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# CANADA MEDICAL RECORD

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JUNE, 1898.

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## Original Communications.

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### GYNÆCOLOGICAL NOTES FROM PARIS.

By A. LAPHORN SMITH, B.A., M.D., M.R.C.S. Eng., Montreal,  
Canada.

*Apostoli.* As chance would have it, I found myself first at the Clinic of Apostoli, who has attained such world-wide celebrity by his successful application of electricity to gynæcological therapeutics. Although his office is still at 5 Rue Moliere, near the Avenue de l'Opera, he has removed his clinic from its former dingy surroundings in the Rue du Jour to a much larger and more suitable place at 15 Rue Montmartre. Since my last visit here, twelve years ago, his views have changed but little. Most of what I wrote in my letters from Paris at that time is still true. I was greatly interested to see his splendid outfit of instruments and apparatus, and the honest and painstaking manner in which the records of his cases are kept, and I could not but be impressed each time that I visited his magnificent waiting rooms by seeing them filled with the highest class of patients from so many different countries. His method must have some virtue in it to have stood the test of so many years. At his clinic he has three salaried assistants constantly taking histories and giving treatment, so that now he has more than five thousand cases, all carefully, and many of them most minutely recorded. His clinic costs him personally over three thousand dollars a year. Although he still uses the constant Galvanic current for the symptomatic cure of fibroids and the Fine Faradic current for pelvic pain, he has added two other important elements to his installation: one the static current, obtained from a

Holtz machine, and the other the Tesla current, of very high tension and high frequency. The static is given in the form of showers or sparks, while the Tesla current is applied as the patient is reclining on a sofa or sitting within a solenoid or cage, the current passing all around him. Want of space prevents me from describing these currents more fully, so I must be content with a summary of my observations.

1st. Apostoli does not treat surgical cases with electricity. Each time that I attended his clinic, I saw case after case sent to the surgeon, because these cases had either disease of the appendages or cancer of the uterus, neither of which he claims to cure by electricity. He wishes it to be distinctly understood, therefore, that electricity is an ally and not a rival of surgical treatment.

2nd. If I had any doubt, which I have not, as to the great value of electricity as a diagnostic agent in gynæcology, it would have been dissipated by what I saw at Apostoli's clinic. As the cases were brought before him, the assistants reported that in several of them there was intolerance of even small doses of 40 or 50 milliamperes. Apostoli invited me to investigate them carefully with him, and by the aid of the clinical history and the physical examination I would have suspected diseased appendages in some and cancer in others. With the intolerance of electricity added, Apostoli felt so certain of the diagnosis that he then and there sent them to the surgeon for operation. He was much interested in a case of my own, bearing upon the diagnostic value of electricity. A young woman who had been treated by three physicians with electricity for a large fibroid tumor of the uterus, was rendered worse each time. Guided by Apostoli's advice I suspected pus tubes, and on performing laparotomy I found that what was thought to be a fibroid was a collection of four enormous abscesses of the two tubes and ovaries.

3rd. I saw demonstrated the important place occupied by the electrical treatment of ovarian pain, for which, so far, neither medicine nor surgery have proven very effective. And yet no other word than magical would express the effect of the *static* spark on tender ovaries. Cases which could not endure firm pressure on the ovarian region without crying out, declared after two or three minutes of application of the static sparks,

that the same pressure caused them no discomfort whatever. Some of these patients were seen for the first time while I was there and did not leave my sight for a moment, nor was a word spoken to them until the effect was produced, so that they did not know what was being done, nor what was the effect expected. I cannot say how long the relief lasted, but Apostoli assured me that many cases, even including those suffering from ovarian pain after removal of the ovaries, had been completely cured by the treatment, which he tells me, has taken the place of the current from the long fine faradic coil.

*Pozzi*, with whom I had the pleasure of spending a morning at the Broca hospital, is one of the most striking figures of the profession in Paris. Like our own Sir William Hingston, he is a Senator and a Knight (of the Legion of Honor), and he is also a full professor of the University. He is a tremendous worker, his book on Gynæcology being one of the most complete that has ever appeared. I was always puzzled to know how he managed to find the time to write such a work, and on expressing my curiosity, he told me that he obtained leave of absence from the University and from the Hospital, and, taking many cases of notebooks and monographs with him, went to Montpellier, where he shut himself up like a hermit for two years, writing for fifteen hours a day. I saw him do an abdominal hysterectomy, during which, in order to give himself more room to work, he first split open the fundus and enucleated a large hard fibroid, by screwing a specially made corkscrew into it. The remainder of the operation was exceedingly simple, because, relieved of its load, the uterus was easily lifted out, including the cervix, and the six arteries ligatured individually with catgut, and the peritoneum closed. As far as I could learn, vaginal hysterectomy is gradually being abandoned in France, where it had its greatest stronghold, and Howard Kelly's method of abdominal hysterectomy is gradually taking its place. Pozzi is getting the City Council of Paris to build a one hundred thousand dollar operating theatre and laparotomy pavilion. It will be without wood, marble and cement throughout, so that each day it may be washed with a stream of bi-chloride solution with the hose.

*Segond* is next in seniority to Pozzi, and is about forty-eight years of age. He is a man of great force of character and is making a marked impression on the progress of gynæcology in France. He was a strong advocate of vaginal morcellation of the uterus for pus tubes, fibroid tumours and all conditions in which both tubes and ovaries had to be removed. While visiting America a year ago, he performed this operation eleven times before large assemblages of gynæcologists, and he did them so elegantly and quickly that he elicited the admiration of all who saw him operate. But though he came to show American surgeons what could be done with vaginal hysterectomy, they in turn showed him what they could do by the abdominal method, with the result *Segond* became converted by those whom he came to convert, and ever since his return he has become so strong in his advocacy of Kelly's method as to carry all before him. They all, however, still remove the cervix, even when there is no suspicion of malignancy, their sole object being to obtain vaginal drainage, which they think was the strong point leading to their great success in the vaginal method. In this I think they are mistaken, as it adds very much to the time required for the operation, several whom I saw doing it taking more time to arrest the vaginal hæmorrhage than was required for the ligature of the six arteries and the removal of the tumor. Moreover, I think it important to leave the *healthy* cervix, to avoid shortening of the vagina, and as a rule there is so little to drain that it hardly justifies the opening of the vagina. *Segond* is a great admirer of everything American, and he told the large staff present that the finest hospital he had ever seen was the Royal Victoria at Montreal, and in his writings, which are very forcible and convincing in their style, he loses no opportunity of praising the skill of American gynæcologists. I saw him doing an abdominal hysterectomy for cancer of the uterus, in which he also removed the upper part of the vagina, which was affected; he had great difficulty in stopping the bleeding. He admitted, on my inquiring, that his experience with hysterectomy for cancer was very discouraging; so I suppose they have the same difficulty to contend with in France as we have, namely, the cases come to us too late. The above case was at the Salpetriere; the next one was at the Baudeloque,

where I saw him remove a papilloma of the ovary, with secondary grafts on the peritoneum and ascites. After removing the disease he placed a drainage tube and gauze packing on account of the profuse oozing. He recognized the fact that gauze packing keeps in secretions but does not drain them. The third case I saw Segond doing was at a private hospital kept by the nuns, where he removed one tube and ovary from a young lady; but he admitted that it did not give very satisfactory results, as he had often to operate them again later.

*Richelot*, as far as I could learn, comes next to Segond. I saw him operating at the St. Louis hospital, the dirtiest looking old barracks, internally, that I have ever seen. As this was probably not his fault, I felt very sorry for him. I called upon him at his elegant private house, 32 Rue Panthievre, and although he was crowded with patients, he received me most kindly, and made an appointment for the next day. Everything during the operation was rigorously aseptic, which, of course, is the principal thing; but any stranger seeing *only* that hospital would have a very bad opinion of French hospitals. I was glad that it happened to be a vaginal hysterectomy for disease of both appendages, pus tubes, for that is his forte. He performed the operation beautifully in about the same time as we would take to remove them by the abdomen. They claim here that the uterus should always be removed when both ovaries are taken away. I also saw him perform a Schroeder operation, using a needle on a handle to pass the sutures. He did not, like Martin of Berlin, pass a preliminary suture on each side to control hemorrhage. At all the hospitals the feet and legs of the patients are bandaged up in a thick layer of cotton well sterilized, an example worth following, as it helps to keep up the bodily temperature. To close the abdomen Segond uses through and through silver wire; Bonilly, through and through silk worm gut, and Pozzi three layers, two of buried catgut and one of superficial silk worm gut.

*Doyen* is said to be the equal of any, but he did not operate while I was in Paris.

*Bonilly* operates beautifully at the Cochin hospital. *Tuffier* is a rising man. My next letter will be from Berlin

# Selected Article.

## RÖNTGEN RAY AND ITS USEFULNESS.\*

By FREDERICK PREISS, M.D., Buffalo, N. Y.

Lecturer in Electro-therapeutics.

To thoroughly familiarise yourself with the discovery of the Röntgen ray, I shall give you a summary of experiments which led up to this important event. Faraday invented the terms anode and cathode, which indicate the conductor terminals of a current of electricity. He also studied the effects of electrical discharges within tubes containing rarefied gases. Geissler improved these tubes and increased the degree of rarefaction ; he also experimented with many kinds of gases noticing the beautiful effect of a number of them. It was also noted that these gases acted differently at the anodal and cathodal terminals within the tubes and that fluorescence was produced, which was the result of the cathode extremity. Following these experiments came the magnificent researches of Prof. Crookes, who, by his high vacuum tubes, demonstrated that electrified particles were projected in straight lines within the tubes from the cathode end producing a fluorescence of the glass, which was caused by the bombardment of these electrified particles.

Next came Hertz, who showed that the cathode rays possessed penetrable power within the tube, and his student, Lenard, discovered that the cathode rays possessed the same qualities outside the tube to about the distance of three inches from the tube, and that the ray would pass through certain substances easier than through more dense objects ; he also showed that these shadows caused by the ray not passing through opaque substances might be impressed on a sensitive plate and developed in the usual art of photography. But to Prof. Rontgen is given the credit of producing similar effects at enormously long distance from the tube, he also being the first to bring the ray into practical use by having shadow-photographs taken of the bones of the human organism. Prof. Rontgen claimed that the rays from which these results were obtained were not those of his predecessors, and brought forth arguments to substantiate his claim, but arguments may be brought forward also in favor of the cathode ray being identical with the Rontgen ray, differing from it only in degree as regards severity or penetrable power. In my

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opinion the ray is cathodal, and is developed in any of the Crookes' or Geissler tubes by the passage of electricity through them, and the strength or penetrable power of the ray depends wholly upon two favorable conditions—namely, (1) a certain amount of electricity of high electromotive force; (2) the proper vacuum of the tube used. After many experiments I have come to the conclusion that the Hertz, Lenard and Rontgen ray are all one and the same, differing only in the degree of penetrable power, as above explained.

There has not been any discovery in any line of science which has caused as much world-wide interest as has Prof. William Conrad Rontgen's discovery of the properties of the penetrating light commonly called the X-ray. That name, in my opinion, is inappropriate for the following reasons—namely, in the first place the letter "X" is made use of in difficult problems to represent an unknown quantity, and that is why it has been made use of in this instance. Although the ray is somewhat obscure, still we know that it is a light and is produced by the passage of electricity of very high voltage through a glass tube which has been previously exhausted to 1-1,000,000 part of air; consequently, when we know the origin, development and properties, I am not in favor of having it represented by the letter "X", but am more in favor of calling it after the discoverer of its usefulness and who was instrumental in introducing it to be used in a practical way. This personage is Prof. Rontgen.

My object in this paper will be to give a concise description of a Rontgen ray apparatus and describe its usefulness, and, inasmuch as this subject is somewhat new and much experimentation is going on at the present time, I shall avoid, as far as possible, all unnecessary technical terms and theoretical discussions. Before advancing further on this subject I shall explain a few terms which I shall make use of:—

(a) A "volt" is a practical unit of electro-motor force; (b) an "amperé" is a practical unit of rate of speed; (c) the "cathode" is a name given to the negative pole terminal; (d) the "anode" is a name given to the positive pole terminal; (e) a "Leyden jar" is composed of glass and has a tin-foil coating inside and outside of the jar to about one-half its height; a cork stopper is used through which a brass rod runs, having a brass chain attached to its inner end, which touches the tin-foil, and a brass ball or ring attached to its outer end; the inner tin-foil is called the internal armature and the outer tin-foil is called the external armature; (f) high vacuum or high density is a name applied to the Crookes' tube when it requires great electromotor force to drive the electricity through the tube in order to give the best penetrable light;



(*g*) low vacuum or low density is a name applied to the Crookes' tube when less electromotor force is required to drive the electricity through the tube, and the consequent penetrating power of the ray is much less than that of the high vacuum tube; (*h*) the fluoroscope is an instrument of great importance to the operator of the Röntgen ray. This instrument was devised by Prof. Edison, and is composed of a pasteboard screen, covered with either fused tungstate of calcium or barium platino-cyanide set in a pyramidal box having this screen as the bottom. This screen serves to the operator the same as the lens does to the telescope manipulator. Prof. Edison has experimented with many different salts, but up to the present writing the barium platino-cyanide is by far the superior to any yet discovered for use in conjunction with the Rontgen ray. By the use of this instrument the operator is enabled to tell with what degree of perfection his tube is being excited and so aid him greatly in shadow-photography, or an examination may be made by the use of this instrument without the trouble or expense of having a shadow-photograph taken. It is a common practice of the operator of the Röntgen ray apparatus to test the penetrable power of his tube by looking through his hand and noticing the distinctness of the bony outline. I am much opposed to such a practice, as injurious effects may sooner or later develop if he uses the coil apparatus to a considerable extent. I should advise a metallic or other object to be placed in a book or box and to be looked at each time he operates, and soon his eye will become accustomed as to the clearness of the object when the tube is working to perfection. This method, as I advise, is equally instructive, and not at all injurious to the manipulator.

In the development of the Röntgen ray there are three main apparatuses used to excite the Crookes' tube—namely, (1) the static machine; (2) the induction coil; (3) the Tesla transformer.

In order to do Röntgen ray work from a static machine the size of the machine must first be taken into consideration. As a rule, an eight plate or more does the best work, although the ray can be obtained from as small a machine as a four plate, but not with any satisfactory results. There are three methods employed to excite the tube by a static machine; (*a*) the convective, (*b*) the interrupter spark gap, (*c*) the Leyden jar oscillating current. The only difference in all these methods is in the connection. A description of each is here given. (1) In the convective method, simply connect the tubes to the prime conductors and be sure that you have connected the anode of the static to the anode of the Crookes'

tube, and in commencing operation by this method have the spark-gap two inches between the sliding terminals, and gradually pull them apart beyond sparking space while the machine is in motion. It is customary to place large Leyden jars beneath the pole pieces of the static machine in the hope that better results may be obtained, the jars acting as condensers and having a tendency to reinforce the current; but I have not noticed any material difference in such arrangements. (2) The Leyden jar oscillating current is attached by connecting the tube terminals with Leyden jars having not more than twelve square inches to the external or internal armatures; otherwise, if larger jars are used, the condensation is so great and the consequent current reinforced to such an extent that injury may be done to the tubes. In commencing operation by this method, have the sliding poles close together, and gradually pull them apart beyond sparking capacity as the machine is being worked. In having the Leyden jars in a circuit, remember that by induction the current is changed—namely, the prime conductor giving positive electricity and entering the internal armature, as such is negative when it leaves the external armature; therefore, for example, an anodal prime conductor of the static machine is attached to the cathodal end of the Crookes' tube, providing the Leyden jar is in the circuit between the static machine and the tube. (3) The interrupter spark-gap is connected in the following manner: having first noted the anodal and cathodal terminals and having placed the interrupters on the handles of the sliding rods, which have been pulled wide apart, connect the anodal interrupter to the anodal terminal of the tube and the cathodal interrupter to the cathodal terminal of the tube. In commencing operation with a machine connected in this manner, have the interruptions about one-eighth of an inch in space, and gradually increase this space to about one inch at the positive and to one-half inch at the negative pole. Of course, this space of spark-gap will depend greatly upon the size and density of the tube. The Leyden jars may be in their proper position with the external rod extending high enough to be in contact with the post of the sliding terminal. In this position the jars are supposed to act as condensers and so increase the electromotor force of the current. This method of connecting I claim to be superior to the other two, for the following reasons:—(1) There is not as much waste of current, and consequently a greater amount passes through the tube; (2) the interrupters give greater bombardment to the ray within the tube, and thereby greater penetration is produced.

The induction coil is the most convenient, especially if

the apparatus be taken to the bedside or clinic room. The first object which confronts the purchaser, however, is how large a coil should be bought? For all ordinary purposes a six to ten inch is sufficient; it also must be decided whether a direct or alternating current is to be used for the primary circuit or battery. I should recommend the direct current in the form of a movable battery. A necessary accessory to the coil is a vibrator or rotary interrupter; both work satisfactory, but a rotary interrupter run by a small motor is to be preferred, as more even interruptions are thereby obtained, which is conducive to better Röntgen ray production. A rheostat should be used to control the current supplied to the primary of the induction coil, as, if too strong a current be passed to the coil, it is very liable to be burnt out and consequently ruined. If the coil be immersed in oil it is not so easily short-circuited, and will give the purchaser more service.

*Tesla Transformers.*—Mr. Tesla has devised a coil which develops static electricity, and may be attached to a direct or alternating current, and consequently may be connected to any of our electric light currents. Mr. Tesla claims that, with an ordinary incandescent lamp, his coil may be used in place of the ordinary static machine in the treatment of various diseases. Unfortunately, the coil is not manufactured at present, but Mr. Tesla informs me, however, it will be in the course of a few months. Such an apparatus would be very useful, as it could be carried very easily to the bedside or the clinic room, where electricity or a small battery is at our command without the slightest inconvenience, as the whole apparatus would not weigh over twenty pounds.

Many names have been given to the pictures taken in conjunction with the Röntgen ray. The following is a partial list: Cathode-photography, shadowgraphy, radiography, cathography, photography, electrography, fluorography, skiagraphy and rontography. There are two methods whereby this picture is taken: (1) by putting the object which is to be shadow-photographed between the sensitive plate and the Crookes' tube; (2) by having a fluoroscopic screen and putting the object between this screen and the Crookes' tube, and then with a camera take the picture of the image or shadow which appears on the screen.

You will observe that in either case we do not get a photograph of the object itself, but a photograph of the shadow of the object is produced; therefore, I have designated the word shadow-photography, which is self-explaining, and is an appropriate word to use in conjunction with this part of the Röntgen ray work. In giving a description of shadow-photography the process is identical, whether a small or large

apparatus be used, or whether the shadow-photograph is to be that of a bone or that of a foreign body. Now, supposing the experimenter is ready to proceed. He takes the plate-holder containing the sensitive plate, the film side of which is turned upward, and fixes the object between the tube and the sensitive plate; everything being in readiness, the apparatus is made to work. The length of time required for the exposure depends upon the following conditions: (1) the penetrating power of the rays; (2) the amount of tissue or substance which the ray will be required to penetrate.

There are now on the market plates wrapped in black paper, and a plate-holder is not required. These plates will keep from four to six months without any deterioration as regards their sensitiveness. The experimenter must always remember that the Röntgen ray will destroy the sensitive plates; consequently these plates must be kept in an iron box or in an adjoining room having a partition made of other than carbonous material. Furthermore, the object to be shadow-photographed must be kept perfectly quiet, otherwise a fogging of the picture will result. You are all familiar with what a photographer will say when you have a photograph taken—namely, keep quiet and do not move a muscle; so, in a shadow-photography, the object must be kept perfectly quiet. If the object be fastened to the sensitive plate it does not matter so much if both move slightly, but one must not move differently than the other. If you wish, for instance, to take a shadow-photograph of the hand, fasten the hand firmly to the plate by three or four bands of adhesive plaster. To the beginner, questions arise, (1) how far should the plate be kept from the tube? That depends upon the apparatus you have and the power of the ray, but, as a rule, very good results are obtained at about two to six inches from the tube. At this distance the picture will be the best as regards accuracy and fine definition. (2) How long must the sensitive plate be exposed? That depends upon two conditions: (a) The density of the tube, whether high or low; if the density be low, much time is required, and at its best the definition is poor and inaccurate; but, if the density be high, a much shorter time is requisite to obtain a perfect impression, a few seconds or even an instant of exposure to a perfect flash is worth more than minutes of the working of the ordinary tubes of low vacuum. (b) The object the ray has to penetrate, as, for example, under like conditions it will take double the time for the elbow than for the hand. There are a few suggestions I shall endeavor to make here in regard to the manipulation of the tube. To the experimenter it is of the utmost importance to have the tube working per-

fectly before the sensitive plate is exposed, and herein the fluoroscope is made use of, after you have turned on the apparatus; have a certain object to look through and see whether the tube is working at its best. If you accustom yourself to look at the same object each time, you will soon familiarise yourself as to how plain the object should appear when the tube is at its best, whereas if you use a different object each time you will have lost that advantage.

A word about the Crookes' tube. This tube is exhausted to 1-1,000,000 part of air, having at each end a platinum wire fused in the glass and ending externally in a loop to make attachments to the exciting apparatus. Internally these wires end differently; the one is attached to a dish, usually made of aluminum, which function is to concentrate the rays, and is called the cathodal extremity of the tube. It is always attached to the negative pole of the exciting apparatus, the other being attached to a reflector, and is usually made of the same material; its function is to reflect the rays, and is called the anodal extremity, and is always attached to the positive pole of the exciting apparatus. If these attachments be reversed, little or no penetrating ray will be detected outside the tube. If the vacuum of the tube be too high, heat the cathodal extremity slightly over a spirit lamp, taking care not to heat it too much at one point, as you are liable to break the tube by so doing. If the vacuum be too low, use the tube a while and the vacuum will gradually get better and the ray more penetrable. After the tube has been in use considerable and is not working perfect, reverse the connections a few minutes and the tube will again probably work to perfection; an impaired tube is also benefited by rest; but after a time the tube cannot be benefited by this means of repairing, and will have to be sent to the manufacturer for re-exhaustion. Many tubes are on the market, and it depends upon what kind of exciting apparatus it is to be used as regards which kinds of tubes are best suited for that particular outfit. In connecting the tube with the exciting apparatus I should recommend the connecting link to be made of fusible lead wire, as a more perfect connection can be made and consequently less injury done to the tube through manipulation while making the necessary attachments. Tubes are manufactured which contain a salt in an extension at one end of the tube. This salt can be heated from outside the extension and lower the vacuum if it be too high. This tube is commonly called a focusing tube.

Great has been the interest taken by all the educated human race in the achievements of the Rontgen ray, and the class that has been most interested is that of the medical

profession, who are ever eager to grasp at new remedies and appliances that may assist them in their efforts to relieve diseased, suffering humanity. Among the foremost revelations of the Röntgen ray are those applied to normal anatomy, and the day is not far distant when a first-class Röntgen ray apparatus will, out of necessity, be among the paraphernalia of the dissecting laboratory of every foremost medical college and hospital of the universe. It might be argued that the student can study as well from an artificially arranged skeleton, but such is not the case, as no human hand can arrange the osseous structures to the same perfection as nature. By the Röntgen ray shadow-photograph or by the use of the fluoroscope, the precise relations of the bones to each other may be determined when the body is in the erect position or in any of the various attitudes. Development may be studied with great advantage, as developing bone may be easily distinguished from that which has already developed; likewise, the comparative anatomist is furnished an opportunity to study the osseous structures of the lower animals.

In the dissecting room the anatomical relations of the blood-vessels may be accurately determined by injecting into the vessels of the cadaver a metallic or nonpenetrable substance, which will show by opaqueness the precise course and distribution of the arterial circulation; the feasibility of this method may also be applied to the various cavities and organs of the dead body. In the living subjects the dimensions of the stomach may be determined by having the patient swallow ferruginous pills, or, better still, a metallic ball attached to a string or flexible handle, and a shadow-photograph taken and the fluoroscope used while the patient is in certain positions. Irregularities and congenital deformities of the osseous structures may easily be determined; also the heart, liver and the kidneys may be outlined. To the surgeon the Röntgen ray is as requisite as the mirror is to the laryngologist or the ophthalmoscope is to the oculist. In considering the diseases of the bony structures of the human organism, we find the ray indispensable in various pathological conditions, most of which I shall endeavor to bring before you. How often are we consulted when, owing to the extreme tenderness and extensive swelling, thereby causing inability to properly manipulate the disabled member, we are unable to accurately decide whether the case at hand is one of fracture, dislocation, a severe sprain with much laceration of the soft tissue, or perhaps all three; but now with the use of the Röntgen ray we may very easily determine the exact nature of the existing disability and treat our patient with confidence and not with the fear of a possible malpractice.

suit. If in case of fracture you manipulate the broken bones and apparently get them in proper position, but are still in doubt as to whether the ends of the bones are in perfect apposition, all that is requisite is to place your subject before the ray, and with the use of the fluoroscope you will be able to satisfy yourself whether or not they are now in their natural position. If the splints be carbonous, you may at intervals look through them and determine whether the bones are kept immovable and that healing is going on properly.

We find the ray also very useful in determining tubercular and cancerous disease of the bone, caries and necrosis, exostosis, floating cartilage of osseous formation and hypertrophy of bone ; in fact, any disease whatever which shows increase or loss of bony substance. Many times we are consulted for troublesome pains referable to the bony structures. So localised is the pain that the patient is strongly under the impression that the bone is affected. By the use of the ray you will be able to convince your patient that such is not the case, but that the symptoms complained of are those caused by a probable localised neuritis, and treat the patient accordingly. And so in a great many instances, where the patient imagines that something is wrong with the osseous structure, you have only to use the ray, which will aid in the diagnosis and also gain the confidence of the patient and so aid materially in your endeavor to relieve the existing troublesome condition.

It is also very important to diagnosticate whether ankylosis, caused by a fracture or disease, is due to fibrous or bony union, inasmuch as the former may be remedied with good success and the latter not. The ray, in passing through an ankylosed joint, due to fibrous union, will show a light space between the ends of the bones ; if due to bony union this space will appear opaque. Consequently the surgeon is in a position to enlighten his patient on the probable result if operative procedure be performed in either case.

In dentistry the ray is occasionally made use of in detecting whether or not a fang of a tooth remains in the socket, even if it be covered with soft tissue. The surrounding bone is more penetrable than are the teeth, thereby distinguishing the alveoli from the teeth or fangs. The lost end of a broken drill may be located if the dentist unfortunately breaks his instrument while operating upon his patient ; also the central cavity of a tooth may be outlined so that diseased conditions within the tooth may be detected. The growth and development of the teeth may be studied before and after they begin to protrude above the gums, thereby greatly aiding in the diagnosis of certain obscure cases of convulsions occurring during infantile teething.

One of the first applications of the discovery of Prof. Röntgen was the detection of foreign objects in the human body. Many occasions we meet with cases where the patients have been injured by fire-arms, whether intentionally or otherwise, and no one knows better than the surgeon how difficult it is sometimes to locate the bullet, but with the use of the Röntgen ray the exact position may be manifested, and once the object being located there are three methods by which to proceed for its removal:

1. The surgeon may take a glance through the fluoroscope to see where the foreign body is located and mark the spot, then giving the fluoroscope to his assistant. He takes his knife or forceps, as the case may require, and operates; if necessary he may be directed by his assistant, who has the management of the fluoroscope and is watching the operation through it.

2. A shadow-photograph may be taken whereby the exact location of the foreign body is determined, and the operator, having the picture before him, can now very easily extract the object.

3. By the use of the fluorometer, which is by far the best method of exactly locating any foreign object. Not only does this apply to missiles sent by fire-arms, but to all substances which are nonpenetrable to the ray, such as needles, glass, pieces of steel, stone and the like. Then, again, we find important diagnosis made by the rays in abdominal concretions, such as stone in the kidney, bladder and liver. Also calcareous deposits may be detected in various parts of the body, such as in gouty and rheumatic affections.

Suppose you are consulted by a patient who has had articular rheumatism for many years, you will be unable in the majority of cases to say whether the swelling around the joint is all external to the periosteum, but by the use of the ray you may very easily determine enlargement of the osseous structure, and consequently be able to give a more satisfactory diagnosis and prognosis of the case at hand. Fibroid growths of large dimensions, whether simple or malignant, may be outlined. Pregnancy may be diagnosed as soon as the fetal osseous structures become slightly nonpenetrable to the ray. Prior to four months' gestation it is almost useless to attempt diagnosis by the above means.

To the practicing physician the ray is not of such great importance as it is to the surgeon, but it may be made use of by him to determine consolidation of the lung, enlargement of the liver, enlargement of the kidney, enlargement of the uterus, displacement and enlargement of the heart,



and is useful in the diagnosis of disease by exclusion. In almost all other diseases the practicing physician will find the Röntgen ray of little service to him.

In the foregoing pages I have endeavored, to be best of my ability, to lay before you, in a concise way, the pathological and anatomical conditions wherein the use of the Röntgen ray is of great importance. Of course, I could cite many instances where I have found the ray of incalculable service. An example is here given :

January 8th a brother physician brought a patient of his to me for a Röntgen ray examination, with the following history : Pain more or less for six years since falling off a platform ; at the time of the accident he alighted on both feet. At that time he was confined to the house for four days, after which he was out and about by the aid of a cane. Upon making a comparative shadow-photograph of both knees the bone of the injured leg, which was the lower end of the femur, was found to be half an inch wider in lateral diameter than the other ; consequently, at the time of the accident the lower end of the femur must have been slightly cracked, and was never properly put together. He was informed at this examination that nothing could be done and was much disappointed, but was pleased to be enlightened as to the exact nature of the existing difficulty. Previous to this he had consulted many physicians without any relief or satisfaction. Now, under the circumstances it would have been impossible to have diagnosed this condition by any other advisable method except the one I have described.

Another very important application of the Röntgen ray will be in connection with testimony in lawsuits. Up to this date only two cases are on record where the presiding judge allowed the above used as such, and in these cases it was used only as corroborative testimony. In all other cases the court did not allow such testimony as might be given by shadow-photography, but it will only be a matter of time when such evidence will be permissible. The main reason why shadow-photograph testimony is not at the present date always permitted is because most of the cases in the court at the present time are the result of injuries sustained before the ray was discovered, and consequently the defendant did not have the advantage of the use of this recent discovery.

I may say that the field of experimentation of Röntgen ray work is large. There is ample room to make use of the ray in other directions than it has been used up to the present time. It is an interesting and notable fact that a diamond can easily be distinguished from a paste or glass, as the latter will appear opaque while the former will not. It may also be used to detect flaws in metals or how much metal there is in certain ores. Who knows but that in a short time, by chemical or mechanical devices used in conjunction with the Röntgen ray, we will be able to differentiate between the cyst, hematoma or a collection of pus and the like.

A word here about the beneficial and curative effect of the Röntgen ray. Allow me to say that, in my opinion, it has not any such property whatever. Much experimentation has been carried on, but all without the slightest encouraging result, but, on the other hand, injurious effects may be procured by a constant or repeated exposure of a coil apparatus.

Cases have been cited of the falling out of the hair, erythematous sloughing, inflammation of the eyelids and skin generally, and falling off of the nails, but this injury, in my opinion, is not produced by the ray itself, but is produced by the subject being placed in too close proximity to the electric current, which current is of high voltage, and consequently the patient is subjected to some extent to the electro-galvanic burning, which manifests itself in and around the tube and its conductors. I have yet to witness a single case where the slightest injurious effects have been produced by the proper manipulation of the Röntgen ray apparatus; but, if operated by an imprudent or unskillful hand, occasionally considerable injury may be manifested. Pray, what is not injurious if carried to excess?

The ray itself appears to have very little, if any, action upon animal or vegetable organisms. Any action that does manifest itself is due to electric diffusion, which is the result of leakage from the tube and its conductors while the apparatus is being operated.—*Buffalo Medical Journal*, June, 1898.

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## Progress of Medical Science.

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### MEDICINE AND NEUROLOGY.

IN CHARGE OF

J. BRADFORD McCONNELL, M.D.

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#### THE TREATMENT OF NEPHRITIS.

Acute nephritis is by no means so frequently met with as the more chronic inflammatory conditions which produce such disastrous results; yet it is sometimes seen either as the ingestion of irritant substances or of the presence of severe infections. Some persons have gone so far as to assert that acute nephritis may result from severe exposure. Whatever its causes may be, if it is of a severe character, a train of symptoms familiar to experienced clinicians assert themselves. There is a condition of malaise, with anorexia and perhaps

nausea and vomiting, while, if the condition of the kidneys be grave, these symptoms may be followed or supplanted by violent headache, followed by delirium, convulsions and coma, during which the heart will be found acting laboriously and the pulse will be of high tension. The urine will also be decreased in quantity and the patient may develop rather a typhoid appearance. This condition may last, if not so grave as to produce death early in its course, for several weeks, and at that time, unless the case has been badly treated or has been unusually severe, recovery takes place, or at least the patient becomes so improved in health as to consider himself well.

The most important thing to do for any patient who is suffering from mild or severe acute inflammation of the kidney is to insist upon absolute rest, the patient remaining in bed not only for the rest, but also in order that the surface of the body may be protected from draughts and colds. A liquid diet, consisting largely of milk, should be insisted upon, and this liquid diet has the additional advantage that it will tend to increase the quantity of urine and so help to wash from the kidneys the effete materials which it is the function of these organs to eliminate. On the other hand, it must not be forgotten that during the course of acute nephritis the kidneys are unable to eliminate as much fluid as they can do in health, and the too free administration of liquids under these circumstances may to some extent aid in increasing the tendency to dropsy. For this reason scantiness of the urine in acute nephritis is not to be considered as a very grave symptom, but, if it becomes exceedingly scanty and does not show evidences of being thoroughly laden with excrementitious matter, and if it seems probable that this failure of action on the part of the kidneys is due to congestion, it then becomes the physician's function to relieve that congestion by one or several measures. Dry cups or even wet cups may be applied over the lumbar region, provided that hot compresses applied to this area for an hour or two fail to relieve the congestion. Or, in other cases, it may be well to cause a flow of blood to the surface of the entire body by placing the patient in a hot wet pack.

As purgatives not only relieve congestion of the abdominal viscera directly, but also seem to indirectly stimulate the kidneys to increased secretion, probably by relieving engorgement, and as calomel is a purgative which is supposed to possess considerable diuretic power, this or some other more rapidly acting drug, such as the sulphate of magnesium, may be given, and this will also aid the body in eliminating poisons through the bowel. Should the arterial tension be great,

we are not to forget that, in the presence of acute inflammation with high arterial tension, aconite and chloral are valuable drugs which are best given in small doses rather frequently rather than in full doses far apart. Should evidences of cerebral congestion manifest themselves, it may be necessary to resort to hot foot-baths or to actual venesection, the patient being also purged by repeated small doses of Epsom salts. As the end of the period of acute inflammation is approached, the anemia, which has probably been gradually increasing, is to be combated by the use of iron and arsenic, though the latter drug is to be administered cautiously lest it irritate the kidney, and solid food may be employed in place of the liquid diet heretofore insisted upon. Oxygen inhalations are also useful to some of these cases. The greatest attention should also be paid to maintaining an active condition of the skin by frequently sponging it with alcohol, or, if the patient is strong enough, by frequent washings.

Where the condition of the kidneys is more chronic, or, in other words, subacute nephritis is present, the patient should be advised, if possible, to resort to a warm and equable climate, to clothe himself most carefully, to avoid wetting the feet, and to limit his diet both as to fluids and solids. The rule in regard to fluids should be that they should not exceed to any great extent the quantity of urine which is passed, although, of course, an amount of liquid over and above that which is passed must necessarily be swallowed to make up for that which is lost through the skin and lung. This is particularly necessary in patients who are suffering from dropsy, more or less well developed. Should the patient not be passing water freely, copious draughts of fluid may be given to him with the object of aiding his kidneys in getting rid of the quantity of urea which should normally be eliminated and which amounts approximately to about 500 grains. If the physician is properly cautious he will from time to time analyse the urine to determine whether the normal quantity of urea is being eliminated, and should it constantly fall below the normal he will know that there is danger of the development of uremia and cerebral symptoms, and arterial tension should be lowered and diuresis encouraged by the use of nitroglycerin. If the dropsy in any case is sufficiently severe to result in large effusions into the various visceral cavities, there is nothing left to do but to recognize the fact that the condition of the kidney is grave; that the prognosis is distinctly unfavorable, and the only measure for relief in addition to those named is the use of tapping for the purpose of drawing off the liquid. If, as occurs in some cases where the disease is advanced, arterial tension is depressed rather than

raised, digitalis in the form of the infusion, which contains more of the diuretic principle of the digitalis (digitonin) than alcoholic preparations of this drug, should be employed for the triple purpose of stimulating the heart, the arterial system, and increasing urinary flow.—*The Therapeutic Gazette*, April, 1898.

### THE BECHTEREW TREATMENT IN EPILEPSY.

De Cesare (*La Riforma Medica*, Aug. 13, 1897) records eight cases of epilepsy treated for a period of six weeks with a mixture of bromide of potassium codeine and adonis vernalis, given twice a day (Bechterew treatment). In four cases there was complete suspension of the fits; in three cases the fits were replaced by infrequent attacks of vertigo, and in the last case there were four attacks of vertigo and two convulsions. In each case the attacks were very much reduced in frequency; no bad results were observed. The digestion was not impaired, the pulse was fuller, the temperature normal, diuresis increased, sleep uninterrupted and calm, and the mental condition unchanged. The author believes the results were due to the combination of drugs and not to the bromide alone.—*British Medical Journal*, Oct. 23, 1897.

### THE ANTITOXIN TREATMENT OF DIPHTHERIA.

In the *Western Medical Review* of December 15, 1897, M. D. Jones concludes a paper on this subject by asserting that the value of antitoxin in diphtheria is no longer a question of opinion or theory, but an established fact. The few who oppose it have proved nothing in comparison with the enormous mass of evidence as to its specific value. It may, therefore, be affirmed that the following facts have been demonstrated:

1. That diphtheria antitoxin, where generally employed, has reduced the mortality from diphtheria at least one-half.
2. That it has distinctly favorable effects on the clinical course of the disease, shortening it and lessening its severity.
3. That the earlier the treatment is commenced the better the results obtained; the mortality, when adequate doses of antitoxin have been given within the first forty-eight hours of the disease, not exceeding five per cent.
4. That antitoxin is a specific against true diphtheria, and less efficacious in mixed infection, but even in these forms of diphtheria it is of decided benefit.

5. That it is not necessary to wait for a confirmatory bacteriological diagnosis, but that in every clinically suspicious case of membranous angina, especially in children, a medium dose of antitoxin should immediately be given, and repeated if required by the further development of the case.

6. That antitoxin is a remedy without serious after-effects in the doses which have ordinarily been employed; that it has no injurious action on the kidneys, the heart or the nervous system; that it does not entirely prevent albuminuria, heart failure and post-diphtheritic paralysis, because the effects of the diphtheritic toxin which has already entered the system before the administration of the remedy, no matter how soon the treatment is begun, are not always completely counteracted by the antitoxin.

7. That the protection conferred by immunizing doses of antitoxin is almost absolute for a short period of time.

8. Antitoxin should begin in early or mild cases in not less than 500-unit doses; for moderately severe or recent laryngeal cases in not less than 1000 unit doses; and in severe faucial or laryngeal cases in not less than 1500 unit doses.

If, in the face of the volume of statistics and testimony in favor of the antitoxin treatment of diphtheria, the writer hears a physician oppose or condemn it, he concludes that he either knows nothing about its use practically or his experience has been very limited and with an inferior product, or perhaps he has treated the case until all other means have failed—hopeless degeneration of important organs has taken place—when as a last resort he expects antitoxin to accomplish the impossible. Under these circumstances the remedy is not employed scientifically or honestly, and should reflect discredit upon the physician and not the remedy.

In the late administration of antitoxin we merely stop the storm waged against the frail bark of life, as irreparable degeneration has taken place, and it sinks beneath the silent wave of toxemia.—*Therapeutic Gazette*, April, '98.

## HOW TO TREAT SICK HEADACHE.

Analgesine, says Dr. Hirtz in the *Journal des Praticiens* of December 11, 1897, is unquestionably a medicament of the first order. Huchard experimented with it as an antipyretic; but it is especially an analgetic, and Germain Sée used it commonly to combat pain. The dose is, so to speak, individual. Some subjects are relieved by a dose of four grains; others require fifteen grains; and sometimes thirty or forty-five grains are necessary to obtain recovery.

Patients should be warned against the abuse of this drug, which has become public property, and is frequently taken without the advice of a physician, as it gives rise occasionally to symptoms of veritable poisoning. Analgesine is more easily tolerated when combined with eight grains of sodium bicarbonate. It may also be administered hypodermically when the condition of nausea dependent upon the headache is too painful and too pronounced to allow of the ingestion of any liquid. It may be given in enemata, from thirty to forty-five grains of analgesine with six drops of laudanum being sufficient for four injections.

Before the employment of analgesine, says the author, caffeine was frequently prescribed, either in potion or in subcutaneous injection, and the following formula by Huchard may be recommended :

R Caffeine,  
Sodium benzoate, of each 660 grains ;  
Peppermint water, 8 ounces.

M.

A teaspoonful is to be given every two hours until four teaspoonfuls have been given, each one representing four grains of caffeine. The same dose will be contained in a Pravaz syringe, with the following formula for hypodermic injection :

R Caffeine, 38 grains ;  
Sodium benzoate, 44 grains ;  
Distilled water, sufficient to make 2½ drachms.

M.

If the sick-headache persists after the administration of analgesine, other drugs may be tried, such as acetanilid. They should not be given except in divided doses, in small capsules containing from three to four grains five or six times a day. Care should be taken not to exceed thirty grains a day.

Phenacetine has the advantage of being almost non-toxic and of provoking much more rarely than analgesine eruptions and symptoms of intolerance. Capsules containing four or five grains may be given four or five times a day.

Exalgine does not give such brilliant results in sick-headache as in the trifacial neuralgias. Four grains may be given at a time, but this dose should not be exceeded, and its action should be carefully watched, as it gives rise to accidents.

Lauder Brunton, says Dr. Hirtz, recommends sodium salicylate combined with potassium bromide. The amount is twenty-three grains of the former and thirty-eight grains of the latter, given in four doses.

Immerwahr, Lewy and Schumann have found in methylene blue a very efficacious remedy for sick-headache,

especially the form called angeiospastic. They gave it in doses of a grain and a half four times a day, combining it with nutmeg as follows, in order to avoid vesical irritation :

R Methylene blue,  
Pulverized nutmeg, of each 1.5 grains.

M.

This quantity will make one capsule, about four of which may be given a day.

Migrainine, which is considered by Schumann one of the best remedies for sick-headache is a combination of antipyrin and caffeine as follows :

R Antipyrin, 89.4 per cent. ;  
Caffeine, 8.2 per cent. ;  
Citric acid, 0.56 per cent.

M.

Aconitine is sometimes successful when other nervines fail. It is prescribed in globules only, each containing four one-thousandths of a grain, of which two a day may be given.

Guarana contains guaranine, which is identical with caffeine. It is given in a powder in doses of from eight to thirty grains dissolved in water.

Seguin, who was a great advocate of the ocular theory of sick-headache, thought it was frequently due to defects of refraction, and he recommended the employment of mydriatics and the correction of the muscular defects by wearing proper glasses. As an internal remedy, he recommended the extract of cannabis indica, to be given three times a day in pills, each containing a fifth of a grain, which amount may be progressively increased to three grains. Gradle, of Chicago, prefers the tincture of cannabis in doses of from twenty to twenty-five drops twice a day, at an interval of six hours.

Ophthalmic sick-headache during its painful stage is amenable to the same treatment as common sick-headache. Other indications, however, present themselves. This form of sick head-ache is associated with nervous affections, such as neurasthenia, hysteria, certain mental troubles, epilepsy, tabes and general paralysis. The most useful treatment, and the only one really efficacious, given in the interval between the attacks in order to delay their recurrence, is with the bromides. Charcot and Fere, says Dr. Hirtz, laid great stress on the services which this treatment rendered. Potassium bromide, sodium bromide, or a mixture of several bromides, may be prescribed in amounts increased from thirty to ninety grains in twenty-four hours.

Ophthalmoplegic sick-headache sometimes resists all treatment. During its painful stage antipyrin, phenacetine, exalgine, etc., may be employed. The paralytic stage is



frequently rebellious to all therapeutic intervention, and this is explained, says the author, by the anatomical and pathological changes. In one case Gubler found the oculo-motor nerve surrounded by an abundant exudation, with thickening of the pia mater. In a case coming under Weiss's observation the nerve was buried in tuberculous masses; in another the nerve was pressed upon by a fibro-chondromatous tumor. In spite of these facts, which baffle all attempts at cure, either the iodide or the bromide treatment should always be tried. Locally, energetic revulsives may be tried under the form of blisters, the cautery, or even the seton. Not only must the attacks be cured, but, what is more difficult to accomplish, their recurrence must be delayed in order to render them less frequent, and, if possible, to cause their disappearance. To do this, the various causes which lead to sick-headache should be taken into consideration. The patient should be put upon a strict diet; he should avoid all indigestible food, alcoholic drinks and liquors, the smallest doses of which bring on an attack of sick-headache in predisposed subjects. The majority of recoveries, according to Dr. Hirtz, are due to extreme sobriety.

Debout recommended the following as a prophylactic measure :

R Quinine sulphate, 45 grains ;  
Pulverized digitalis flowers, 2 grains ;  
Syrup, a sufficient quantity.

M.

This quantity will make thirty pills. The dose is a pill every night for a period of several months.

In arthritic, rheumatic and gouty persons, the following treatment is recommended by the author: The patient is put upon a strict diet; nitrogenous or indigestible food, especially vegetable, is not allowed at night, and water or a drink like weak tea may be taken. In the morning, before eating, Carlsbad or Tarasp water, heated to about 104° F., may be taken, or else Vichy water. Every night, before supper, a pill containing the following mixture may be taken :

R Quinine valerianate, 15 grains ;  
Extract of colchicum, from 3 to 7 grains ;  
Extract of digitalis, 3 grains ;  
Extract of aconite, 1½ grains.

M.

This quantity makes ten pills.

Neurasthenic sick-headache is best benefited by living in the country, moderate muscular exercise, and a quiet life free from professional occupations. It may be overcome by

the employment of the phosphates or the glycerophosphates, the use of which may be alternated with arsenic under the form of Fowler's or Pearson's solution in amounts of from six to twelve drops a day ; or strychnine arsenate may be used in globules containing fifteen one-thousandths of a grain, of which from two to three a day may be given.

Hydrotherapy, static electricity and psychotherapy are, says Dr. Hirtz, ordinarily valuable adjvants.—*The Therapeutic Gazette*, April, '98.

### BLOOD REACTION IN DIABETES.

Loewy (*Fortschritte der Medicin*, March, 1898, *British Medical Journal*) records some further investigations of Bremer's reaction in the blood of diabetic patients. The original method of obtaining the reaction was to stain a film of blood in two solutions, each consisting of a mixture of 0.5 per cent. solution of eosin with a saturated solution of methylene blue, the one contained excess of the former, the other excess of the latter stain. After passing the film through these two mixtures successively, Bremer found that in normal blood the red corpuscles were stained deep brown, whereas in diabetic blood they are left pale yellow or greenish yellow. Loewy, in his experiments, used the simpler modification which has lately been suggested. The blood is stained two minutes in 2 per cent. methylene blue, and then 10 seconds in 0.125 per cent. eosin solution. Keeping strictly to the technique described by Bremer in this method, Loewy found that, in every case of diabetes in which the amount of sugar in the urine was more than 2 per cent., the blood gave the characteristic reaction. In one case, where dieting had already caused the sugar to disappear, the reaction was still obtained in the blood. The failure of several observers to obtain the reaction in diabetes is probably due to their not having paid sufficient attention to the details of the method, which must be adhered to strictly. No reaction was obtained in the blood in cases of severe anæmia; no opportunity occurred for trying it in leucæmia, in which some observers have found the reaction. The blood plasma is not necessary for the reaction; 5 c.cm. of blood were taken from a vein of a diabetic patient, and separated from the plasma by a centrifuge; the corpuscles were then washed with normal salt solutions until the washings showed no trace of sugar; the typical Bremer reaction was then obtained with the blood corpuscles. It was also found that normal blood treated with a weak acid gave the reaction.

## PROFESSOR SCHENCK'S RESEARCHES ON THE PREDETERMINATION OF SEX.

In view of the fact that Professor Schenck's conclusions as to the power of artificially determining the sex of offspring have served as a nine-days' wonder to some of the lay papers, it seems advisable to lay before our readers a plain statement of his argument, taken without comment from the pamphlet which he has just published. It opens with the statement that it is impossible to command natural processes, but possible by scientific means to exercise a more or less effectual influence upon them, in order to extract from them the best possible results. His essay falls into three parts—a summary of the writings of his predecessors, an account of his own researches and deductions, and finally a description of the method of treatment he has devised, with illustrative cases.

In the development of an embryo the generative organs are at first indifferent—hermaphrodite; in the further process of growth one set develops while the other atrophies. This tendency must be predetermined from the time of fertilisation, for each cell formed from the ovum must have sexual characters since these are not confined to the generative organs but appertain to the whole body. The readiness with which an ovum can be fertilised depends upon its position in the ovary, the thickness of its envelope, etc., and these may also have a bearing on the question of sex. In other words, the predetermination may precede fertilisation, and of this confirmation is found in the development of bees and in the production of male and female flowers by plants under different nutritive conditions. In this connection Professor Schenck enunciates and discusses at considerable length the views of previous writers. He points out that the male sex preponderates to a definite though slight degree in the total number of births, and that the sex of a child is more likely to be that of its older parent. He pays particular attention to the theory of crossed sexual heredity, by which each sex tends to propagate the other. Thus, if the sexual power of the male be greater, a female offspring is more likely to result, and *vice versa*. This theory is threshed out most thoroughly and with abundance of quotations and examples; in the end Professor Schenck practically accepts it, and makes use of it in his further work. With regard to the influence in environment upon sex, he quotes Robin's statement that in warm climates females preponderate, in cold and unfavourable males. Born also showed that 95 per cent. of artificially fertilised frogs' eggs hatched out as females, this being an

effect of nutritive conditions acting after fertilisation. Thury's researches are fully analysed, and are stated to have originally called Professor Schenck's attention to the subject. Thury found that cattle fertilised at the beginning of "heat" threw more females, at the end more males. This he explained by the degree of ripeness of the ovum, but Professor Schenck accounts for it on the crossed inheritance theory, the sexual power of the female being at its greatest at the end of the period of rut. This part of the work is summed up in the statement that the sex of offspring largely depends upon the state of nutrition of the parents, particularly that of the mother during pregnancy. During this period the difference between intake and excretion represents the food of the embryo, and hence requires special attention. The temperature is slightly raised, owing to oxidation processes, which entail a considerable consumption of red blood corpuscles and consequent diminution of hæmoglobin.

The second section begins with the enunciation of the fact observed in domestic animals and in insects, that the better the mother is nourished the more females she produces, the number of males remaining practically constant. This influence upon the *fœtus in utero* has received but little attention from the practical point of view, and Professor Schenck consequently set out upon a series of observations based on a theory of crossed sexual inheritance. He first investigated the excreta, and particularly the carbohydrates of the urine. The presence of a certain amount of sugar, which is commonly recognisable by the phenyl-hydrazine test in perfectly normal individuals indicates incompleteness of the oxidation processes, whereby a certain quantity of heat is lost to the body. This physiological output of carbohydrate is in the male sex most marked during the period of growth—that is, between the ages of 14 and 19. In women there is no corresponding increase, but small quantities may appear in the urine before and after menstruation, while Iwanoff and others have shown that glycosuria is common in pregnant and parturient women. Now the amount of sugar normally excreted is equal in men and women, but more significant in the latter, owing to the lesser activity of their metabolic processes. For the perfect ripening of the ovum it is necessary that oxidation shall be perfect—that is, that no sugar shall be left unburnt. Where there is a remainder of unburnt sugar the ovum stands a chance of being less ripe and less well nourished. Hence the properties of its protoplasm are less well developed; and by the theory of crossed inheritance it is more likely to produce a

female child. On the other hand, when the urine is free from sugar the ovum can attain perfect development, and give rise to male offspring. It is upon this cardinal principle that Professor Schenck's theory is based. He holds that a prolonged course of appropriate nourishment both before and after fertilisation will tend to the conception of male children only.

The next question is of the means to be adopted to ensure this end. If a male child is desired, and the maternal urine contains no sugar, but abundance of reducing substances (particularly the lævo-rotary glycuronic acid) he allows impregnation forthwith. If, on the other hand, sugar is present, it must be removed, and the reducing substances increased before fecundation may take place. It is found that the urine of a woman pregnant with a boy contains more reducing substances than that of one with a girl. We need not enter into the details of the diet recommended beyond saying that it contains a large amount of proteid, which seems to be required by a male embryo.

Finally, Professor Schenck gives what may be called his clinical results. He quotes numerous cases to show that the bearing of female children is associated with glycosuria. In such instances he recommends a diet comprising plenty of proteid and fat, and as little carbohydrate as can be tolerated; this must be taken for two or three months before and three months after impregnation. He gives one example in which six boys were born in succession under this treatment, and a girl immediately it was relaxed; and others in which boys were born after repeated births of girls before the treatment. In all, out of 7 recorded cases, 6 were successful. He concludes that the nutrition of the mother plays a most important part in the determination of sex, and that in countries where much flesh is consumed there is a marked preponderance of male children. This can be imitated artificially, but it is far more important to ensure the completeness of oxidation processes in the body. As long as the combustion of the food is perfect, and the urine is totally free from sugar, the exact amount of meat consumed is of secondary importance. The birth of male children can thus, in certain cases, be predetermined, but the voluntary production of girls is a problem as yet unsolved.—*British Medical Journal*, May 7, 1898.

## DIET IN HEALTH AND DISEASE.

DR. WILLIAM HENRY PORTER, of New York, in a recent paper on this subject, stated that the most valuable

food-stuffs are beef, eggs, and milk. Animal foods have the advantage of being easily digestible and not prone to undergo putrefaction, but they are deficient in nucleo-albumin, which is essential for the construction of the red-blood corpuscles and for supplying energy to the nervous system. It is for this reason that those who are kept for any length of time on an exclusively animal diet become anemic and weak. Vegetable foods, on the other hand, contain a large percentage of nucleo-albumin, but also an unduly large proportion of starch and sugar, and are prone to undergo fermentation. Moreover from 15 to 60% of vegetable food-stuffs pass through the alimentary canal unchanged. It is true that fruits are laxative, but they are so because they cause fermentation, and in doing so, they favor the production of toxins by microbic activity. The most important of the vegetable foods are rice, maccaroni, green peas, spinach and lettuce. Potatoes should be taken quite sparingly. In connection with the subject of fermentation within the alimentary canal and the production of toxins, it should be noted that Dr. Porter expresses the belief that these toxic products arise, for the most part, from the decomposition of the mucus as a result of the action of the microbes. From this he deduces the corollary, that treatment directed towards reducing the quantity of mucus in the alimentary canal to a minimum is an excellent way of controlling these intestinal toxemias. He has found that the administration of tannalbin, in doses of from 5 to 15 gr. t. i. d., causes a precipitation of this mucus and a destruction of the culture-medium, and so acts as a valuable means of diminishing putrefaction. In prescribing the diet for very sick persons, it is wise to begin first with egg water and follow this successfully with a little dry toast and beef-tea, and finally with scraped raw beef. Not until it has been found that these can be digested easily by the patient is it safe to give fully cooked meats or vegetable food-stuffs. For those very exceptional cases in which milk really cannot be tolerated, the milk should be given warm, and after the administration of some ox-bile and pancreatic extract. If the milk is taken in this way, to the exclusion of everything else, it is rare that there will be any special difficulty. If there is trouble, skimmed milk or butter-milk should be substituted. In those exceedingly rare cases in which even these methods fail, and milk seems to be but little short of a poison to the individual, the nutrition can be maintained by giving a little beef-tea and a large number of raw eggs daily in a little sherry wine.—*The Philadelphia Medical Journal*, April, 1898.

## DYSPEPSIA.

Thorizon's treatment of dyspepsia and gastro-enteritis in infants is as follows :

1. *Acute dyspepsia* : A diet of pure water for twelve to twenty hours, until the acute stage has somewhat abated. At the same time pepsin and dilute muriatic acid is administered, the same plan is followed in the chronic form.

2. *Acute gastro-enteritis* : Diet of water for twelve to thirty-six hours. When vomiting is present, "lavage of the stomach," and large Hegar's enemata. Internally—calomel in the usual doses.

When high fever is present, cool baths, in the algid stage, mustard baths, rubbing the skin with alcohol and administering the latter internally. He also gives subcutaneous injections of caffein and artificial serum.

When the acute stage is passed, benzonaphthol, bismuth, lactic acid, and, later, Kefir should be prescribed.

3. *Chronic gastro-enteritis* : An attempt should be made to check the diarrhoea by bismuth-benzonaphthol. Tonic treatment should be employed, and the child must be kept warm.—*Revue de Malade d L'enpao Pediatrics*.

## THE TREATMENT OF INSOMNIA IN CHILDREN.

Comby (*Lr Med. Mod.*, 1897, *viii.* 249, *Pediatrics*). Soporifics are not indicated in infants when insomnia is due to improper food or to disturbances of digestion; in such cases we must remove the cause. Insomnia is often met with in children who are given alcoholic potions, coffee, tea, etc. In these cases a cure is obtained by withholding the cause. Some children sleep restlessly on account of eating too much nitrogenous food; these children should be allowed meat only once a day. If the cause is not found in feeding, insomnia may be due to nervous cause. Before having recourse to soporifics, physical anodynes should be applied, for example: warm baths, before bed-time, of fifteen to twenty minutes' duration. In some children cool baths or even douches will exert a more favorable influence. Finally, we may use the wet pack advantageously two or three times a day in cases of marked cerebral irritation. In children, whose brain is very active, rest to the latter should, of course, be prescribed. Should all these measures prove insufficient, it may become necessary to administer soporifics. One of the simplest of these remedies is orange flower water, which may be prescribed in quantities of twenty to sixty grammes (5 to 15 drams) before bed-time. This remedy frequently induces

quiet sleep, lasting the whole night. Opium should be administered, but only in small doses, when insomnia is due to cough or pain. The bromides are always indicated when neurosis accompanied by cerebral irritation is present. Bromide of potassium or sodium may be given in doses of 0.10 (1½ grains) in sweetened water or in syrup or milk. If the child is unable to swallow these remedies, they may be administered in clysmata or in suppositories.

Chloral hydrate in doses of 0.05 (¾ grain) in the first year of life is safe and active, in larger doses it has a bad action on the heart. It may be used in solution, in enema or in the form of suppositories.

A combination of bromide of potassium and chloral is quite effective :

℞	Potassii bromat.....	
	Chloral hydrat, aa.....	2.0 (½ dram)
	Extr: hyoscyami .....	
	Extr. belladonnæ.....	
	Extr. cannabis indicæ aa.....	0.02 (⅓ minim)
	Syr. flor. aurant.....	30.0 (1 ounce)
	Aq. destill.....	40.0 (1⅓ ounce)

Sig.—A coffeespoonful every hour.

The disulfones employed in recent years are especially indicated in children. Sulphonal may be given internally or in clysmata in doses of 0.10, to 0.15, to 0.25 (1½ to 4 grains) at a dose, according to the age of the child. If sleep is not induced after one or two hours, the dose may be repeated. As regards trional, Claus recommends it in children, from one month to one year old, in doses of 0.20 to 0.40 (3 to 6 grains), in children between one and two years of age in doses of 0.40 to 0.80 (6 to 12 grains), in those between two and six years in doses of 0.8 to 1.20 (12 to 18 grains), in children between six and ten years of age in doses of 1.20 to 1.50 (18 to 23 grains.) Comby considers these doses too large, as has seen the temperature fall from 38.5 C. to 34.0 C. in a greatly excited girl ten years of age suffering with meningitis after the exhibition during the day of one gramme (15 grains) of trional, divided in four doses.

According to his numerous experiments with trional, this remedy proved to be an excellent hypnotic in doses of 0.25 to 0.75 (3¾ to 11½ grains), which was well borne and showed no bad after-effects in these quantities. This dose may be repeated every evening, but it would be better to omit it every other night, for the reason that sleep is frequently permanently induced after one to two doses of trional.



## ALCOHOLIC STIMULATION IN CONTINUED FEVERS.

What are the indications for the use of alcoholic stimulants in such febrile diseases as typhoid, grippe, pneumonia or septicemia? This is the question put and answered by CABOT in the *Boston Medical and Surgical Journal* of December 2, 1897. *The Therapeutic Gazette*, May, 1898.

There are many who regard the existence of one of these febrile diseases as of itself a sufficient reason for giving alcoholic stimulants. For example, in Wood and Fitz's "Practice of Medicine" it is laid down that "alcohol in some form should be used in every case of typhoid from the beginning, unless there be some very strong reason for refusing it, as where there is a distinct heredity towards drunkenness." Many who might not agree to this course in typhoid believe in using alcohol in every case of pneumonia, whatever its nature, and in all severe septic and pyemic processes the author supposes that the majority of good practitioners in this vicinity would prescribe alcohol as a matter of routine. From this point of view, the diagnosis once established, the exhibition of alcoholic stimulants is a matter of course.

On the other hand, there are in many modern text books signs of a reaction against this wholesale and routine use of stimulants. For instance, W. Gilman Thompson, in his new work on dietetics, says: "I am inclined to prescribe very much less alcohol than formerly;" and again: "The routine employment of alcohol in typhoid is to be deplored." Pepper, in the edition of 1894 of the "American Text-book of the Theory and Practice of Medicine," says: "Until recently the symptoms of alcoholic overaction (in typhoid) were often mistaken for advancing debility, and regarded as an indication for still more free stimulation."

Of modern authorities Strümpel is the only one who distinctly disbelieves in the use of alcohol in any of the diseases above mentioned. Even in pneumonia he does not give alcohol except to patients who have become habituated to it before their illness. "We could never satisfy ourselves," he says, "of the often praised action of alcohol on the heart."

Between these two extremes—the routine use and the absolute avoidance of alcohol in continued fevers—falls the practice of most of us. The usual opinion is that there are certain indications for the use of alcohol in such cases. What we want to bring out in this paper is that many of us are not as clear or as consistent as we ought to be as to just what we expect to gain by stimulation, and as to the reasons for its use in any particular case.

For example, Cabot thinks there is a fairly wide-spread

impression among us that alcohol is itself directly inimical to the toxemia which forms the chief danger in acute infections.

Does this impression rest on any satisfactory experimental basis? The writer has never heard of any such. If it could be shown that the use of alcohol increases the germicidal power of the blood, or of the power of the kidney to excrete toxins or precipitate them in the stomach, we should have a satisfactory reason for giving stimulants, as, for instance, most surgeons now give them in septic cases. There would then be good reason for giving stimulants, even if they did not improve the heart's action, the digestion, or any other function of the organism. But, so far as known, there is no experimental evidence that the ingestion of alcohol does increase the antitoxic or bactericidal power of the blood, and there is a certain amount of evidence that, so far from increasing the ability of the kidneys to excrete toxic products, alcohol has just the reverse effect. We know that alcohol precipitates snake poison in the stomach where it is excreted, but the writer is not aware of such evidence as regards other toxins. He has heard surgeons and others express a belief that it is no harm to stimulate a septic patient even to the point of making him drunk. As to the wisdom of this course the following experiments are relevant :

1. In the *Comptes de la Société de Biologie* for 1895 (p. 51), Wurtz and Hudels report experiments on fourteen rabbits and seven guinea-pigs, which were given enough alcohol to make them drunk, and then killed, and their blood examined for bacteria. Over one-half the cases showed the presence in their blood of streptococci, colon bacilli, proteus vulgaris and various anaerobic organisms.

The control animals, to whom the same dose of alcohol had been given, recovered from its effects, showing that the inroad of bacteria in the autopsied cases was not due to any moribund condition from a lethal dose. They were simply drunk and not dangerously poisoned.

If large quantities of alcohol make bacteria enter the blood in animals, why may it not have a similar effect in sick men? Are we likely, then, to benefit a septic patient by making him drunk?

2. Again, take the question of the excretion of toxins by the kidney. It is well known that in most acute infectious diseases, where the patient is doing well, the urinary toxicity is greatly increased, and this is taken to show that the kidneys are aiding in the fight against the disease by excreting the poisons produced by the infectious agent. Kellogg found that the use of alcohol, so far from increasing the urinary toxicity, greatly decreased it. The writer does not

vouch for these results, but offers them for what they are worth. There is no doubt that cold bathing in typhoid does increase the urinary toxicity, as has been shown by Roque and Well.

Apart from the question of the action of alcohol as an antitoxic or bactericidal agent, the following indications for using it in continued fevers are stated in most text-books.

1. Persons long addicted to its use should not be deprived of it in febrile diseases. On this point there seems to be no disagreement.

2. It may be the only form of food which the patient can and will take.

3. Sudden collapse or great prostration from any cause is generally agreed to call for stimulation.

As to these three indications the writer thinks most physicians would agree. But the great majority of writers go further and recommended that :

4. Any serious complication, such as hemorrhage or perforation in typhoid, severe nervous symptoms like delirium—in fact, anything that shows an especially severe case—should be considered an indication for stimulation.

5. Persons over forty years of age and persons of feeble constitution are believed by most writers to need stimulation in case they catch any severe infectious disease, like typhoid or pneumonia.

On the other hand, Ringer's views on the use of alcoholic stimulants are copied into many text-books, and they conflict with the belief that a severe or complicated case or one occurring in a feeble person should always be treated with stimulants. Ringer says in substance: "If after the use of alcohol we see the pulse become slower, the skin and tongue moister, sleep better, nervous symptoms less marked, breathing less hurried, food better taken—the alcohol is doing good. Not otherwise."

Now, if this be true, we cannot say that severe or debilitated cases need stimulation, but only that they may need it, or that they need it in case it turns out to do them good. Now this is where the writer thinks many of us err. We do not watch the action of alcohol as we do that of other drugs which may do harm. We often give it as we might give malt, and not as we give digitalis or calomel. When we give a diaphoretic or a purgative we look for its definite action; if we do not get it after a sufficient dose, we do not continue the drug. But the writer has repeatedly seen alcohol given whether any good effects appeared or not with a general idea that it must be doing good since it is a food and a stimulant. But in many cases it does not act as a stimulant—in

any dose ; does not slow the pulse, moisten the tongue, or decrease restlessness and delirium ; and other food is so well taken that it is not needed as a food—yet we go on using it under a vague impression that it helps the patient to fight his disease, makes him feel better perhaps, and at any rate cannot do any harm. Cabot enters a protest against such treatment which he sees constantly administered in our hospitals and elsewhere. He believes with Pepper that the symptoms of alcoholic poisoning are “often mistaken for advancing debility, and regarded as an indication for still more free stimulation.”

There is a pernicious idea which has been repeatedly advanced by prominent physicians, that if the smell of alcohol is not present on the breath the amount of alcohol given must be doing good. But alcohol is not excreted solely by the lungs, and its ill-effects can be shown, as Ringer and others have pointed out, by other symptoms besides the smell of the breath.

It seems to the writer that what is most needed at the present time in order to improve our therapeutic use of alcohol is more experimental evidence on two points : (1) The effects of alcohol on the toxicity of the urine, and on the antitoxic and bactericidal power of the blood ; (2) the effects of treating acute infectious diseases without alcohol.

The writer has often thought that therapeutic progress is seriously hindered by the fact that every case is given the best treatment known. He accounts for the long persistence of the bleeding treatment by supposing that since every patient was given the best treatment known—namely, bleeding—physicians had no chance to see how the disease would do without the treatment. Similarly, at the present day, so few of us have ever seen a severe case of sepsis or pneumonia treated without alcohol that it is very possible that some of us may attribute to the disease (as Pepper says) symptoms really due to the treatment. The writer has often been struck with the close resemblance between delirium tremens and some of the symptoms of severe febrile cases treated with the best known alcoholic stimulation.

In 1864 A. L. Loomis treated 600 cases of typhus fever without alcoholic stimulants as an experiment. His mortality record was six per cent. ; the previous record in the same epidemic in cases treated with stimulants was twenty-two per cent,

N. S. Davis claims to have treated 1,000 cases of typhoid fever without alcoholic stimulation with a mortality of five per cent.

Kellogg, of Battle Creek, states that he has treated

eighty-two cases of pneumonia without alcohol, with a mortality of 4.9 per cent.

The author states that he is aware that statistics can lie, and he is not prepared to say, as Strümpel does, that we should give up alcoholic stimulation in fevers; but he does think that we need a broader experimental basis for our practice of and use of stimulants simply because the case appears to be very severe.

In conclusion he believes that alcohol, like other drugs, should be given to accomplish a definite therapeutic result, and if no signs of that result appear the drug should be withdrawn. Experimental evidence is much needed: (a) As to the effects of alcohol on the toxicity of the urine and the bactericidal power of the blood; (b) as to the result of treating acute febrile diseases without alcohol.

### BACTERIOLOGICAL RESEARCHES IN WHOOPING COUGH.

By E. CZAPLEWSKI and R. HENSEL (*Deutsch. Med. Woch.*, 1897, No. 37, *Ref. Der Kinder-Arzt*, 1897, Hft. 12. *The Post Graduate*, March, '98).

Experiments hitherto made upon the etiology of whooping-cough have thus far given no definite results. Therefore, during the last Koenigsberg epidemic of whooping-cough, the authors instituted researches, obtaining positive results. The sputum was received immediately after the paroxysm, in sterile or (what is irrelevant) non-sterile vessels, and washed in peptone-water; from the solid residue of the sputum floculi smear preparations were made. The staining is done with carbol-fuchsin, or better with carbol-glycerin-fuchsin (both diluted), preferably after a previous short treatment of the preparation with 1 per cent. acetic acid. Cultivation took place upon Loeffler's blood serum, at 37°C. The micro-organism thus found appeared as a very small, short rod, with oval rounded ends. It is about as large as the influenza bacillus, which it also resembles through its staining qualities, but, in distinction from this, it grows upon the ordinary culture media. Furthermore, the size is very variable. The smallest forms appear as cocci, in division as diplococci. The adult rod is only 2-3 times as long as broad. Longer forms are found in cultures, more rarely in the sputum. Sometimes several individuals are arranged in chains. The bacterium is non-motile, short-lived and little resistant. Up to this time lasting (Dauer) forms have not been observed. Most of the bacteria lie free in the sputum; more rarely they occur in the cells, yet sometimes many cells are entirely filled with them. In sputum that has not been well washed, still other bacteria are

found, particularly streptococci, whereby isolation upon serum plates is rendered very difficult. Pure cultures were first obtained by means of secondary streak inoculation upon plates. These can readily be grown as a not very characteristic, yellowish-gray coating upon serum tubes, and then also upon the remaining ordinary nutrient media, even upon gelatine at 23 ° C. Inoculation experiments upon animals yielded no results, as in the case of the influenza bacillus (here, as is known, a transfer inoculation only takes place in a specific form in apes).

The above described findings were constant in over thirty cases. The assumption that this micro-organism is the cause of whooping-cough was confirmed by the fact that, by its detection, the authors were able to foretell the existence of whooping-cough in several cases in which a positive clinical diagnosis could only be made at a latter period. Moreover, one of the authors became affected during this investigation with a severe coryza associated with general symptoms. Coughing was slight; upon only one day were several convulsive coughing attacks observed. The described bacteria were found in great numbers in the nasal secretion. The authors believe that Burger (*Berlin klin. Woch.*, 1883. No. 1) has already described the same bacteria.

### TREATMENT OF THE ATAXIA IN TABES DORSALIS BY THE RE-EDUCATION OF THE MOVEMENTS, FRAENKEL'S METHOD.

By HIRSCHBERG (*Arch. de Neurol.*, Vol. II., 1896, Nos. 9 and 11; *The Post-Graduate*, March, 1898).

The author bases his conclusions on a study of nine cases. In the beginning the patients practice the movements for one-half hour every day, but after they have become accustomed to them an hour is the customary time. This should not be exceeded, nor should any considerable fatigue be caused. In the three of the cases which the author mentions, the ataxia was so profound that the patients were unable to walk or to stand, and in the remaining three cases the ataxia was of a moderately severe degree. Improvement was manifest in every case, and in some this was very marked. Concomitantly with the bettering of the ataxia the patients were subjectively improved. They not only felt better, but remarked that when in bed they knew where their legs were, etc. There was no objective improvement of sensory disturbances. According to the author's experience, Fraenkel's method may be employed with benefit in all uncomplicated cases of tabes; nevertheless in every case the patient's nutrition must be fairly well preserved. It should

not be used when tabes is complicated with other diseases—such as of the heart, for example. An absolute contra-indication to its use the author sees in tabic joint affections. The blind tabic patient finds no benefit whatsoever. Cases in which the tabes has developed acutely should not be treated by means of the Fraenkel method at once—on the contrary, this method of treatment should be delayed until the disease comes to a standstill, or until the progression of the disease is extremely slow.

### TREATMENT OF MANIA.

By MAGNAN (*Revue de Psychiatrie*, 1897).

The author's advice regarding the treatment of mania is summarized as follows: 1. No restraint and rest in bed. The patient should never be put in a cell except as an absolutely last resource. 2. Baths, bromide and chloral. 3. When there is intense excitement and profound insomnia, hydrochlorate of hyoscine may be used subcutaneously. 4. The concentrated nutrition must be given, frequently repeated, and all forms of fermented liquors interdicted. The straight jacket is never used. To quiet the patient, baths at 33° C. are given, the patient being kept in the water for from two to five hours, and the same time cold applications are made to the head. If the patient is extremely maniacal wet packs may be used instead of the baths. In the evening the patient should receive from 40 to 60 grains of bromide of potassium and two or three hours later from 10 to 40 grains of chloral. After a week or so, when the patient has quieted somewhat, the dose of bromide is diminished and the chloral is given only occasionally, sulfonal and trional being substituted. Patients that are rebellious to the bromide-chloral medication often take increasing doses of laudanum with very good effect. Morphine should not be given. Over-medication is the mistake usually made in the treatment of acute mania.

### PHYSICAL ENDURANCE.—WHY WE GET TIRED.

It should be impressed upon all young persons that during life each member of the body, in the very act of living, produces poison to itself. When this poison accumulates faster than it can be eliminated, which always occurs unless the muscle has an interval of rest, then will come fatigue, which is only another expression for toxic infection. If the muscle is given an interval of rest, so that the cell can give off its waste product to keep pace with the new productions, the muscle will then liberate energy for a long time. This latter condition is what we call endurance.

The power and endurance of the human machine is limited according to our understanding of the above facts, and also our recognition of its slowness in getting started. Like any other ponderous and intricate machine, the body requires time to get in harmonious working order. The brain, nerves, heart and skeletal muscles must be given some warning of the work they are expected collectively to perform. Ignorance of this fact has broken down many a young man who aspired to honors on the cinder-path. The necessity of getting all the parts of the body slowly in working order is well understood by trainers and jockeys on the race track, as is evidenced by the preliminary "warming up" they give their horses, although it is doubtful if the trainers could give any physiologic reason for this custom.

It is the general impression among athletes that exhaustion and "loss of wind" is due to the inability to consume sufficient oxygen and exhale rapidly enough carbon dioxide. When the muscle is moving rapidly and forcibly it is true that it demands more oxygen, and gives off to the blood more carbon dioxide than when at rest. When a man is running as fast as he can make his limbs move he is able to keep up the pace but for a short distance unless, like the hunted hare, he runs to his death. On account of the forced, vigorous and rapid muscular action in this case, the poisonous materials are thrown into the blood, to be carried to all parts of the body—muscles, nerves, brain. The heart is affected by this poison through the nerve cells controlling that organ; the muscles of respiration are similarly disturbed. The panting, distressed efforts of breathing, sidelong tumbling, anhelation and final semi-consciousness of the hunted stag or hare are a good example of acute auto-intoxication ending in death. This latter deplorable condition is not unknown among the annals of human strife for athletic honors, even with our present advanced knowledge of physiology.—*From the Physiology of Strength and Endurance, by W. L. HOWARD, in Appletons' Popular Science Monthly for June.*

### THE USE AND ABUSE OF HYPNOTICS IN INSOMNIA.

The use of hypnotics in the treatment of insomnia is simply the use of symptom remedies; insomnia is a symptom, not a cause of disease nor a disease. Sleep is essential to the welfare of the organism in the same sense that food is. Deprivation of one or the other causes death in about the same period of time.

The use of hypnotics, therefore, should be temporary while the underlying cause of the insomnia is being removed



or palliated. Nor, indeed, is it well at the outset to employ hypnotics without trial of other measures. Aside from the removal of somatic causes for sleeplessness, various general methods may be employed. One of the best is a bath at 104 F. for five minutes. The general cutaneous vascular dilatation, increased by rubbing with a coarse towel, is frequently followed by a good night's rest. Warm liquid food, as a glass of hot milk, a bowl of soup, will often give satisfactory results. In fact some of the hypnotics which, on account of their insolubility, must be given in considerable quantities of hot liquids, owe not a little of their reputation to the vehicle in which they are administered. In debilitated individuals, a glass of stout or whiskey in hot water (hot Scotch) may work wonders. In tired subjects, strychnine sulphate in moderate dose acts as a hypnotic, not because it makes a too-tired individual just tired enough to sleep, as a distinguished professor of medicine would have it, but because strychnine dilates arterioles. Sometimes stimulation of the emunctories, as by sodium sulphate, again in hot water taken at night, will be followed by sleep, particularly in gouty subjects, not because it is hypnotic, but on account of its action on liver, intestines and kidneys. Methods which relieve pain—position, topical applications—are hypnotic.

Sleep is accompanied by cerebral anaemia and systemic cutaneous vascular dilatation. Any method which produces these effects will tend to the production of sleep. When these all fail, and often they do, hypnotics must be resorted to. The safest only should be chosen; they are chloralamide, pelletine, paraldehyde and trional.

The abuse of hypnotics comes from two sources: (1) careless and ignorant physicians, and (2) conscienceless prescribing druggists. The careless physician prescribes for the symptom insomnia, little caring whether it be due to cerebral degeneration, organic cardiac disease, obstructive pulmonary disease, latent gout, functional intestinal derangements or hysteria. The ignorant physician uses opium or its alkaloids, not knowing that these are narcotics, clubs a patient into insensibility and calls it sleep. Here commences the opium habit, or, not believing in "new-fangled" remedies, he keeps closely to chloral, and either adds to the list of chloral fiends or terminates the life of one who is suffering from an unrecognized heart lesion, the cause of the insomnia. Or, again, he may be a therapeutic nihilist—a polite name for the therapeutic ignoramus—and finding that drugs when administered by him have but slight beneficial effect, concludes that they have none at all, launches out with a combination of drugs, and succeeds in making his patient sleep because, with all

functions overwhelmed, he can do nothing else. The danger of hypnotics are immediate (death) or remote (interference with nutrition). The possibility of habit is always to be borne in mind. Druggists are responsible for a large share of the abuse of hypnotics. They openly prescribe hypnotics in doses far exceeding those considered safe and further repeat prescriptions containing hypnotic drugs even when the prescription distinctly forbids this. In England, sulphonal is sold as openly and carelessly as are the ordinary necessities of life. With equal ease coffee can be purchased for breakfast and sulphonal for bedtime. The same is true in this country. So long as druggists prescribe and sell without authority, so long will hypnotics be abused. And druggists are beyond control.

The only remedy lies with the physician. Let him study his materia medica, learn his therapeutics, and apply intelligently what he has learned. Then, and only then, may we get the best results with the fewest disadvantageous symptoms, do the most for our patients, and after all rest with a consciousness of duty well performed.—*The Post-Graduate*, May, 1898.

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## SURGERY.

IN CHARGE OF

GEORGE FISK, M.D.,

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### A RETRACTOR FOR THE INTESTINES.

Karl Roser (*Centralbl. f. Chir.*, Berlin, 1898, XI, pp. 297-300) describes an instrument devised for the purpose of holding the intestines back out of the way during abdominal operations. The apparatus is made by soldering together the end of a steel wire sixty-two centimeters long and two-millimeters thick, so that it forms a ring. The wire should be of such a temper as to allow of its being bent to fit the individual needs, at the same time being of sufficient elasticity to keep its shape and maintain enough pressure on the surrounding structures to hold the required position. The deleterious effects following pressure on the tissues may be overcome by covering the wire with rubber. Either gauze or lint is stretched over the ring. This instrument is of especial advantage in operations in the pelvis when the Trendelenberg position is contra-indicated, and also in operations in the region of the gall-bladder, and it is useful in all abdominal operations where it is essential to keep the intestines out of the way.—*American Medico-Surgical Bulletin*, May, 25, 1898.

## MINIATURE HAMMERS AND THE SUTURE OF THE BILE DUCTS.

Dr. W. S. Halstead (*Bul. Johns Hopkins' Hosp.*, Vol. IX., No. 6, p. 67, 1898) says that the operation of choledochotomy should never be postponed solely for the purpose of allowing the ducts to become thickened, for the normal duct "can be sutured accurately, almost infallibly, and without danger of leakage or constriction." To facilitate the suture of the bile-ducts Halstead employs miniature hammers, the heads of which vary in diameter from 3 to 17 mm., and they have the handle inserted near one of the heads in order to make easy its introduction and removal. The mode of procedure in suturing the ducts is as follows: Two sutures are introduced to serve as retractors, and the incision into the duct is made between them. When all is ready for uniting the duct, a hammer of the proper size is inserted into the opening. Then, with the very finest of silk and needles, mattress sutures are introduced directly across the hammer-head, uniting the two sides of the incision. These sutures must of necessity go through the duct-wall, but as the contents of the duct are almost always sterile this makes no difference. The hammer is then withdrawn and the sutures tied. The advantages of being better able to control the position of the duct, of more ease in passing the sutures, and of cleanliness, are all manifest to the operator when he uses these hammers.—*American Medico-Surgical Bulletin*, May 25, 1898.

## THE ADVANTAGES OF THE TRENDELENBURG POSTURE DURING ALL OPERATIONS INVOLVING, DIRECTLY OR INDIRECTLY, THE CAVITIES OF THE MOUTH, NOSE AND TRACHEA.

W. W. Keen (*Dunghlison's Coll. and Clin. Rec.*, July, 1897) calls attention to the great advantages which may be secured by operating on the tonsil and on the adenoid growths in the pharynx in the Trendelenburg position. This position has also a much wider use in the removal of pharyngeal tumors, naso-pharyngeal tumors, extirpation of the tongue and upper and lower jaws, all operations involving the cavity of the nose, in cleft palate, hare-lip, epithelioma, and other tumors of the lips, roof of the mouth, etc. The advantages of this position are :—1. There is little danger of an aspiration-pneumonia following the operation. 2. A preliminary tracheotomy may generally be avoided, a by no

means slight advantage, since a tracheotomy-wound is necessarily an infected wound, adding greatly to the dangers of the principal wound. 3. There is little difficulty in giving the anesthetic. 4. The mouth being gagged open, if the operation is intra-oral, the interior of its cavity can be seen very readily, especially if with the gag a tongue-depressor is used. If not, then the tongue is controlled by a ligature passed through it. The soft palate can be lifted by a blunt hook, and adenoids removed from the vault of the pharynx with the aid of sight as plainly as if they were on the face. The arches of the palate, tonsils, the posterior wall of the pharynx, the roof of the mouth, cheek, etc., can always be seen and reached with that certainty which accompanies sight. A forehead electric light is of great assistance. 5. There is no spitting of blood into the face of the operator, and therefore no interruption of the operation. The author also incidentally alludes to the use of a slight Trendelenburg position in the removal of the breast, Estlander's, Schede's, or other operations on the chest, in all operations about the shoulder, neck or head. Soiling of the night-dress, underclothes, blankets, etc. is thus avoided.—*American Médico Surgical Bulletin*, Feb. 10, 1898.

### POST-OPERATIVE INTESTINAL PARESIS FROM NERVE INJURY.

Dr. E. McGuire, of Richmond (*Virg. Med. Semi-Monthly*, Oct. 22, 1897), calls attention to and reports several cases briefly of the foregoing, which came under his care. The importance of post-operative ileus from nerve-injury has not received the attention that it should; one reason is that it is generally confounded with some other variety, especially the sceptic form, which is often added to the former in a few hours if not relieved. The nervous distribution of the intestinal canal being derived from the solar plexus, its impressibility and sensitiveness are not excelled in any part of the body, and it is little to be wondered at that over-stimulation from injury to the peritoneum is followed by a paresis of the muscular coat of the intestine to which the afferent or motor nerve is distributed. The wonderful inhibitory power of the nervous system over intestinal peristalsis is illustrated in the passage of a gall stone or renal calculus, in omentum strangulation, in ovarian compression from blows on the abdomen, etc. McGuire believes that a large number of cases where death is attributed to post-operative sepsis or peritonitis are either caused by or have their beginning from reflex nerve-injury. A bowel that has been exposed to the air for a long time until it has become blanched and dry, one that has been

subjected to rough manipulation, or has had its mesentery or coats torn or lacerated in separating adhesions, has, in the author's belief, sustained sufficient injury to lose, by reflex paresis, its functionary powers of absorption and peristalsis. Distension from reflex paresis may come rapidly or slowly. To a great extent, it depends upon the preparatory treatment of the intestinal canal prior to the operation. An exceedingly interesting, important and, at times, difficult matter is the differential diagnosis between the various forms of post-operative ileus. In every instance the problem to solve is, whether we have to contend with a case of traumatic, septic or mechanical ileus. Vomiting in post-operating traumatic ileus, if the effects of the anesthetic have passed off, does not occur as early as in the septic or mechanical variety, and in most instances is not excessive until the advent of sepsis. To the discomfort due to distension added pain is not severe. The distension of the abdomen is, usually, gradual and diffused over the whole surface, and not limited at first to a portion of the abdomen, as so often seen in mechanical ileus in its early stages. After extensive distension has occurred and septic paresis or peritonitis is added, which condition is usually, but not always, accompanied by a rise of temperature, there is no line of demarkation between these two forms. One gradually merges into the other, and the case rapidly progresses from bad to worse temperature. The pulse should be watched closely, as it often gives the first indication of impending complications by gradually increasing in frequency. Rapid operations, the avoidance of exposure and rough handling of the intestines, the repairing of all peritoneal injuries as far as possible, the prevention of traction on the intestinal walls, are all important in lessening the danger of a parietic bowel due to nerve-injury. Finally, peristalsis should be excited that an evacuation be secured. —*American Medico-Surgical Bulletin*, Feb. 10, 1898.

### THE TREATMENT OF FRACTURES BY MASSAGE AND MOBILIZATION.

Dr. Lucas Championnière (*Le Scalpel*, January 2, 1898) presented a patient at the Academy of Medicine of Paris who had had a fracture of the inferior extremity of the left humerus. The cure was perfect, and had been effected by massage and mobilization from the first. Apropos of this case, Dr. Championnière said that immobility is not an indispensable element nor even a useful one in the treatment of fractures. A mobilized bone with peripheral massage repairs itself more quickly and more easily than an immobilized one. A great number of fractures of the humerus are amenable

to this same treatment, all those from the finger to the elbow and those which are superior to the insertion of the deltoid. Adult and aged subjects are those most benefited by this treatment. These principles apply not only to fractures but also to all tissues which have undergone traumatism. Im-mobility does not favor the repair of tissues or of organs; movement is as necessary to their repair as to their life. Im-mobility in surgery is harmful, and should become a thing of the past. Dr. Péan acknowledged that the results obtained were all that could be desired, but could not agree to a general application of this method. It is advantageous in transverse fractures when the displacement is slight, but, when there is a fracture of the olecranon or an intercondyloid fracture, he felt convinced that immobility for some days gives most excellent effects. The method of Dr. Championnière may be all right in his hands, but complications are likely to arise when less experienced surgeons attempt to employ it. Dr. Championnière said that he had been slightly misunderstood. He wished to say that movement never produces pseudarthrosis. Im-mobility is only used to avoid deformity. There are fractures in which mobilization cannot be employed, as fractures of the humeral or femoral diaphyses, fractures of the inferior extremity of the tibia, etc.—*Medical Record*, May 7, 1898.

### BRAIN SURGERY.

Ernst von Bergmann ("Die chirurgische Behandlung der Hirngeschwülste," Volkmann's "Klinische Vorträge," No. 200, December, 1897) recommends greater moderation in brain surgery. He considers the dangers to be apprehended from shock, infection, œdema and possible prolapse of the brain substance, and the risk of the formation of scar tissue, inducing epileptic attacks, sufficiently great to contra-indicate craniotomy in all cases when a positive diagnosis cannot be made. Tumors of the central convolutions are those easiest to diagnose and most likely to admit of successful removal. New growths in the temporal parietal or occipital lobes can be definitely located only when they encroach on the central convolutions sufficiently to give rise to motor disturbances. In addition to the customary motor symptoms, ophthalmologic examination is capable of giving much assistance in diagnosis. Choked disc is almost invariably present, and its character often permits an opinion as to the probable size of the tumor. General systemic treatment of tuberculous nodules and gummata gives a better prognosis than operation, but when a tumor of another variety is suspected, although the presence of either of the above is possible, craniotomy is indicated.—*Med. Record*, May 7, 1898.

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## Editorial.

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### HOSPITAL ABUSE.

A paper was read on this subject at a recent meeting of the Montreal Medico-Chirurgical Society by Dr. George E. Armstrong, Associate Professor of Clinical Medicine, McGill University, in which he outlines the principal aspects of this much-discussed evil. He refers to the growing disposition to get medical care at the expense of the public by those who are able to pay for it. In New York city it was estimated that fifty per cent. of the population were in this category, and in most large cities doubtless a similar state of affairs prevails. Dr. Armstrong considers the causes under which this condition has developed under seven headings. The first is the "increased efficiency, comfort, attractiveness, even luxuriousness of the modern hospital ward"; the rapid increase in the number of hospitals and the accommodation for patients; the rivalry between the increased number of hospitals in the way of attaining to a high standard of efficiency, and swelling the list of patients cared for, irrespective of claims of the applicants for charitable attendance; the advance in medicine and surgery has increased the expense of treatment, and the necessity and expense of the care of trained nurses is often beyond the means of patients who, under the conditions of twenty years ago, would have received more simple treat-

ment ; the commercial spirit of the time and the disposition to acquire wealth, make a display and live in luxury. " People will buy pianos, bicycles, good clothes, who have their doctor's bill unpaid or go to the hospital for free treatment when sick ; " " the starting of this modern abomination, the private dispensary and hospital, by members of our profession for purely selfish and personal reasons ; " lastly, hospitals dependent upon the public for support must, to avoid alienating sympathy and subscriptions, sometimes receive into their wards those who are very well able to pay.

Dr. Armstrong, as a hospital surgeon, recognizes the growing evil of hospital abuse and its demoralizing tendencies, although the effects are felt mostly by the general practitioners who are not connected with hospitals, and he looks for means of remedying the evil. Among these is concerted action between all the hospitals of a city and a central hospital board with representatives from each hospital and from the general profession, selected from each district. This Board could do its work largely through one or more enquiry officers. Ambulance work and first aid to the injured should not be interfered with, but after the first aid is rendered those able to pay should be referred to their regular medical attendant.

The Victorian Order of Nurses will be a means of enabling those of moderate means to secure the necessary trained care. Dr. Armstrong thinks that hospitals should care only for the sick who are unable to pay anything, and he is entirely opposed to dispensaries and hospitals accepting small amounts from patients. These are the chief points of this interesting and timely paper, and they touch the most vital parts of the problem. The subject was discussed at several meetings of the Society, and was referred to a final discussion at one of the early meetings in the autumn. There is no reason whatever that those who have the means should be cared for at the expense of charitable institutions intended only for the poor and receiving the support and contributions of the public, and it only requires a proper organization to greatly minimize this pauperization of the masses and robbing of medical men of their proper source of revenue. The City Hospitals not only extend this unnecessary charitable work towards those residing there, but it is a common thing



for well-to-do people from the surrounding country requiring operative work especially, to get this done free of charge at the City Hospitals. At the last meeting of the Medical Board of the Province of Quebec, a resolution was passed suggesting that all such be refused unless bringing a letter of recommendation from their attending physician in the country asserting their inability to pay for professional services. While it is probably not so necessary to have such a number of certificates of inability to pay as in the case of a patient for a hospital for the insane, yet it is important to demand reasonable proof that such is the case, and in the case of patients from the country we think the signature of the medical attendant and also that of a prominent layman in the locality should also be required; and in the city, where in most of the hospitals a certificate from any governor of the hospital or well-known citizen is all that has been required, the signature of a physician or of the one who last attended the applicant should be also attached. And if a regular printed certificate form was required with detailed answers to a sufficient number of questions to ascertain fully the financial standing of the applicant, few but those entitled to free attendance would get admission to the hospitals. As to those of moderate means requiring the conveniences of the fully equipped hospital, wards connected with our general hospitals, or private hospitals with accommodation at rates corresponding to the financial capabilities of applicants would seem to meet the difficulties.

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## PUBLISHERS DEPARTMENT.

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### OLD REMEDY—NEW USES.

There are very many important uses for Antikamnia, of which physicians as a rule may be uninformed. A five grain Antikamnia Tablet prescribed for patients before starting on an outing, and this includes tourists, picknickers, bicyclers, and, in fact, anybody who is out in the sun and air all day, will entirely prevent that demoralizing neadache which frequently mars the pleasure of such an occasion. This applies equally to women on shopping tours, and especially to those who invariably come home cross and out of sorts, with a wretched "sightseer's headache." The nervous headache and irritable condition of the busy business man is prevented by the timely use of a ten-grain dose. Every bicycle rider after a hard run should be advised a bath and a good rub down, and two five-grain Antikamnia Tablets on going to bed. In the morning, he will awake minus the usual muscular pains, aches and soreness. As a preventive of the above conditions, Antikamnia is a wonder, a charming wonder, and one trial is enough to convince.