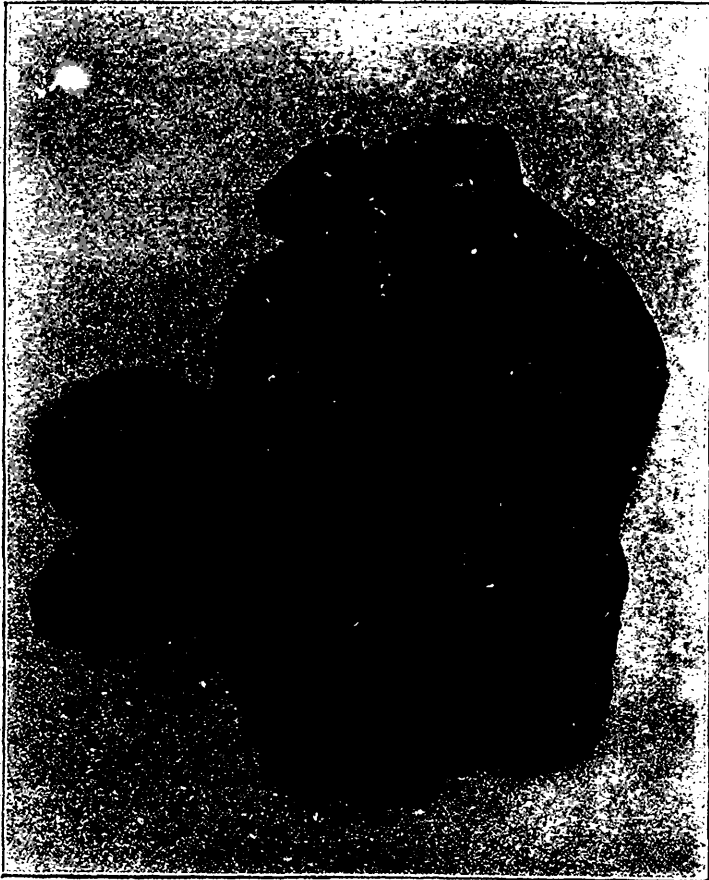
With two statements so diametrical I may be excused if I present the clinical history of a few cases in which there were unusual symptoms, or in which some of the usual symptoms were absent or masked by unusual conditions, to show that diagnosis before incision is often difficult.

Case 1.—Mrs. S., aged thirty, married, two children, personal and family history good, had no miscarriages, menstruation regular; her last menstrual period, which had just been completed when I saw her, was normal in amount of discharge and length of time. She never had any attack of acute pain in the pelvis, but for some time she had experienced a feeling of weight and a dragging sensation, with some shooting pains down the back of the thighs. Her general health was somewhat impaired, her features had an anxious pinched look, and her skin was rather pale. Bimanual examination revealed a large doughy tumor, well rounded off, occupying the left pelvic region, and extending across somewhat towards the opposite side. The tumor could be distinctly felt in the hypogastric and left iliac regions. The uterus was pushed to the right side and closely packed against the pubic arch. The sound entered it to the extent of three inches and with it *in situ* the fundus could be made out behind and above the pubes. Incision was made, and on examination the dome of the tumor proved to be the pelvic peritoneum, raised up and covered with portions of the sigmoid flexure, its mesentery on the inner side entering into the formation of the serous coat of the tumor. It was a pelvic hæmatocele. The abdominal wound was closed at once and the hæmatocele freely opened by an incision through the vagina. About two pints of tarry fluid escaped by this route, and after a period of four weeks she returned home.

Case 2.—Mrs. A., married, the mother of several children, the last three years old. Her monthly periods had always been regular and normal until the last three or four, in which at each time she had profuse and prolonged menstruation. Her other symptoms were almost identical with case No. 1. Bimanual examination revealed a hard tense tumor occupying the same region. The uterus occupied the same position and was of the same length but did not seem quite so moveable. On incision a small thin walled translucent cyst, about the size of the fist and containing a clear or straw-colored liquid, presented in the wound, together with coils of small intestines. This cyst ruptured on handling, as did also the second one which subsequently presented. The collapsed walls could be traced down to the posterior surface of the tumor between it and the pelvic wall where they were ligated. The tumor proper was now examined and proved to be an intra-ligamentous cyst which had developed downward between the layers of the broad ligament and was thus without a pedicle. It could not be raised up out of the pelvis or even moved or enucleated, and guided by one hand in the pelvis it was freely opened and drained through the vagina, after which the abdominal wound was closed.

Case 3.—Mrs. H., married and mother of several children. There was nothing abnormal in the history of her menstrual functions. About two years ago she noticed an enlargement and could feel a tumor in the right side. Since then her abdomen has been steadily increasing in size until it resembled a woman at full term. On examination I found a large tense fluctuating tumor, occupying the whole anterior abdominal region. Vaginal examination discovered the cervix very high up, above and in front of the promontory of the sacrum, in fact it could not be reached by the examining finger. It was impossible to pass a sound into the uterine cavity, it seeming to meet with an impermeable obstruction at the internal os. After incising the abdominal wall, a large ovarian cyst, having its origin in the right side and containing about six quarts of light straw-colored fluid was evacuated. As soon as this was done, and the sac removed, another similar tumor, the size of a child's head presented, with the uterus lying on its upper surface, which proved to be a cyst of the left ovary. After its removal, the cause for the unusual position of the uterus and the inability to pass a sound became apparent. The uterus, packed between the tumors, had been drawn up with them, and the anterior tumor being much the larger, had retroverted and acutely retroflexed the uterus over the anterior wall of the smaller one.

Case 4.—Miss B., aged thirty, menstrual periods regular until the last four months, when they became profuse and prolonged. She could give no history further than that she had suffered from continuous pain on the lower part of the back and in her hips for many months, but she really had no idea that there was anything abnormal



FIBRO-CYSTIC TUMOR OF UTERUS.

1. Incision in wall of large cyst. 1, 2. Interior of cyst. 2. Small cyst. 4. Uterine cavity.
5. Multiple fibro-myoma. 6. Fundus of Uterus.

about her until some people hinted that she was pregnant. Examination revealed a tense fluctuating tumor rising as high as the margins of the ribs, and more prominent in the left umbilico-lumbar region

than in the right, much resembling the buttocks of an eight months foetus. The right iliac region was hard and solid-like. The uterus was pushed forward and packed up-against the pubic arch somewhat to the right side. The os which was found close behind the pubes was normal in size, mobility, and consistency. The sound acutely anteflexed readily entered the canal for a distance of three inches, turning to the right on its way to the fundus. When the abdomen was opened, a tense fluctuating tumor presented, from which ten pints of straw-colored fluid was removed. The sac was drawn out, but no pedicle could be found. The abdominal wound was enlarged and a large mass, about the size of a foetal head at full term, was withdrawn, which proved to be a fibroid uterus. Hysterectomy, with amputation at the cervix was performed as rapidly as possible, and up to to-day, more than three weeks after operation, there has been no rise of temperature or pulse of any moment. Examination of the tumor showed it to be a fibro-cystic tumor of the uterus. The large cyst occupied the left posterior wall, and there was a small cyst in the right posterior wall. The rest of the uterus was composed of interstitial multiple fibro-myomata, and weighed, after the evacuation of the fluid, nearly seven pounds.

These four cases, all of which have occurred in the service of the Doran Wing of the Kingston General Hospital, within a very short period of each other, are fairly typical of the large pelvic tumors found, and I think it will be admitted that they all presented misleading symptoms. Case No. 1 did not represent the typical symptoms of a pelvic hæmatocele, and if it did, case No. 2 did also. In case No. 3 the position of the uterus and the inability to pass the sound pointed to the uterus being implicated, possibly fibromyomatous, whereas in case No. 4 the position of the uterus and its apparently almost normal length, together with the abdominal fluctuation was strongly suggestive of its being ovarian.

R. W. GARRETT.

PLACENTA PRAEVIA.

(READ BEFORE THE KINGSTON MEDICAL ASSOCIATION.)

ANY loss of blood which precedes, at any period of utero-gestation, the birth of the child is abnormal, unless we make an exception to the slight hæmorrhagic discharge occurring at or about the termination of the first stage of labor. There are cases occurring in practice, fortunately rare, in consequence of peculiar conditions, in which such a loss of blood occurs before birth, as to endanger the life of both mother and child. Hæmorrhage occurring in the last three months of gestation has been classed under the terms, *unavoidable* and *accidental*. It is to the former I desire to direct your attention for a few moments—the latter depending upon such causes as come under the heading of miscarriage.

Placenta Prævia, placental presentation, or unavoidable hæmorrhage as it is appropriately termed, is a condition in which it is impossible for the child to be born without hæmorrhage, generally of a most alarming character. Placenta prævia was first recognized by Portal in the year 1685, but long before his time authors had mentioned the presence of the placenta at the neck of the uterus, but attributed its presentation there, to a previous detachment from its original situation and its fall by its own gravity to the lower part of the uterus after it had been entirely separated. Gifford, after Portal, referred to this condition in his writings, but Levret of the French school was the first to convey any trustworthy information as to its causes and the means of detecting it, but he did not lay down any specific rules of treatment, and as one would imagine every victim of the unfortunate complication perished. Even in the present day there are few of the dangers of midwifery which the accoucheur dreads more than this; and it is the recognition of this fact which led the elder Naegeli to say, that: "there is no error in nature to be compared with this, for the very action which nature uses to bring the child into the world, is that by which she destroys both *it* and the mother." Roederer in his elementary work on obstetrics in 1866 gave a very complete description of placenta prævia, and we may say that any advancement in the treatment of this condition dates from that period. For over two hundred years then, physicians have recognized this condition, and though many advances have been made, and a clear conception of its nature and causes established, yet the

physician is ill prepared for the immediate action and skill which the exigencies of the case require, owing to the peculiar situation of the placenta, involving its complete or partial detachment from the subjacent structures in contract with it.

By Placenta Praevia is meant that the placenta instead of occupying its usual situation in the fundus uteri, is the most dependent part of the uterine contents. Lusk says it is an attachment to any portion of the uterus which is subject to distension during labor. Playfair defines it as the insertion of the placenta at the lower segment of the uterine cavity, and occupies wholly or partially the passage through which the child has to pass. Another author defines it as an attachment to that portion of the uterus the development of which attains its maximum rate of growth during the latter half of gestation. When the placenta is attached to the entire circumference of the cervix, it is called "*complete placenta praevia*" or "*central*;" when a portion can be recognized over the dilated as it is "*partial*;" when it reaches to the internal as but not beyond it is "*marginal*;" when it does not reach to the margin of the internal as though attached to some extent to it, it is "*lateral*." Such a minute subdivision is scarcely necessary, and I think that *central* and *partial* would meet all the requirements, in practice. It was formerly taught that in these cases the placenta is attached to the cervix, but that theory has been exploded some years ago, as it was found on *post mortem* examination of those who died that the placenta instead of being attached to the cervix, always ends at the os internum because the cervix is not physiologically adapted in structure to receive it, and because the decidua, the maternal covering of the ovum, is the mucous membrane of the uterus itself altered and modified in preparation for its reception. The decidua is not found in the os uteri or the vagina, therefore they are not fitted to receive the ovum. It is only those parts such as the fundus and cavity of the uterus which having shed their epithelium or being subject to menstrual denudation, offer a suitable field for the formation of the maternal portion of the placenta upon which the development of the embryo depends. Withal, strange to say, that the tumified condition of the mucous membrane of the uterus, found during menstruation and some time afterwards, is not absolutely necessary for the arrest of the fertilized ovum which is prone to adhere to other surfaces from which it may derive *pabulum*. A mucous membrane specially prepared, as is that of the uterus, is not essential, for the ovum is liable to graft itself upon con-

tiguous surfaces, as for example where it falls upon the peritoneum in abdominal pregnancy or takes its seat in the Fallopian Tube—tubal pregnancy. The latter is explained by a process of desquamative salpingitis; the tube's offering its bare surface to the ovum. It is safe to say, however, that an ovum cannot mature under such circumstances. It is well-known that conception in the majority of cases occurs in the Fallopian Tubes, their rythmic peristaltic action in the direction of uterus, aided by vibratile motion of the cilia, propel the ovum along till it drops into the uterus which should be prepared to receive it; its not being prepared to do so is the cause assigned by Cazeau for the abnormal position of the placenta. Whilst the etiology of placenta praevia is still *subjudice*, yet there are many theories advanced which are well worthy of mention. Barnes thinks that the ovum as it enters the uterus from the Fallopian Tube is not caught in the folds of the decidua, but drops to the lower part of the uterus. Playfair believes it to be due to an abnormal size of the uterus. Miller believes it to be caused by uterine contraction shortly after conception squeezing the ovum down to the internal os. Tyler Smith thinks it is due to the ovule not being fecundated till it has reached the lower part of the uterine cavity.

It will not be necessary for me to go over the symptoms of placenta praevia; they are few indeed, but well marked. A strongly pulsating, thick, soft cervix and hæmorrhage occurring during the latter months of pregnancy should be sufficient grounds for suspicion; but no positive diagnosis can be made without the introduction of the finger into the os and feeling the placenta. The hæmorrhage often occurring without any warning when there is no assistance at hand, demands our immediate attention. This hæmorrhage is accounted for by the development of that portion of the uterus to which the placenta is attached in excess of the rate of growth of the placenta, and there is a rupture of a marginal utero placental sinus or a utero placental vessel with generally a marginal placental detachment. Barnes, than whom no greater could be cited, differs from this explanation, and says that the flooding occurs from the detachment of the placenta arising from an excess in the rate of growth of the placenta over that of the cervical zone, a structure not designed for placental attachment. But we know that the hæmorrhage occurs in the latter months of pregnancy when the placenta has attained its maximum rate of development, and therefore the hæmorrhage cannot be owing to the growth of the placenta in excess of that of its uterine attachment at

the cervical zone, but the opposite. There is another important cause of the hæmorrhage. We know that all through the period of utero-gestation rhythmic uterine contractions, first elucidated by Braxton Hicks, occur. Like an athlete taking exercise preparing for a great contest, these uterine contractions form the muscular exercise of the uterus which is necessary for the development of its muscle preparatory to the struggle of confinement. These contractions naturally stretch and thin the lower segment of the uterus, and there is a tearing away of the subjacent uterine tissue from the placenta, and hæmorrhage results. Placenta prævia occurs in 570 labors, is more frequent in multiparæ than in primiparæ, and in the poor than in the rich. As to mortality, Simpson gives 29 per cent, Barnes 8 per cent, Churchill one in three, whilst 50 per cent of the children die. Regarding treatment, the great aim of the accoucheur is to deliver his patient as quickly and as safely as possible, as a high rate of mortality in the practice of midwifery is not conducive to the increase of one's clientele. Mauriceau was amongst those long ago who advocated the *accouchment force*, that is, the uterus must be emptied at once by force and at all risks. This method is not thought of at present. A case of placental presentation comes under the notice of the accoucheur at one of three periods. *First*, before the viability of the child; *Second*, when gestation is further advanced and the infant has reached the period of viability; *Third*, perhaps the most frequent, at the commencement of labor. In the first case the treatment is the same as a case of threatened abortion, that is, stop the discharge by tampon, allay any disposition to uterine contraction, and endeavor by rest in the recumbent position to prevent any further separation of the placenta. In the second case, when gestation is further advanced and the child has reached the period of viability, we must endeavor to avert premature delivery as long as possible by the usual means employed in order that the child may have the best chance. The earlier the period of pregnancy at which hæmorrhage occurs, the less the risk to the mother; for that reason some authorities recommend the induction of premature labor. The life of the child must in every case be considered. In the third case, when the accoucheur is summoned at the commencement of labor at the full period of gestation, and hæmorrhage is profuse, the os not being dilated, his duty is the same as in the first and second, except he must endeavor by being prompt, steady and fearless to deliver the woman as soon as possible. The means usually adopted and recommended in placenta prævia are four :—

1. Puncturing the membranes.
2. Plugging.
3. Version.
4. Separation of placenta.

It will be impossible to puncture the membranes at once in every case, though if labor has commenced it may be done, and is the first thing recommended by Barnes and Playfair. It must be remembered that uterine inertia is common in placenta praevia and consequently version must follow, if possible, soon after puncture of the membranes, though it is done under less favorable conditions than if it had been performed previous to puncture. Version should be always accomplished whilst the membranes are intact if possible. If hæmorrhage is great and the os not dilated, the tampon carefully applied and changed every three or four hours till os is dilatable or dilated is good treatment. This is a most effective procedure in arresting hæmorrhage, which it does by compressing the placenta between the plug and the presenting part of the child, thus artificially damming up the source from which the blood has escaped. When labor has been fully established, the plug has another advantage, that is, by stimulating the uterine fibre, the os is more rapidly and effectively dilated. Version should be employed when quick delivery is called for and the parts sufficiently dilated to admit the hand without any force. It is to this method that most modern authorities give the preference in the treatment of placental presentation. The method of Braxton-Hicks, the bipolar or combined method, which is done by internal and external manipulation and which is applicable to those cases where the os is not sufficiently dilated for the introduction of the whole hand, is recommended. The adoption of this method has not made much headway, and few if any of the French authors refer to it in their writings. Turning once effected, the presenting part is brought in contact with the bleeding surface and hæmorrhage is checked. Version is best performed under an anæsthetic, but Spiegelberg referring to the administration of chloroform in placenta praevia, says, that it is inadmissible where the woman has lost much blood, since this, like any movement of an exhausted woman, might easily lead to pulmonary embolism and render collapse fatal. Version is perhaps the quickest method of terminating labor, and is the best, if the woman is not exhausted by previous floodings. If there has been much loss of blood, the patient prostrate, and os dilated or dilatable, the application of the forceps is safer and better. The operation of turning always involves special

risks of which laceration of the cervix, and uterine phlebitis are frequent. It is scarcely necessary I hope, to mention that strict antiseptic precautions should be taken, and especially in placenta presentations where the fingers, the hand, or the instruments come in contact with the open ends of the uterine veins. Ergot is recommended, but it produces tetanic not rhythmical contractions. It closes the uterus upon its contents, but does not favor their expulsion. This treatment constitutes the *modus operandi* in dealing with placental presentations, but you will, I fear, find no two cases alike, and the accoucheur will find himself at sea if he adheres too closely to the stereotyped rules laid down in the text-books. I may tell you that it has been my good fortune to have attended 1,523 cases of labour in this city without a death, and a carefully kept record of the same shows that amongst that number there were, *instrumental* 83, *version* for various causes 10, *twins* 16, *triplets* 1, *alarming post partum hæmorrhage* 6, *concealed hæmorrhage* 1, *placenta prævia* 3.

D. PHELAN.

THE STUDY OF ANATOMY.

THERE is no knowledge so necessary to the successful practice of medicine, surgery, or obstetrics as that of anatomy. It matters not from what point of view we approach the human subject, a knowledge of anatomy is the first essential of success. In his college years the student instinctively looks upon anatomy as the foundation of his studies. He gives that subject his best attention. He regards it with a respect or veneration far beyond his other subjects. The qualities of the student seem tested by his study of anatomy. The successful anatomist is looked upon as the man of his year. And the knowledge thus obtained guides him throughout his entire course, winning laurels for him on every side. If he wish to prosecute his studies still further he will find a knowledge of anatomy absolutely necessary. In the examinations for the English degrees anatomy has a place in nearly every subject without a thorough knowledge of which, it is next to impossible to become either a member or a fellow of the Royal College. It is a matter of great regret that when the days of his examinations have ceased, the student holds that his

duty to anatomy has ended. This should not be the case. For after all, what is the knowledge of any subject that a student obtains during his college days, or how long will this knowledge abide with him unless he constantly adds and renews it. What is his knowledge of pathology, of obstetrics, of surgery, of the practice of medicine? Why barely enough to enable the student to successfully prosecute his work in post college days. No man who has any regard for his position will rest content with the knowledge he has obtained during his college life. He provides himself with text books and journals, with apparatus where necessary, that his learning may be increased and refined. Now, what about anatomy? How many medical graduates ever take the slightest interest in this subject, or if it be studied at all the duty is performed in a way that yields no practical results. This want of anatomical knowledge is often painfully manifest in imperfect and incorrect diagnosis, in the dread and hesitation evoked by the slightest surgical operation, in the humiliation of medical witnesses. It would be of little value to point out this condition of affairs were there no remedy available. It is because there is a remedy, and that too within the reach of every physician, that I mention the subject at all. For far less than he has expended in loading his shelves with often times useless medical works, he can supply himself with a complete anatomical outfit. To be studied at all, the work should be entirely practical, by actual dissection on the human cadaver. For this purpose no elaborate preparations are necessary. I do not anticipate there would be much difficulty in securing a subject. To any one who has not forgotten his student days the matter is quite possible. But if he does not wish to renew his youth in this respect his object may be obtained legally and easily through the Inspector of Anatomy, one of whom should be appointed for each municipality. If such is not the case the physician has himself to blame.

A mixture containing 6 parts alcohol, 1 glycerine, 1 carbolic acid, is injected into the aorta or femoral artery. The body should then be placed in a fitting receptacle. A well-jointed wooden box, the size of an ordinary coffin, and lined with zinc will answer the purpose admirably. The cost will be trifling. Into this should be placed a few gallons of methyl alcohol. After about four days or a week the body should be injected with a mixture of shellac and alcohol, sufficient alcohol to take up the shellac. This mixture may be colored with a carmine solution. An ordinary large size hard rubber syringe will suffice for injecting purposes. When prepared in this way the tissues

are preserved and hardened and there is practically no odor. There is no danger to the dissector, and if ordinary cleanliness be observed, neither the accoucheur nor the surgeon need have any fear of contaminating his patients. On a subject thus prepared there is the greatest possible pleasure in working. Not only has the anatomist the means of refining his knowledge, but the surgeon can perfect his operation and the gynæcologist increase his skill and train his hand and eye for the time of need. Under circumstances such as these no general practitioner, either in the city or country, can excuse himself for want of anatomical information. The outlay is not excessive, and by renewing the alcohol as required, the subject will preserve long enough to give the dissector an opportunity to perform his work at leisure. No man engaged in the practice of medicine should neglect dissecting at least one extremity yearly. It is not alone the inestimable value of such a course from a practical standpoint, but it quickens ones desire for further research, it enlivens one's devotion, it keeps us young in our profession. The man who knows his anatomy is never behind the times. It is not supposed that we should all exhibit the enthusiasm of Haller who dissected four hundred bodies in seventeen years, nor of Berenger who dissected one hundred, nor of Billroth whose constant cry to his students was "anatomy, anatomy, and again anatomy." Nor on the other hand should pressure of professional duties be pleaded as an excuse for neglecting our anatomical studies. Hunter, Sir Astley Cooper and Paget have set us an example in this respect. And when quieting our conscience for this reason we ought to remember the dictum of Richelieu "it is only the busy man who finds time for more work."

E. RYAN.

HYDRAMNIOS AND ITS COMPLICATIONS

WITH REPORT OF THREE CASES.

DROPSY of the amnion or an excessive accumulation of fluid in the amniotic cavity is a condition frequently met with, and easily recognized by the unusual size and permanent tension of the uterine tumor. The mobility of the foetus distinguishes this condition from twin pregnancy, while the softened condition of the cer-

vix, the presence of uterine contractions, and the history of amenorrhoea, differentiates it from an ovarian cyst.

The condition rarely manifests itself before the fifth month and is generally slow in development. When it exists in a marked degree there will be cardiac embarrassment and dyspnoea from interference with the diaphragm; the hepatic gastric and renal functions suffer from direct pressure; ascites and oedema result from obstructed circulation; locomotion may be rendered difficult or even impossible; severe cases are usually terminated by a premature labor, the foetus being dead and in most cases deformed.

The following cases occurred in my own practice within the past two years:—

Case 1.—Mrs. L., a farmer's wife, aged 35, a tall muscular rugged looking woman, gave following history; married ten years, three healthy children, youngest three years old, labors all normal. Felt well and did her own work during this pregnancy up to seventh month when she had a fall, did not think, at the time, she was injured, but a few days later noticed the abdomen was rapidly increasing in size. At the end of two weeks breathing was difficult and walking about almost impossible, premature labor set in and had been going on for about twelve hours before I saw her. The abdomen was so distended, tense and tender that no information could be gained by palpation. The os was fully dilated and membranes protruding, but it was quite impossible to determine the presentation. As there was no apparent necessity for further delay I ruptured the membranes; about twenty pints of fluid escaped with a rush and both feet presented, the pains increased in force and frequency, and the progress was rapid except in the delivery of the after-coming head, a free hæmorrhage followed, but passing my hand up I swept out the contents of the uterus, then used a douche of sterilized water as hot as could be borne which caused immediate and firm contraction. The child was dead when born. It was hydrocephalic, otherwise well-formed, a female, and weighed about eight pounds.

Case 2.—Mrs. R., age 30, always healthy, previous labors normal. When six months pregnant with this her third child, the abdomen began to increase in size rapidly, labor came on at seven and a half months. When called in I found the uterus enormously distended, palpation and auscultation were negative. The os was quite rigid and only about half dilated; pains regular, frequent and strong. At the end of two hours the os being fully dilated I ruptured the membranes, and allowed some twelve quarts of fluid to escape—passing the hand well up in the uterus, a shapeless mass could be felt pre-

senting labor progressed rapidly and in due time a small dead and deformed child was born. The placenta was expressed almost immediately, but uterine contraction was feeble and hæmorrhage was with difficulty controlled. The mother made a good recovery.

Dr. W. T. Connell, pathologist, examined the foetus and reported as follows:—Female, weight 3 lbs. 3 ounces; length $10\frac{1}{2}$ inches; respiratory, circulatory, digestive and genito-urinary organs, normal; skin greatly thickened over all parts of the body. At junction of dorsal and cervical vertebrae the spinal axis bends sharply forward and then upward to base of sphenoid; from this angle projects a tumor measuring $3\frac{1}{4}$ by $2\frac{1}{2}$ by $1\frac{1}{2}$ inches and covered by a thin tough membrane. The laminae dorsales from second sacral vertebra up were entirely wanting, the cord being covered by a thin membrane continuous with that over the tumor. On section, the tumor proved to be a rudimentary brain developed as a complete encephalocele.

Case 3.—Mrs. H., aged 26, wife of a dairyman, living in the country, had one child four years old, two miscarriages. She was in the eighth month of her pregnancy and had been in active labor for five hours when I saw her. The patient and her friends were fully prepared for the advent of twins, examination revealed conditions very similar to those described in the preceding cases. The os being fully dilated I ruptured the membranes, and after the excess of fluid had escaped, the head was felt presenting. The pains became more vigorous and effective, and labor was terminated in less than half an hour. The placenta was adherent and hæmorrhage free, but after separation and removal of the placenta the uterus contracted down firmly.

The child, a small delicate female, died twelve hours after birth. When examined a well-formed foot (infant size) was found attached by a pedicle to the perineum, a little to the right, and behind the fossa navicularis. There was also complete atresia of the vagina and the urethra, otherwise the child was well-formed and presented the usual appearance of a foetus at the end of seventh month.

In reviewing these cases several features appear common to all of them:—

1. Premature labor occurring about the seventh or eighth month.
2. Mal-presentation of the foetus.
3. Malformation of the foetus.
4. The child was a female, was dead-born or died soon after birth in every case.
5. A strong tendency to post partem hæmorrhage.

ISAAC WOOD,

CHROMICIZED CATGUT LIGATURES.

AN ideal ligature for vessels should be smooth, pliable, strong, aseptic, and not too readily absorbed, and, among the materials that have been employed for ligating, catgut, silk and tendon rank first. Of these, catgut possesses three of the above qualifications, being smooth, pliable, and aseptic, (for, though in the crude state it is laden with myriads of germs on account of its manufacture consisting, as it does, of decomposition of all the intestinal coats with the exception of the submucus, yet it can, with considerable trouble, be rendered sterile) but it falls short of the ideal ligature in strength and rate of absorption.

Within a short time after introduction, catgut, imbibing the serum of the wound swells and softens, and, if used to ligate large arteries, there is always a possibility of hæmorrhage occurring within a few hours afterwards from the heavy pulsations behind forcing the swollen and softened ligature apart. Again, secondary hæmorrhage may occur should organization of the coagulum not keep pace with the absorption of the catgut, *i. e.* should the ligature be absorbed before nature has had time to thoroughly occlude the vessel. For these reasons, the use of catgut ligatures, especially in the large vessels, is hazardous.

Efforts were directed to remedy these defects by means of hardening agents, chiefly chromic acid, and chromicized catgut has been regarded as almost an ideal ligature—but our experience with this material as reported below satisfies us that chromicized catgut acts rather as an irritant to the tissues.

F. L. Stephen Smith's amputation at knee joint. Operation under thorough asepsis was performed May 1st. Six days later union was complete and the stitches removed. About two months afterwards a sinus formed and on being freely opened the chromic catgut ligature on popliteal was found to be the cause of the trouble.

J. P. Radical cure hernia. Operation May 15th. Perfect asepsis. Sinuses formed two weeks after apparent union and continued discharging for about four weeks longer until portions of the chromic sutures were withdrawn from them.

W. H. Amputation knee joint, (Stephen Smith's)—on patient weighing 280 lbs. Primary result first-class; but, as in above cases,

the sinuses which formed, remained open until six weeks after operation when the chromic catgut ligature was withdrawn.

R. G. Ligature Dorsalis Pedis. About five weeks afterwards patient returned with slight swelling, and on incising it most of the ligature (chromic) was found.

W. G. Amputation at elbow joint, (Ollier's)—June 6th. Brachial tied with chromic gut. Sinuses formed three weeks afterwards, but closed on discharge of ligature.

R. M. Extensive angeioma of scrotum necessitating the use of a considerable number of ligatures (chromic). Many of these came away through sinuses formed a short time after operation.

In all the above no antiseptic detail was neglected. Cultures had been made from the gut before being used with negative results. The discharge from the sinuses when opened was not actual pus but a serous fluid with granular debris and, on the extrusion of the ligature they quickly healed.

These considerations led to no other conclusion than that the chromic catgut ligature could and did act as an irritant. This was strengthened by an examination of the ligatures themselves, and it was found that only at one point was there any absorption of the gut, and here the crystals of chromic oxide (the action of organic material on chromic acid being to reduce the acid to an oxide—accounting for the dark color of chromic acid gut) had been entirely absorbed.

The chemical action of the blood plasma is insufficient to dissolve the chromic oxide crystals—hence the absorption of these crystals occurring at the point of division of the ligature alone, would indicate that the removal of the chromic oxide had been by phagocytosis. The leucocytes concentrating their energy on one part of the ring of ligature carried away the crystals and then attacking the catgut itself, quickly destroyed it at that point.

That the inorganic material (chromic oxide) in the tissues of the gut was more than the leucocytes could remove was shown by the formation of the sinuses, for the purpose of throwing off the foreign body.

Hence it seems to us we are justified in concluding that chromicized catgut is not an ideal ligature.

A word as to the other ligature material mentioned above, viz: silk and tendon.

In these days of aseptic surgery, silk has none of the disad-

vantages incident to its use before Lister's time, hence, sterile silk in an aseptic wound is undoubtedly the safest ligature to employ for the ligating of the larger vessels.

But the nearest approach to perfect ligature material is found in kangaroo tendon. It is smooth, pliable, strong, aseptic, and not too readily absorbed (it takes eight or ten weeks for absorption to occur). It has no inorganic material incorporated with it and can easily be made aseptic. In rendering it sterile it is better to boil it in alcohol, as any of the aqueous solutions causes it, like catgut, to swell up, and afterwards, when dried or placed in alcohol, it becomes brittle. After boiling, it should be kept in absolute alcohol. There is only one objection to its use, and that is—the knot is apt to slip unless well tightened. In conclusion, we prefer for the larger blood-vessels silk, for the medium sized ones, kangaroo tendon, and for the smallest, catgut or tendon.

SKIN GRAFTING.

W. B., age 26, about 13 years ago, had the misfortune to upset a pot of boiling pitch, burning his left leg from the hip to the knee. During these years he was incapacitated from work, and when seen by us there was still a large ulcer about seven inches long by five wide remaining. Everything possible had been done to promote healing, including Reverdin's method of skin grafting, which had been employed about two years before entering the Hospital, and which for a time promised to be successful, but the new skin formed was of such a delicate nature that in four weeks time it broke down and the sore was as bad as ever. With the exception of this period, the ulcer had remained in the same condition during these 13 years.

On May 4th, under chloroform, skin grafting by Thiersch's method was done; both limbs being prepared for operation in the usual way, the ulcer was scraped, the healing margin as well as the granulation tissue being thoroughly removed. Oiled silk which had been disinfected in carbolic solution, and then washed in a saturated solution of boracic acid, was placed over the ulcer and, covered with sponges, was firmly bandaged to the limb. This was done to keep the surface of the scraped ulcer aseptic, and the oiled silk was used to check the hemorrhage, for if gauze or cotton had been employed, they would have adhered to the surface, and on being removed to put the grafts in position, would have torn the capillaries and thus promoted bleeding.

The grafts were removed from the other limb, anterior aspect, the hairs having first been shaved off. The skin, rendered tense by an assistant, was with a sharp razor cut in strips about an inch in width and long enough to cover the ulcer. The strips were left in contact with the surface until all were cut, the razor being constantly wet with the boracic solution. Having a sufficient number of grafts, the oiled protective was removed from the ulcer and the grafts placed in position.

Transverse strips of oiled silk were firmly pressed over the grafts, a large protective of the same material placed next, and the whole covered with antiseptic dressing.

The patient was confined to bed for about six weeks at which period the whole surface was covered with delicate Epithelium, and in three months time the skin was firm and strong. He resumed work and has been entirely well ever since.

We have reported this case as it shows the contrast between Reverdin's, *i.e.*, small grafts of epidermis, and Thiersch's method. In this case, Reverdin's method had been skilfully done in a perfectly aseptic manner, and yet the new skin broke down in a few weeks.

The small grafts cannot be expected to have the same vitality as larger ones, and there is a greater liability of contraction, after healing does occur, in Reverdin's method, as each one of the small grafts surrounded by the island of new skin necessarily contracts, and the united contraction of a large number of small grafts would cause more or less deformity, while contraction after Thiersch's method is very little, and a new skin sound and strong is formed.

Perfect asepsis is essential, and grafts thinner than half the depth of the skin give better results than thicker ones.

D. E. MUNDELL.

THE CURE OF SOPRANO VOICE IN THE ADULT MALE.

IN all the literature available to the writer no reference can be found to the subject of soprano voice in the adult male. The causes which produce the various classes of voices; basses, contraltos, tenors and sopranos, are not wholly understood. The principles involved and agreed upon by the authorities at hand are as follows:—

1. A counterbalance between the chordae vocales and the crico-thyroidei muscles. The thinner, lighter and narrower the bands, the stronger in proportion are the muscles.
2. The length of the voice box.
3. The distance between the cords and the superior resonators, *i. e.* the pharynx and mouth.
4. The size and weight of the chordae vocales.
5. The proportion in size between the cords, on the one hand, and the voice-box and organs of resonance and reflection on the other.

The voices of children are much alike in the two sexes and remain so usually throughout the entire period of childhood. The vocal organ is quite small, proportionally to the bulk of the body, and the pitch of the voice is high. When girls reach the age of twelve or thirteen, and boys that of fourteen or fifteen, the larynx enlarges rapidly so that in from one to three years it becomes nearly double its former size. During this period what is popularly known as a change of voice occurs. This is most marked in boys, the pitch of whose voices will fall an octave, while in girls the pitch will fall but one or two notes. At the same time the quality or timbre of the voice becomes modified and acquires the natural tone which it retains during adult life. It sometimes happens that this change does not occur in the male adolescent. The larynx enlarges, but the voice retains the same pitch and quality. Sometimes no cause can be assigned for this, while in a few cases it is attributed to voice strain, acute laryngitis or diphtheritic laryngitis during the transition period. After a few years when it is realized that no change to a lower tone

will come naturally, the advice of a physician is sought. These patients come with the expectation that a course of treatment or a surgical operation will produce the desired result. Examination by the laryngoscope does not discover anything abnormal. The first time I was consulted in such a case I was inclined to think that nothing could be done. On testing the young man's voice, he had a fair falsetto register—the falsetto being to him the natural register. He was able to make a few of the chest notes also. I therefore advised him to select with the aid of a piano a tone which could be easily emitted and low enough for a male adult, and to practise reading and speaking in that tone. After a few weeks' practice this tone improved in fulness and was used without much effort. Then he shut himself up in his boarding house for a few days, being determined to use henceforward only the new tone. The result was perfectly satisfactory. Another patient after considerable practice in private, left home on a bicycle trip of two days, making use only of the new tone when he had occasion to speak. When he reached his destination he found it impossible to speak in his former high-pitched tone. The change was complete and permanent. Culture of the voice in this way, coupled with a little determination will, I believe, afford relief in all these cases.

ADDITIONAL NOTE ON INTUBATION.

Since the publication of the January number of the QUARTERLY twelve cases of intubation have occurred. This makes a total of seventeen for the winter. The conclusions reached in the article already published are confirmed by the additional experience. Of the seventeen cases two proved fatal. One died of bronchitis, which was well advanced before the laryngitis manifested itself. The other of cardiac paralysis twelve hours after intubation. In the fifteen cases of recovery the average time of wearing the tube is two and three-quarter days. This is a material reduction in the time, and is undoubtedly due to the antitoxin which has been used in all cases as soon as possible. The other treatment consisted of calomel sublimation and a moderate amount of stimulant with the milk which was fed by catheter, through the nose, every four hours. Case No. 11 presented some peculiar and interesting features. This was a girl of five, a patient of Dr. Cunningham. Intubation at 2 p.m., Jan. 15th. At 5 p.m. the following day while Dr. Cunningham was present,

the tube suddenly became occluded and stenosis was complete. The doctor succeeded in extubating with his fingers, and by artificial respiration restored the breathing. Reintubation was done at 7 p.m. The tube was then worn for 36 hours, extubation being done on the 18th. Five hours later dyspnoea developed suddenly and Dr. Third intubated, leaving the thread in place. After an hour, the child having her hands free, pulled out the tube. There was no further dyspnoea. Eight days later nephritis developed with suppression of urine. This continued till the patient became comatose. Small doses of calomel were given, and digitalis poultices employed without effect. Finally, Dr. Cunningham administered fifteen grains of calomel with the result that copious uresis followed in less than two hours, the coma passed off, and an uninterrupted recovery followed.

J. C. CONNELL.

NOTES ON SURGICAL CASES.

THE value of the X Rays in the diagnosis of bone disease has frequently been proven in connection with the patients in the surgical wards of the Kingston General Hospital, and the two following cases are cited as examples of the aid afforded to the surgeon by the skiagraphs taken previous to the operations.

L. D. S., aet. 23, was admitted to Yates' Ward, Dec. 18th, 1896, suffering from a fracture of the left femur at the junction of the middle and upper thirds, the result of an accident that day. A falling tree had struck him, breaking his leg and pinning him to the ground, and on admission he was found in a condition of considerable shock. The injured limb was deformed as the result of an injury when the patient was two years of age, the leg below the knee being very much atrophied, four inches shorter than its fellow and carried posteriorly at an angle of about 60 degrees with the thigh. There was also evidence of disease in the knee joint, two sinuses being seen on the inner aspect of the joint discharging a thin watery looking pus. This discharge the patient stated had existed since the preceding spring and had been copious at times. Up to the time of the accident he had been wearing a crude form of artificial limb and had been able to do heavy laboring work.

The patient as well as his father, who accompanied him, urged immediate amputation of the deformed, diseased, and injured limb, but it was explained to them that this would not be a good surgical procedure under the circumstances. Accordingly the fracture was reduced and short coaptation splints adjusted. An absorbent dressing was applied to the knee joint and the limb placed comfortably on a pillow. The bandages were re-applied on the 21st, and again on the 30th Dec. On Jan. 20th, the fractured femur was found to be well-united, so the whole limb was thoroughly cleansed and put in plaster of paris, an opening being left for the sinus discharge. This permitted the patient to move about the ward daily on crutches, and his general health markedly improved.

On Feb. 6th, a skiagraph of the region of the knee joint was taken on a celluloid plate which fitted closely to the limb. This showed in addition to the manifest disease in the joint that foci of the disease extended up the femur for $3\frac{1}{2}$ inches. The original intention had

been to amputate just above the condyles but trusting to the accuracy of the skiagraph the femur was divided $4\frac{1}{2}$ inches above the condyles on Feb. 8th. Inspection of the portion removed by sawing the bone longitudinally, demonstrated the fact that the saw line was just $\frac{1}{4}$ of an inch above the disease. On Feb. 16th the stump was dressed, and the drainage tube removed. Feb. 23rd, sutures removed, wound healed. Feb. 27th patient left for his home. Dr. Connell's report is as follows:—

REPORT ON RIGHT KNEE BONES.

Amputated by Dr. Anglin, Kingston General Hospital, Feb. 8th, 1897. The femur was cut across $4\frac{1}{2}$ inches above joint line. The joint was evidently long diseased. The articular cartilages and crucial ligaments had entirely disappeared, and the synovial membrane was replaced by a firm fibrous, in places fibrocaceous tissue of varying thickness. Nearly the entire epiphysis of the femur except a small spicula on articular surface is replaced by a fibrous mass presenting a few small yellowish softened areas (caseation). Above this mass the bone is markedly rarefied but shows no recent tubercle formation. In the centre of the bone $3\frac{1}{2}$ inches above joint line there is seen the upper limit of the walls of an old abscess cavity, measuring about 1 inch transversely and $\frac{3}{4}$ of an inch from above down. This communicated by a sinus with the tissues on the inner side of the joint. Above this point the bone was healthy and the medullary canal filled with yellow marrow. The patella is not affected by any lesion in itself, but the articular cartilage has disappeared and there is present at lower outer side of the bone a small wedge-shaped spicule of bone, which passes backward into the joint.

The tissues about the knee presented numerous sinuses, old and recent—and all the tissues were matted together in a yellow glutinous fibrous mass. Evidently there has been here a tubercular arthritis with secondary infection with progenic micro-organisms keeping up suppuration with the persistence still of the original tubercular infection.

TUBERCULAR DISEASE OF KNEE—EXTENSIVE DISORGANIZATION—
AMPUTATION OF THIGH.

H. K., aet. 28, occupation mason, was admitted to Yates' Ward, on March 4th, 1897, suffering from a diseased right knee joint. In

October, 1889, the patient in falling from a scaffold injured the right knee, but no special treatment beyond a few days' rest was required. In 1890 by another accident the same joint was severely wrenched and at this time blisters were applied—Recovery was tedious and imperfect the joint being tender ever since. In November, 1896, the same joint was again injured, and since then the patient has been under medical treatment, rest and the usual constitutional remedies being employed. In January last, injections of iodoform emulsion were made at intervals of a few days into the inflamed joint.

On admission the right knee joint was found to be swollen and presenting to the touch a boggy feeling most marked over the tuberosity and inner border of the tibia. Patient suffered very much, the pain being greatly increased upon any motion of the limb. The circumference of the diseased joint was $1\frac{1}{2}$ inches more than that of the corresponding joint. The whole limb was atrophied to a considerable extent from disuse and held in a position of semi-flexion.

The patient's temperature on admission was $99\frac{3}{5}^{\circ}\text{F}$, and was found subsequently to vary between normal and 101°F —Pulse 80 to 98—Respiratory and digestive systems were found to be normal. A diagnosis of tubercular disease of the knee joint with caseation and abscess formation was made and early surgical interference was considered to be a necessity. Some delay was occasioned in obtaining the consent of the patient and his friends, and meantime the limb was placed on a posterior splint and a moderate amount of extension applied.

The question of excision or amputation was readily solved by a skiagraph taken by the Medical Superintendent, Dr. Third, which shewed extensive disease in both the femur and tibia, extending fully 2 inches beyond the joint line in either direction. It was therefore explained to the patient that amputation of the femur well above the disease was the only course to be followed, and the operation was performed on March 18th by antero-posterior flaps, the femur being divided about 4 inches above the joint line. Examination of the diseased area shewed the correctness of this procedure as outlined by the skiagraph.

The report of the pathologist is as follows:—

On opening up tissues about knee a cold tracking abscess was found leading downwards for about 3 inches from the joint line on the anterior and outer aspect of the leg, involving superficially the anterior tibial muscles.

Tibia—Situating in posterior middle portion of the head of *Tibia* about $\frac{1}{5}$ inch below the articular surface there was found an old chronic abscess of the bone, the cavity measuring $\frac{3}{4}$ inch antero-posteriorly and $\frac{1}{2}$ inch from above down. Leading from this towards posterior portion of the articular surface is a sinus with recent carious walls. Passing downward from this cavity there is an area of recent tubercular infiltration about 1 inch square showing as a red gelatinous nodule with rarefaction of the bone. The remainder of the tibia seems to be normal.

The *synovial membrane* of the knee is in a typical condition of pulpy degeneration. The articular cartilages of the tibia are ulcerated, only small portions being still intact. The semilunar cartilages still persist. The crucial ligaments are destroyed.

The right articular cartilage of the femur shows marginal destruction and slight central ulceration. The left cartilage is covered with "a veil of granulation tissue."

The *Patella* is not involved except by slight marginal ulceration of its articular cartilage.

In the femur beginning 1 inch above joint line there is seen a red gelatinous tubercular nodule about $\frac{1}{4}$ inch square. The remainder of the lower end of the femur is not involved.

Pathological history bears out the clinical characteristics. Years ago tubercle of head of tibia ending in production of cold abscess, which kept always troubling him, yet remained latent till recently (say within a year). Bacilli of Tubercle probably present still in abscess, again became capable of invasion. Then we have extension to joint and extension downwards. The nodule in the femur is of secondary formation *via* the blood current.

W. G. ANGLIN.

NOTES ON BLOOD AND BLOOD EXAMINATION.

THE study of the blood is a subject at once important and fascinating; a study too, in which it would be well for all practitioners to interest themselves. For any practitioner who makes a careful examination of the blood in his suspicious cases will learn much of practical importance to his patients and will throw light on many previous dark points. Late investigations into the domain of Haematology are extending wider our knowledge of the conditions of the blood and the blood re-actions, in disease. One investigator goes as far as to state that he can make a diagnosis of incipient Phthisis by examining the blood alone—basing his diagnosis on the morphological and staining characteristics of the white cells. But this work is based on the incorrect hypothesis that the white cell of the blood is in miniature the prototype of the entire body. Now practitioners as a rule are in the habit of disregarding all discoveries in the domain of medical science unless they can at once apply such clinically.

The examination of the blood is by no means a complicated procedure, in fact it is a very simple one, but it requires certain special instruments and a knowledge of technique, which is however readily acquired by practice. Just here let me say that in making any series of blood examinations if comparative results are desired, then we must always carry out our procedures in a like manner. A few notes on the composition of the blood with regard to points of examination may not be out of the way. Blood consists of the Plasma and Corpuscles. We have at present no good means during life, of examining the Plasma to determine any changed conditions in its composition. Hence it is on a study of the corpuscles, red and white, that we depend for our knowledge of blood changes.

In making a blood examination we usually attend to four points. *1st.* Determine the number and character of the red corpuscles. *2nd.* Determine the percentage ratio to normal of Haemoglobin contained. *3rd.* Determine the ratio between the red and white cells. *4th.* Determine the percentage ratio of the various forms of white corpuscles, one to the other, noting the presence of any new forms.

In examining the red corpuscles we note their number, size, outline, intensity of color (Haemoglobin), grouping, and the presence of

any nucleated forms. In healthy blood there are from 5,000,000--5,500,000 red cells per cubic millimetre. Increase in numbers is rare and occurs in no pathological condition. Decrease is quite common in various forms of anaemia etc., and is always of pathological import. Normally the red corpuscles are circular in outline and quite uniform in size, but in disease we may find changes in size and outline—larger or smaller cells making their appearance and being ovoid, tailed or otherwise irregular in outline. Such changes in size and outline are pathological, being found in grave and pernicious anaemias. The irregularity in outline is termed "poikilocytosis" and we also apply the terms megaloblasts to the larger forms of red cell. At times nuclei may be detected in some of the red discs in grave anaemias. They are never found in health. In specimens of fresh blood examined at once microscopically, or to a lesser extent in stained specimens, we can estimate approximately the amount of Haemoglobin by the intensity of coloration of the corpuscles and by the size of the central depression.

The white blood corpuscles are of very great importance in disease conditions, not only in purely blood diseases (so termed) but in disease conditions of other tissues of the body, so that a careful study of those forms is of much import. Normally the white cells are present in the blood in proportion of one white to 500 to 600 red. Now, in the blood we have various forms of white cells, which can not be clearly differentiated in unstained specimens, but when we use certain staining materials, the differences can be readily determined. Various observers classify these cells in various ways, depending either on the re-action of the cell protoplasm, granules, and nuclei to stains (acid neutral or basic) or upon the nature of the granules as regards size and re-action, or further upon the supposed origin of the cell. Most classifications are based upon Ehrlich's work and that of Kanthack and Hardy. I will follow here the classification given in Osler's Practice of Medicine as being perhaps the most convenient. Thus we have the normal white cells of the blood divided into :—

(a) The polynuclear leucocyte, phagocyte, finely granular oxyphile cell of Kanthack, neutrophile cell of Ehrlich, This cell is the common white cell of the blood, making up from 60 to 80% of the white corpuscles. It is about $\frac{1}{2500}$ inch in diameter, contains two or more nuclei—protoplasm is finely granular—the granules being oxyphile

(taking acid dye). These cells are the active phagocytes of the blood; the cells which pass out from the vessels in inflammatory exudations. This is the cell which is increased in the leucocytosis of some fevers *e. g.* pneumonia before the crisis.

(b) The lymphocyte or small mononuclear cell, small hyaline cell of Kanthack. This is a small cell about size of red discs, with a large nucleus nearly filling the cell, the protoplasm appearing as a faint hyaline ring about the nucleus. This cell makes up from 10 to 25% of white blood cells.

(c) The large lymphocyte, large mononuclear, or hyaline cell. This is a larger cell being about the size of polynuclear cell with a large nucleus and a large rim of hyaline protoplasm about it. It is found to make from 4 to 8% of white cells.

(d) The eosinophile cell or coarsely granular oxyphile cell of Kanthack. This is a cell as large as the polynuclear; the nucleus is single, lobed or horseshoe shaped, and as a rule takes the stain lightly. The protoplasm is filled with coarse granules, which take up acid dyes with avidity. This cell makes up from 1 to 3% of the white cells.

(e) Transitional forms. These lie between the large lymphocyte and the polynuclear cell. The nucleus is single, bean or horseshoe shaped, and the protoplasm is either hyaline or filled with small neutrophile granules.

Now, besides these cells which are found normally in the blood, we may find other forms in disease, or we will find the percentage ratio of white to red or of the various white cells, one to the other, disturbed. Now the new forms which we may find in the blood are:—

(f) The Mastzellen or Basophile cell, which appears rarely in healthy blood, more frequently in grave anaemias. This is a large cell with a single nucleus, the protoplasm being filled with granules taking on a deep staining with Basic dyes.

(g) The myelocyte—a cell which is characteristic of spleno myelogenous and mixed Leukaemias. This is a large cell commonly larger than the polynuclear cell. It has a large single nucleus rounded or oval; the protoplasm is filled with granules, which are commonly oxyphile but which (as lately shown by Buchanan) may at times be basophile or show mixed granulation. The presence of these cells is as before stated absolutely characteristic of Leukaemias.

Now having taken up the composition and the special characters to be noted in the examination of the blood, let us consider shortly the method and instruments employed in such examination. The first necessity will be a microscope having a magnification of at least 350 diameters, much better if from 700 to 900 diameters can be obtained, particularly for examination of stained specimens.

The blood is best obtained from the ball of the finger—the middle finger being the best. The finger is first thoroughly washed with warm water and soap, then with a little alcohol and then dried; a large triangular pointed needle is taken and pushed into the ball of the finger and the blood which oozes forth is taken for examination. Pressure should not be used to produce the blood drop.

The examination for diagnostic purposes is best carried out in the following manner, the instruments necessary being mentioned as we proceed. (1) The Haemoglobin reading should be taken by Fleischel's Haemometer, which I consider much superior in efficiency to that of Gowers. It should always be remembered in using this instrument that artificial light is necessary, either lamp or gas can be used. With daylight no correspondence can be found between the Blood coloration and that of the standard comparison Bar. With this instrument, we obtain the percentage ratio of Haemoglobin.

(2). The red and white corpuscles should next be counted. This is best done with Thomas' Haemacytometer. In this instrument a drop of blood is drawn up into bulb and diluted 100 times in a solution of same specific gravity as blood. A drop of this solution is then counted on a special slide with cell and micrometer measurements, by the use of a microscope of from 200 to 350 diameters. In counting red discs, 40 squares of the scale are all that will be required, while to estimate the number of white cells, 200 squares should be counted. From this examination we obtain the number of white and red cells per cubic millimetre and their proportionate relationships. We also note the size, shape, outline and coloration of the red cells, thus noting whether poikilocytosis is present, and forming an approximate estimate of the Haemoglobin percentage per cell. One can also in this way detect a leucocytosis, but cannot certainly say in what the leucocytosis consists, unless he (3) prepares and stains cover glass specimens of the blood. To prepare these films take clean, well-polished cover glass squares; with one glass, pick up a small drop of blood in centre and drop over a second cover square. The blood spreads out in a single film, the covers are then gently slid off from one another.

er in parallel and opposite directions. If the films are to be stained at once, no fixing other than allowing the blood to dry will be necessary. If, however, the blood films are not to be examined till later, it is better to fix the blood. This may be performed in several ways.

I find placing the films after drying in air, in a mixture of rectified spirit and Ether, equal parts, for three minutes proves very efficient. Another method which has given good results is to hold the films, while still moist over the fumes arising from ordinary foemalin till film dries.

With regard to the stains used in preparing the specimens, we must use dyes which will bring out as clearly as possible the affinity of the various cells and granules for acid or basic dyes. In so far as my experience teaches, nothing can replace eosin for the former, and Methylene Blue for the latter in giving even results, care being taken to carry out the technique alike in all cases.

The formula for the eosin dye I have been in the habit of using is .5 gramme eosin, 70 c.c. alcohol, and 30 c.c. water. The Methylene Blue solution is that of Loeffler, made by taking 30 c.c. saturated alcoholic solution, Methylene Blue, 130 c.c. of 1/10000 aqueous Caustic Potash solution.

If the films are to be stained at once after drying, then pass three times through flame, (gas or spirit lamp) and proceed. With fixing may be proceeded with at once. Place in Eosin solution two minutes, methods, staining wash in distilled water, dry and then place in Methylene Blue solution half a minute, again wash, dry thoroughly and mount in Canada Balsam. Examine these films with a microscope with a magnification of 300 diameters or over. We will note in these films the size and shape of the red cells, their oxyphile power the presence of nucleated forms. Further in the white cells we note whether increased or not, whether new forms are present, and we can now determine by counting, the relative ratio of the various forms. These color preparations are absolutely essential to differentiate between the various forms of leucocytosis in various conditions. Take the leucocytosis which occurs in favorable cases of Pneumonia before the crisis; here the increase is in the Polynuclear. In lymphatic Leukaemia, the increase is in the small mononuclear elements.

Immediate microscopic examination of a fresh drop of blood is often of importance in determining whether it would be necessary to carry out a complete examination of the blood; for in this way we

The accompanying table gives a short classification of various blood conditions. As will be seen I have divided the sections into Primary and Secondary Anaemias, and Leucocytoses of fever, etc. This will need no further explanation than that given in the table.

ANAEMIAS, ETC.

NORMAL BLOOD COMPOSITION.	SECONDARY ANAEMIAS.		WITHOUT LEUCOCYTOSIS.		WITH LEUCOCYTOSIS.		SIMPLE LEUCOCYTOSIS. e. g. Fevers, etc., etc.
	Simple.	Grave.	LEUKAEMIAS.		Lymphatic.	Hodgkin's Disease.	
			Chlorosis.	Pernicious Anaemia.			
a. Haemoglobin 100 p.c.	Characters of these Anaemias are, that the Haemoglobin and red blood discs remain at the same percentage ratio to normal. In these Anaemias, then we have diminution of Haemoglobin and of red discs to a like extent. In the grave forms e.g. lower.		Haemoglobin greatly diminished, but the amount is proportionally higher than number of red cells.	Haemoglobin is diminished and in severe cases greatly so e.g. Mrs. B. 30 p.c.	Haemoglobin is diminished, usually markedly so. The Anæmia is of a grave Secondary type, though nucleated red discs are rare.	Haemoglobin may be unchanged but usually is moderately diminished.	Usually no change in Haemoglobin or number of red blood cells. If there is a change it is always one of an Anæmia of a Secondary type. The leucocytic proportions will vary, but it is seldom we meet with a simple leucocytosis in which proportions are greater than 1:80 red. The increase is nearly always in Polynuclears.
b. Red blood cells 5,000,000 p.c. mm. Regular 2500 inch, no nucleated red.	The red discs are changed in numbers in ordinary cases. In grave chlorosis the red cells may be diminished, but Haemoglobin percentage is always much lower. Polkilocytosis is noted in grave cases.		The red discs are lowered in very severe cases may go down to 500,000. Case W. S., type.	The red discs are diminished. Red corpuscular Anæmia is of Secondary type.	The red discs are usually moderately diminished. There is usually only a slight leucocytosis chiefly in Polynuclear cells. At times the leucocytosis is very marked and takes as its form most commonly of a Lymphatic Leukaemia.	Red blood corpuscles are usually moderately diminished. There is usually only a slight leucocytosis chiefly in Polynuclear cells.	In one case of Erythema Multiforme leucocytosis was noted with marked increase in the Eosinophile cells which made up 15 p.c. of white discs, the proportions to red being 1 in 250. The Polynuclears were also slightly increased in this case.
(1) Polynuclears 60 p.c.	Anæmia of Gastric and intestinal origin, often will usually be irregular in size and outline of cells, and nucleated forms may appear.		Megaloblasts and nucleated forms are common and Polkilocytosis is marked. Each individual cell has an excess of Haemoglobin.	Great increase of white cells, but never greater than 1 to 2 red. Polynuclears numerous but diminished in relative proportion. Eosinophiles very greatly increased. Lymphocytes diminished in numbers. Large mononuclear forms numerous. New row cells are present in large numbers, and with the Eosinophiles and mononuclear forms constitute the white cell increase.	Great increase of white cells, but never greater than 1 to 2 red. The Polynuclear are markedly diminished often making no more than 2 to 3 p.c.		
(2) Eosinophiles 1-3 p.c.	Anæmia of Gastric and intestinal origin, often will usually be irregular in size and outline of cells, and nucleated forms may appear.		White cells are diminished in absolute numbers, but owing to lowering of number red cells relative proportion ratio may be raised.				
(3) Lymphocytes 10-25 p.c.	The white cells are frequently not at all changed in absolute numbers. Frequently particularly in the grave forms there is a leucocytosis chiefly of the Polynuclear cells, and this is of serious import.						
(4) Large Mononuclears 4-8 p.c.							
Abnormal forms.							
(5) Myelocytes.							
(6) Basophiles.							

can obtain a fair idea of the size and outline of the red cells and whether there be any marked increase in the white forms.

Color preparations will not be necessary in cases of simple Anaemias or in chlorosis, but should be prepared in all grave and pernicious Anaemias and in Leukaemias and other cases of white cell increase.

W. T. CONNELL.

NOTES ON SOME MEDICAL CASES.

TYPHOID FEVER AND PNEUMONIA.

DURING the past six months I have attended, in the Kingston General Hospital, seventeen cases of Typhoid Fever. Some of these cases may perhaps prove of interest on account of their complications and sequelae. The ages of the patients were as follows:—15 years and under, three cases; between 15 and 25, 7 cases; between 25 and 30, four cases; between 30 and 40, one case; one case 52, and one 60. Eight of these cases were males and nine were females. The treatment adopted in all but two cases was symptomatic. The other two cases, one a girl 18 years old and the other a girl 17 years old, were treated exclusively by the cold bath. Both of these cases ran a regular course and were uncomplicated, the convalescence regular and uninterrupted. Of the other 15 cases, some exhibited complications and sequelae which, though, perhaps, not unusual, were interesting. I shall refer to them in detail.

R. P., male, aet. 23. Treatment, symptomatic. Temperature declined at the usual period. Patient then had a chill—complained of pain in the back.—On examination a circumscribed red spot was found which rapidly developed pus. This was opened and relief obtained. This abscess was followed by a number of others at various points over the body—they were treated similarly. As soon as the first abscess was noticed the patient was put on Calcium Sulphide. He made a good recovery. What was the cause of the multiple abscesses? Was it a case of auto-infection, or an absorption of septic matter from the ulceration of Peyer's Patches?

J. G., male, aet. 52; M. G., female, aet. 27, and C. H., male, aet. 23. All developed an oedema of one lower leg—the leg in each case was much swollen, glazed and painful. This condition was caused, no doubt, by an obstruction to the return of the blood and is by no means rare. The treatment adopted in each case was absolute rest, with the leg elevated and the application of a lotion of Fluid Extract of Belladonna and Glycerine in equal parts. All made a good recovery. In the case of C. H., there was a more interesting complication. The spleen became much enlarged and very painful—the slightest pressure causing extreme pain. The temperature ran up to 107° F. This phenomenal rise was accompanied by a chill. The patient was given a dose of Phenacetine and Binoiodide of Mercury Ointment applied over the spleen. The temperature rapidly fell, and in three days the tenderness over the spleen had almost disappeared. The patient made a good recovery.

C. D., male, aet. 20. Case was progressing favourably. At the end of 3rd week, the temperature was normal and the patient was apparently convalescent. Suddenly the temperature took an upward curve, reaching on the second day 103°. Careful examination on the first day elicited no information as to the cause. On the second day there was a suspicion of dulness over the upper part of the left lung. The next day the dulness was distinctly noticeable, and the exacerbation of temperature was evidently due to a pneumonia. This case is instructive, not because pneumonia as a complication of Typhoid Fever is rare, but because of the insidious mode of its onset. The pneumonia was treated as if it were the initial disease, with the exception that more stimulants were exhibited. The pneumonia ran a regular course and the patient was discharged well.

A. L., female, aet. 60. Treatment symptomatic, course regular, convalescence had begun. Patient then had a chill. An examination was made and it was found that the left femoral vein was much swollen and knotted, and the parts around the vein also became inflamed. Treatment same as in the case of C. H. noted above. The Phlebitis was then followed by a Pneumonia affecting the upper portion of the right lung. A stimulating treatment was adopted and a good recovery was made.

I have submitted these notes upon Typhoid Fever, not because of anything unusual in their occurrence, but merely to emphasize the importance of having a continuous watch kept upon Typhoids. A chill or a sudden rise in temperature, indicates some complication for which careful search must be made. The points in these cases which

seem to me most interesting, are the recovery of two of these patients who were aged respectively, 52 and 60 years, notwithstanding the complications and the very high temperature reached by one patient, viz: 107° F, owing to an inflammation of the spleen.

PNEUMONIA.

On February 28th last, there came under my care a young man suffering with Pneumonia on the right side. Up to March 2nd, this case presented no unusual feature, except that the patient was much depressed. At five in the afternoon of this day, I visited him and found him cyanotic and unconscious—his temperature was 104° F, and pulse 132. Eyes were turned up and glazed. I administered hypodermically $\frac{1}{30}$ grain of Strychnine; at seven in the evening he got $\frac{1}{60}$ of a grain, and at three in the morning another $\frac{1}{60}$. Next day the patient showed marked signs of improvement. The temperature fell, the pulse became less frequent, the cyanosis disappeared and the patient became conscious. From this out the patient progressed rapidly, and is now working at his trade—that of a painter. This case, it seems to me, was interesting, merely from the stimulating influence of the Strychnine upon the heart and respiration. The patient had reached the crisis in the disease and had not sufficient vitality to tide him over. The Strychnine spurred up the heart and lungs to increased effort—they responded, and the patient was saved. Other stimulants—alcohol and ammonia—had been previously administered to this patient, but they evidently had failed. I have referred to this case solely with the object of calling attention to the stimulating effect of Strychnine upon heart and lungs, and in the hope that others, perhaps, may be able to cite similar cases, or, it may be, to try the same means of stimulation, should occasion arise in their practices.

JOHN HERALD.

GRADUATES IN MEDICINE.

QUEEN'S UNIVERSITY, 1897.

The following gentlemen, having passed all the examinations and fulfilled all the other requirements, have been granted the degree M.D., C.M.

Bannister, P. G., Kingston, Jamaica.
Barber, V., Toronto, Ontario.
Bellamy, A. W., North Augusta, Ontario.
Carscallen, W. E., Tamworth, Ontario.
Douglass, H. E. M., Kingston, Jamaica.
Dunning, J., Napanee, Ontario.
Dyde, C. B., B.A., Kingston, Ontario.
Gould, S. H., B.A., Portsmouth, Ontario.
Harty, J., Kingston, Ontario.
Hill, F. L., Economy, Nova Scotia.
Huffman, F. G., Napanee, Ontario.
Knight, A. S., Cataragui, Ontario.
Kelly, W. G., Kingston, Ontario.
Letellier, A., Peterboro, Ontario.
Mylks, G. W., Glenmore, Ontario.
McArthur, J. H., Ottawa, Ontario.
McCarthy, A. W. P. A., Stapleton, Ontario.
McDermott, M. F., Kingston, Ontario.
McLaren, A. F., Lancaster, Ontario.
Neish, D. B., Fort Royal, Jamaica.
Ross, A. E., B.A., Cobden, Ontario.
Scott, W. B., Port Hope, Ontario.
Walker, H., Belleville, Ontario.
Drummond, S. J., Almonte, Ontario.

Mr. A. E. Croskery has also passed all the necessary examinations but as he has not yet attained the full age of 21 years, his degree is withheld.

We congratulate these gentlemen upon their success and extend to them our best wishes. May prosperity attend them in the work of the noble profession which they have chosen.