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Original Communications.

ELECTRICAL MEASUREMENTS.

By A. LAPHORN SMITH, B.A., M.D.

Read before the Canadian Electrical Society of Montreal, Sept. 3rd, 1888.

Mr. CHAIRMAN AND GENTLEMEN.—It is with feelings of considerable diffidence that I accede to your request to read a paper before this Society. My object in wishing to belong to it was rather to learn than to teach; so that I feel I must throw myself wholly on your indulgence in offering you the following considerations on electrical measurements. The reason why I choose this, for me, somewhat difficult subject, was that during the succeeding meetings we will probably have the pleasure of listening to some very deep but interesting papers from some of the more learned members, in the course of which continual reference will be made to terms which to them are as plain as the alphabet, but which may be beyond the grasp of those of us who received our scientific education before the days of electricity; But first I must apologise to those who are thoroughly up in this modern science if during the course of this paper I take up a little of their time in explaining carefully things which they already know; my excuse must be found in the maxim that in addressing an audience, we should keep in our mind's eye, not the person present who knows most about the subject of which we are speaking, but the one whom we suppose to know least about it. I shall therefore hope that before I have finished my

address this evening I shall have been able to make the terms, vol, ohm, ampere and coulomb familiar to every one to whom they are not as yet very clear.

If we pick up any work on electricity, whether applied to medicine, surgery, or the arts, we cannot read a page hardly without meeting with some of these words. And when, in a few years, electricity shall have completely taken the place of gas, and when motive power will be furnished from electrical stations, it will become more and more important to know the meaning of these words. Before long such terms as volt, ohm, ampere will be as common standards as gallons, pounds and inches.

As the electrical current is an imponderable fluid, we can best acquire a clear idea of its measurable characteristics by comparing it with water. Now you know that when you have a reservoir of water at a certain height above the ground, and you make an opening at the bottom of it, the water will run out, and it does not matter whether the reservoir holds one gallon or one million gallons, the pressure with which the water is forced out of the opening at the bottom is just the same.

As any one who has not thought of this might not agree with me, I will just demonstrate this fact by means of these two reservoirs, both the same height, the one of which contains exactly three times the amount of the other. I place them side by side and open the tubes at their bottoms simultaneously, and you will perceive that the pressure or force with which the water escapes is just the same in one and in the other at the beginning, and as long as the two liquids are at the

same height, as evidenced by the distance to which the stream is thrown. But you will also remark that the flow will last three times longer from the large reservoir than from the small one.

When speaking of the energy with which water rushes from its reservoir, we call it pressure, and the pressure varies with the height of the reservoir. When the top of the water in the reservoir is 33 feet above the opening at the outlet, we say that there is pressure of an atmosphere, or in other words 15 pounds to the square inch. The pressure depends not at all on the size of the reservoir, but on the height of the liquid above its outflow. Allow me to illustrate this by putting side by side two reservoirs, one of which, as in the last experiment, contains three times as much water as the other, but in this case arranged differently, viz., each quantity on top of the other. If I now open the outlet tubes, you will see that the pressure is three times greater, as evidenced by the distance to which the stream is projected, or the rapidity with which it could be made to turn a wheel.

You will also remember that if we were to connect the outflow tube with another reservoir, the current will continue only so long as there is a difference in level between the surfaces of the two liquids.

There is just one other point which I must ask you to remember, and that is that given two reservoirs of the same height, or endowed with the same energy or pressure, the outflow will be in proportion to the resistance offered by the narrowness of the tube.

This can be shown by the following experiment: Here are two reservoirs of the same capacity and with the same pressure. To one is attached a tube of a certain length, and to the other one a much longer tube of, however, the same diameter.

The pressure is the same in the two reservoirs, but the friction or resistance offered by the outlet tube is greater in the one than in the other. The resistance of water in the tube varies with the diameter and the length of the pipe.

Let us take again two reservoirs each containing the same quantity of liquid. The outflow from these vessels will vary according to the pressure and the resistance of the tubes. In other words, the outflow per minute will be the pressure divided by the resistance.

When water is travelling along a pipe of large calibre, and suddenly comes to a much smaller one, the resistance is greatly increased.

All of these principles are exactly applicable to electricity: only some of the words are changed. For pressure substitute electromotive force; resistance remains the same; and for outflow substitute quantity or volume.

As I have already said, electromotive force in electricity corresponds with head or pressure in speaking of water. When we place an easily attacked metal such as zinc in an active liquid such as sulphuric or hydrochloric acid and water, the latter is decomposed into its constituents—hydrogen and oxygen. The oxygen combines with the zinc to form with the sulphuric acid sulphate of zinc, and the hydrogen is set free. A new form of energy called electromotive force is then created, or rather the energy put into the zinc when it was smelted by heat is converted into electromotive force. In order to collect this force and lead it out of the bottle in which it is formed, it is necessary to introduce therein a non-attackable conducting body such as carbon or copper.

The liberated hydrogen follows the direction of the current which is from the attacked to the non-attacked substance; but arriving at the carbon it deposits itself there in the form of small bubbles, which after a time completely cover it. And as gas is a very bad conductor of electricity, the current is mechanically hindered by it.

Not only that, but the hydrogen, being itself an element, is capable of setting up with the newly formed oxygen a secondary gas battery current, called a current of polarization of opposite direction to the principal current, which it rapidly weakens. As this hydrogen must be got rid of, this is accomplished in the following manner: An easily decomposable substance is introduced into the circuit, which readily gives up its oxygen to the nascent hydrogen, with which it forms water.

In the Daniell cell, sulphate of copper is thus used.

In the Marie Davy cell, sulphate of mercury is used.

In the Leclanche cell, peroxyde of manganese is used.

In the Bunsen, nitric acid.

In the Grenet battery, bichromate of potash.

In the Leclanche cell for the attacking fluid no acid is used as acid, but the acid is supplied gradually by the decomposition of hydrochlorate of ammonia, a compound which is easily decomposed by the current into ammonia and hydrochloric acid, which latter attacks the zinc, and the ammo-

nia escapes into the air. The great advantage of this battery is that the attacking liquid is formed only when the circuit is completed, and the battery only burns itself up during the time it is actually in use. At the same time its electromotive force is high, namely, one and a half volts. The Smée cell gives $\frac{1}{2}$ a volt; the bichromate 2 volts; the Bunsen nearly 2 volts.

Now just as we measure steam or water power in pounds per square inch, and heat by thermometric degrees, electromotive force is measured by volts. A volt is the pressure yielded by a galvanic cell, the Daniel cell being taken as the standard unit. The size of the cell has nothing to do with its electromotive force; a cell the size of a percussion cap will give an electromotive force as high as a cell a yard in diameter.

Electromotive force depends on difference of potential.

The difference of potential exists in all dissimilar electrified bodies, whether they are large or small makes no matter; just as the fact that pressure of water due to its flow from a reservoir to a plain beneath is not influenced at all by the area of the receiver, but by the height of the water level above the plain.

As I have shown, water pressure is the same per vertical foot of height, whether the column at its base is a square foot or a square mile in area. The two bodies in the cell are at different potential, therefore the current flows from one to the other from the attacked to the unattacked, through the liquid which surrounds them, and then back to the attacked body through the wire.

The galvanic cell converts chemical action into electricity by burning the zinc, just as the steam boiler converts coal into energy by the chemical action of combustion. If in the galvanic cell we burn twice as much zinc in a given time, we shall have a current twice as strong, but not twice as intense; we can do this by making the surface of the zinc twice as large.

Thus you see that while the size of the bodies in the cell has no bearing on the pressure of the current, it has a material bearing on the strength of it.

So that when we want high pressure electricity, we put into the cell bodies which are, or will be when attacked, of highly different potential. When we want great strength of current we look to their

dimensions. All Leclanche cells have the same pressure, whether big or small. If we take two Leclanche cells, different sizes, the tensions or pressures of the two currents are precisely the same; but if we harness these two currents to some work, mechanical or chemical, such as the decomposition of water, the result will vary according to the volume of the cell. In practice, however, we do not make large cells chiefly because they are cumbersome and difficult to handle. We can increase either the electromotive force or the strength of the current by using several cells of the same size and connecting them together differently. If we connect them in a series of tension, that is the attacked element of one to the unattacked element of the other, and so on, we shall add together the electromotive force of each, while the strength of the current will remain the same as that of one cell, if however we connect all the attacked elements of the four cells, say, to one wire, and all the unattacked ones to the other, we shall have quadrupled the size of the element, and we shall have a current four times as strong, while its pressure will remain at one volt.

RESISTANCE.

When the current in a cell travels from the attacked to the non-attacked element, through the liquid in the cell, it meets with resistance; and so also when the current travels around from the non-attacked element to the attacked element, by the wire outside of the cell, it meets with resistance still further. There are then two places where the current meets obstacles,—one inside the cell and one outside of it. The resistance offered by the liquid inside the cell is known as the internal resistance, while the other is known as the external resistance. The internal resistance is so much lost energy, so that we should endeavor to make it as small as possible, by bringing the solid elements in the cell as near together as possible.

For this reason the conglomerate battery is an improvement over the one with porous pot.

The external resistance we can control, it may be due to many miles of telegraph wire, the coils of an electromotor, or the filament of an electric lamp, the human body, or to any other path we provide for the current, in traversing which it does the work we desire.

The unit of resistance is called an ohm, in honor of George Simon Ohm, who was born at Erlangen in 1781.

The standard ohm is the resistance offered by a column of mercury, 106 centimeters long and one millimeter in cross section, but there are many other ways of getting an ohm of resistance. For instance, 440 feet of telegraph wire made of galvanized iron offers a resistance of 1 ohm.

On the other hand, less than five feet of No. 33 pure copper wire gives a resistance of 1 ohm. I can demonstrate this with the amperemeter. I have here 19 feet of 33 wire, which should give a resistance of 4 ohms. I have also a Leclanche cell which has been weakened down by hard work to an electromotive force of 1 volt, the normal electromotive force being nearly one and a half. Now 1 volt through 1 ohm should give one ampere, or 1 volt through 4 ohms should give one-fourth of an ampere, and this is precisely what it gives by experiment.

No. 40 wire being much finer, the resistance which it offers is much greater; in fact, less than 1 foot of it offers a resistance of an ohm. Or to put it to the test, less than 4 feet should give 4 ohms or allow $\frac{1}{4}$ of an ampere to pass through. And this you see it does.

1 volt, through 1 ohm, gives 1 ampere; 50 volts through 60 ohms gives 1 ampere.

The human body gives a resistance of 50 to 200 ohms.

A 16 candle power incandescent lamp gives a resistance of 50 or 60 ohms.

Resistance depends on two things: on the nature of the conducting body interposed between the poles, being greatest in glass and least in copper; and secondly, resistance depends on the length and calibre of the conductor; the longer and smaller it is the greater will be the resistance, the shorter and thicker it is the smaller will be the resistance. Thus while it only takes less than a foot of the smallest size wire No. 40 to give an ohm, it would take over 20 thousand feet of the largest size No. 1000 to offer the same resistance.

On the resistance of different conductors is based ohm's law, viz., that the intensity of a current is equal to the electromotive force divided by the resistance.

The ohm meter consists of a series of resistance coils of fine wire, of varying length and fineness, arranged with binding posts, so that the current can be thrown into a 10, 20, 100, 1000, or 10,000 coil and of different metals (such as German silver).

QUANTITY.

Ohm's law, as I have said, is that the electromotive force divided by the resistance equals the quantity. The quantity of current furnished by 1 volt of pressure through one ohm of resistance is called an ampere.

An ampere is too large a current to be used in medicine, so it has been divided into milli-amperes or thousandths of an ampere. According to ohm's law, 1 volt through 10 ohms would give $\frac{1}{10}$ of an ampere or 100 milli-amperes, or 20 volts through 100 ohms would give 20-100 or $\frac{1}{5}$ ampere or 200 milli-amperes. The resistance of the body is sometimes as high as 200 ohms, and as each Leclanche cell has an E. M. F. of $1\frac{1}{2}$ volts, it would take a little less than 28 cells or 40 volts to give $\frac{1}{5}$ of an ampere through the body.

A coulomb is an ampere flowing during the period of one second, but it is a term which is only beginning to come into general use.

RARITY OF TAENIA IN THE COUNTRY.

Read at the July (1888) meeting of the District of Bedford Medical Association

By A. D. STEVENS, M.D.,
Dunham, Que.

MR. PRESIDENT AND GENTLEMEN:—I was yesterday reminded by a confrère that my name was mentioned, among others, by the Chairman at the last meeting, to read a paper on this occasion. We now and again see it stated by Journalists, when soliciting contributions, that the daily life of almost every active medical man furnishes material for a subject which may be made interesting to readers or listeners. Whatever truths you may have found in this statement I cannot say; but, with ample notice and a more or less active practice, I confess I am quite at a loss to decide upon a subject worthy of your attention. Nothing has occurred in my field of observation, for some time past, that possesses sufficient novelty or significance to relate within your hearing, unless it be, perhaps, a case of tape-worm or taenia.

I do not pretend to know the range of experience of the gentlemen who are with us to-day, but I may say that so far as my own work is concerned, tape-worm has been found exceedingly rare—so rare, in fact, that the one I am about to refer

to is the first and only one I have had the management of during my now somewhat lengthened professional career; and even this could hardly prove its origin to have been in the Townships, as the man (the owner of it) had only recently put foot on Canadian soil after a prolonged residence in the Town of Milton, Vermont. Hence I conclude this species of parasite is not of such frequent occurrence in the Townships as it is in some other portions of the world, and I choose the case.

I am not aware that there has been of late any additions made to previously existing literature upon this feature of the subject of Helminthics and shall not mention any point, in connection with it, not believed to be necessary to an intelligent recital of the treatment of the case, as well as the results obtained.

About a couple of months ago, a man, aged about sixty years, and of fairly healthy appearance, consulted me with reference to a supposed digestive trouble manifesting itself by frequent colicky pains in the intestines, of a severe character. Otherwise, he said, the functions of the body were being carried on as well as he could desire. Without in any degree suspecting that, after these long years of waiting, I had been suffered to contend with a case of genuine tape-worm, I gave him a full dose of compound cathartic pills, and told him to return in two or three days. When he came back, however, he was the bearer of a vial that contained several fleshy-looking substances that he had voided, and which, unenlightened as was, I, your humble servant, I had no difficulty in recognizing as zooids or links of a tape-worm. The good man seemed a little frightened at first on seeing what had escaped from him (or rather what he had escaped from); but after a full explanation that it was neither a serpent nor a flattened cord, he became more hopeful (and asked for a little nourishment). With the exception of some of the remedies of doubtful reputation, it may well be suspected, from what I have said before, that I had nothing to give him. But I was equal to the occasion (as I am sometimes). In order to gain time to get a prescription from the druggist, I gave him a very highly colored liquid in a very highly ornamented vial, told him to follow directions minutely, and put in an appearance in four or five days again. The record of the Male Fern seemed to me to be the best. In fact, pumpkin seeds

were not to be thought of. They were out of season, and too democratic. Filix Mas sounded well, and besides it had the advantage of being of purely British origin, and it did the work well, as you will presently see. To be more serious, however, I caused to be put up *three* doses of the following:

℞	Fl. Ext. Filicis	3js
	Spts. Terebinth.	3js
	Ovi vitelli T	Misce

et adde aquæ et syrûpi q. s ad ʒ ij—Fiat haustus, mane sumendus. He was directed to take a full dose of castor oil on retiring at night, and, in the morning, after a thorough evacuation of the bowels had been secured, to take *one* of the three doses as above, and carefully preserve every thing suspicious that passed until I came and examined them.

From all I had heard and read of tape-worm, I had been led to believe that it was only after specially skilled, professional search that the head could be found, if expelled at all; and as I knew its discovery was a *sine qua non* to success, I kept my eyes wide open.

Whether my case was an exceptionally easy one to conduct or not, my previous experimental acquirements do not warrant me in giving an opinion, or, whether I even obtained the prize at all, it must be admitted is of doubtful accuracy.

But whatever may have been my doubts and fears as to getting that part of the worm, which should contain whatever brain material he possessed, they proved, I fancy, like so many other things mundane, to be without foundation and illusory. The good-natured man's fourteen years old granddaughter, to whom I had previously parted with a large amount of my own knowledge, was possessed of the peccant intruder, brains and all, before the man at the helm reached the field of conflict. There did not seem to be much doubt of it, but it must be remembered that neither the young lady nor myself were put under oath.

These Entozoa are said to have grown sometimes to enormous lengths—even as much as one hundred yards having been reported in one case; but in the instance under consideration, although I did not arrange the joints or zooids in line, so as to measure or count them, I am not disposed to place the length beyond four or five yards. Then again, we have good authority for urging the necessity of providing against the possibility of there being several such organisms in the same

subject. To make sure that my work was complete—that I had secured the whole—I told the patient to take the *second* dose, in the same manner, on the following day, while, at the end of a week, he was directed to take the *third* and last dose, carefully guarding everything that came away after each effort.

As, by this time, our friend had become tolerably well familiarized with his interesting fellow-traveller, which had for so long and so affectionately adhered to him closer than the proverbial brother, I did not think it worth while to return to the scene of action, and instructed him to report himself at my quarters, bearing anything of an unfriendly look that might be expelled. He has not, however, put foot into my sanctum up to this date, and it is only reasonable to conclude there were no more.

And now, Gentlemen, having thus briefly told the story of my own experience in tape-worm, no matter how triflingly I may have treated the subject myself, I would like to hear your own especially whether, as I fancy is the case, the worm has been met with as seldom by you as my own observation would lead one to believe.—I would also be pleased to know your treatment and success, should you have happened to meet with the parasite at any time in your fields of labor.

Society Proceedings.

TWENTY-FIRST ANNUAL MEETING

OF THE

CANADIAN MEDICAL ASSOCIATION.

PARLIAMENT BUILDING, OTTAWA, ONTARIO.

September 12th & 13th, 1888.

Dr. J. E. Graham, Toronto, President, took the chair at 10 o'clock, and formally opened the twenty-first annual meeting of the Canadian Medical Association. In introducing Dr. George Ross, as President elect of the Association, he expressed the great pleasure it afforded him in doing so, and said:—"I think we can congratulate ourselves upon the prospects of having a very pleasant and profitable meeting, and upon the fact that we have selected as President for this year a gentleman who is in every way capable of fulfilling the duties of that office. Dr. Ross is one of the leaders of the

profession in the largest city of the Dominion, and his reputation is not alone confined to that city but to the Dominion at large."

Dr. George Ross, (Montreal) then took the chair.

The Secretary, Dr. James Bell (Montreal), read the minutes of the last meeting of the Association which were approved of.

ELECTION OF MEMBERS.

The following gentlemen having been duly proposed and seconded, were unanimously elected members of the Association:

Dr. Allen Eaines, Toronto, Ont. ; Dr. W. P'Anson, Ottawa ; Dr. M. C. McGannon, Brockville ; Dr. Thos. Potter, Ottawa ; Dr. W. C. Cousens, Ottawa ; Dr. B. F. Hurdman, Ottawa ; Dr. S. Wright, Ottawa ; Dr. C. J. H. Chipman, Ottawa ; Dr. A. H. Horsey, Ottawa ; Dr. J. W. Shillington, Ottawa ; Dr. W. F. Graham, Ottawa ; Dr. C. P. Dewar, Ottawa ; Dr. W. H. Klock, Ottawa ; Dr. T. L. Brown, Melbourne, Que.

NOMINATING COMMITTEE.

The following gentlemen were selected as members of the nominating committee :

Drs. F. W. Campbell, T. G. Roddick, Montreal ; J. E. Graham, Wm. Caniff, Toronto ; Dr. Bray, Chatham ; Drs. Sweetland and Church, Ottawa ; Drs. Griffin and Mullin, Hamilton ; Dr. Eccles, London ; Dr. Fenwick, Kingston ; Dr. Baird, Pakenham ; Dr. Smith, Seaforth ; the President and Secretary.

SELECTION OF OFFICERS FOR SECTIONS.

The following gentlemen were selected :—
 Chairman of Medical Section...Dr. Bray, Chatham
 " Surgical Section...Dr. Cameron, Toronto.
 " Obstetrical and Gynecological Section...Dr. Trenholme, Montreal.

GENERAL BUSINESS.

Dr. Graham pointed out that, last year, a committee was appointed, the object being to endeavor to further the interests of this Association, and to present a report of this meeting, but that owing to the absence of Dr. Stewart, ex secretary, in Europe this summer, nothing has been done by that committee. He said that it was felt that this Association was not in such a flourishing condition as it ought to be, and that it did not hold the sympathy of the profession throughout the Dominion; also,

that the By-Laws are found to be very deficient. He therefore suggested that another committee be appointed with the view of bringing in a report at the next annual meeting that would be of advantage to the Association.

Dr. Roddick moved, seconded by Dr. Bray, that Dr. Graham, Dr. Ross (President) the President elect, the Secretary and Treasurer, form the committee.—Carried.

RECIPROCIITY OF REGISTRATION.

Moved by Dr Girdwood, seconded by Dr. Roger, that a committee be appointed, consisting of Drs. Wright, Campbell, Sullivan, Bray, Eccles, Milne and himself, to ascertain the feeling of the different Medical Councils of the Dominion, upon what terms reciprocity of registration may be obtained between the different provinces, and the mother country and other colonies.

He stated that on making enquiry in regard to reciprocity of registration with Great Britain, he was informed that before registration could take place, it would be necessary to have an Order-in-Council passed making a new law of reciprocity of registration applicable to Canada. Reciprocity takes place between Great Britain and Australia, and he thought that we might very fairly have reciprocity of registration between Great Britain and this colony. He also remarked upon the want of harmony existing between the Medical Councils of the different provinces in not allowing members to practice in any province in the Dominion.

Drs. Bray, Mullin, Campbell, Sheard and Coupens spoke in discussion.

Motion carried.

The President read his address.

A vote of thanks for his able address was moved by Dr. Workman, seconded by Dr Campbell, and carried.

Sir James Grant spoke in support of the motion.

The meeting adjourned until 2 o'clock.

JAMES BELL, M.D.,

Secretary.

Approved.

GEO. ROSS.

NOMINATING COMMITTEE.

The meeting of the nominating committee took place immediately after the adjournment of the general meeting.

On motion of Dr. Bray, seconded by Dr. Sweetland, Dr. F. W. Campbell was elected chairman.

The following members of the committee were present:

Dr. Roddick, Dr. Graham, Dr. Bray, Dr. Sweetland, Dr. Church, Dr. Mullin, Dr. Smith, Dr. Ross, president; Dr. James Bell, secretary.

ELECTION OF OFFICERS.

President of the Association.—

The committee recommend that Dr. H. P. Wright, Ottawa, be re-elected President for the ensuing year.

Secretary.—

That Dr. James Bell, Montreal be re-elected Secretary.

Treasurer.—

A letter of resignation from Dr. Sheard was read by the Secretary.

That Dr. W. H. B. Aikins, Toronto, be appointed Treasurer.

The committee recommend that the resignation of Dr. Sheard as Treasurer be accepted, and that a hearty vote of thanks be passed to him for his services during the past seven years in that capacity.

Local Vice-Presidents.—

The committee recommend that the following be elected:—

Ontario, Dr. Chas. Sheard, Toronto; Quebec, Dr. F. W. Campbell, Montreal; New Brunswick, Dr. Graham, Bathurst; Nova Scotia, Dr. Ed. Farrell, Halifax; Manitoba, Dr. Lynch, Winnipeg; British Columbia, Dr. J. M. Lefevre, Vancouver; N. W. Territories, Dr. Jukes, Regina; P. E. Island, Dr. Jenkins, Charlottetown.

Local Secretaries.—

Ontario, Dr. Griffin, Hamilton; Quebec, Dr. A. N. Worthington, Sherbrooke; New Brunswick, Dr. Kellar, Fredericton; Nova Scotia, Dr. Webster, Wolfville; Manitoba, Dr. A. H. Ferguson, Winnipeg; British Columbia, Dr. Milne, Victoria; N. W. Territories, Dr. Oliver C. Edwards; P. E. Island, Dr. McLaren, Georgetown.

The committee recommend that the next annual meeting be held at Banff, N. W. T., in the early part of August, 1889.

That \$100 be granted to the general secretary.

F. W. CAMPBELL,

Chairman.

MEDICAL SECTION.

OTTAWA, September 12, 1888.

Dr. Bray, Chatham, in the Chair.

It was moved, seconded and carried, that Dr. Sheard, Toronto, be appointed Recording Secretary.

Dr. H. P. Wright, Ottawa, was then called upon to read his Address in Medicine—but being absent, Dr. Caniff, Toronto, was asked to read his paper upon "The duty of the Medical profession under the Public Health Act of Ontario." A telegram was received from him stating his inability to be present, and Dr. Mills, Montreal, was called upon to read his paper on "The influence of the nervous system on the nutritive processes." He began his subject by referring to a synopsis of a paper read by him last year on a new basis of improved Cardiac Pathology, which developed the theory that all the nutritive processes were constantly under the influence of the nervous system. He explained metabolism as the molecular life of protoplasm, and regarded the organic action of the nervous system, or nerve with the tissue element, as regulating these processes. He proved that nerves going to bone, on being divided, caused atrophic changes in the bone, a change called by Charcot, Acute Necrobiosis. He also referred to certain affections of the skin following nerves which he traced to similar nervous lesions. He spoke of the cause of death in animals, after section of the vagi nerves, as being due to pneumonia, which was an inflammatory process due to the severance of the nerve connection. On birds, section of nerves in connection with the heart was followed by its fatty degeneration. He discussed the influence of the Trigemini nerve, also the inhibitory fibres, and sympathetic fibres, due wholly to interference with nutrition. He referred to the emotions, and their influence on vital processes as being such, and also dwelt upon the training of athletes, stating that over-exertion called into play, and used up, the residual nerve force.

Dr. Mills' paper was discussed by Dr. Playter, of Ottawa, and Drs. Sheard and Graham, Toronto. Dr. Graham asked Dr. Mills to explain the influences to the cause which accelerated heart's action. Dr. Mills promised to do so after he heard Dr. Graham's paper on "A case of extreme rapidity of the heart's action." Dr. Small, Ottawa, also spoke in reference to the nervous influence on the

movements of the Amoeba; and Dr. Campbell and others took part in the discussion, to all of which Dr. Mills replied satisfactorily.

Dr. Wright, Ottawa, then explained the absence of any special Medical Address, as he did not clearly understand what the meeting expected of him.

The Section then adjourned to meet at 10.30 a.m. Thursday.

CHARLES SHEARD, M.D.,
Secretary.

SURGICAL SECTION.

OTTAWA, September 12th, 1888.

Dr. Clarence Church, Chairman.

Dr. Proudfoot, Montreal, read notes of a case of "Excessive hemorrhage after cataract extraction, into the anterior chamber of the eye." No Anæsthetic was used, and no iridectomy made. Pressure was made over the globe by compress and bandage, which were removed next morning, owing to great pain, and an atropine solution dropped into it. Hemorrhage continuing, pressure was re-applied with boracic lotion, and morphia given for the pain, which was very severe. Hemorrhage continuing on the eleventh day, enucleation was performed, and on dividing the globe, the point from which the hemorrhage came was found to be in the Retina. No reason could be given for the troublesome hemorrhage, excepting that the patient was very plethoric and a drunkard. No discussion followed the reading of this paper and the Section adjourned to meet at 10.30 a.m. Thursday.

A. H. HORSEY, M.D.,
Secretary.

OBSTETRICAL AND GYNÆCOLOGICAL SECTION.

OTTAWA, September 12th, 1888.

Dr. Trenholme in the Chair.

Dr. Alloway, Montreal, read a paper on "The indications for, and comparative merits of Emmet's and Schroeder's methods of operating upon the Cervix Uteri." This paper gave rise to an interesting discussion upon the subject. Dr. Gardner spoke in favor of Schroeder's operation as compared with Emmet's in cases of extreme hypertrophy of the neck, and inflammation of the mucous membrane. It enables disease to be removed where Emmet's fails on account of the stitches

being unable to approximate the edges together after an operation. Dr. Trenholme favored Emmet's operation in all cases, except in very extreme ones of hypertrophy and inflammation accompanied by glandular disease of the follicles where Emmet's operation was not available, but thought that in very few cases would this be found necessary, if the tissue was pared away well towards the cervical canal, leaving a narrow border by which tissue could be obtained. Pressure upon the hypertrophied parts afterwards would lead to the formation of the natural Cervix. In no case were we warranted in amputating the Cervix, if it could be avoided.

The general sense of the meeting was that it was much indebted to Dr. Alloway for bringing the subject up, and that the operation of Schroeder should be resorted to only in extreme cases.

THURSDAY, September 13, 1888.

The meeting opened at 10 o'clock. Dr. Ross, President, in the Chair.

Dr. G. H. Oliver, Delegate to the Association from the Medical Society of the State of New York; Dr. Wallis Clark, of Utica, N. Y., and Dr. Imrie, of Detroit, Mich., were introduced by the President, who, on behalf of the Canadian Medical Association, welcomed them.

Dr. Henderson, Kingston, President of the Ontario Medical Society, was invited to a seat upon the platform. He expressed the pleasure it afforded him to be present at this meeting, and said that as the representative of the Ontario Medical Association he felt sure that any friendly sentiments conveyed to that Association through him would be heartily reciprocated. It will always be his duty to promote that unity and concord which should exist between the Ontario Medical Society, the local societies and this Dominion Association. He referred to the re-formation in Kingston, a short time ago, of the Cataraqui Medical Society, which is now affiliated with the Ontario Medical Society, and which has sent two delegates to this meeting, and hoped that such a society will be formed in Ottawa, and elsewhere, with the view of forming a connecting link between the local society and this Association.

The following gentlemen were elected members of the Association:—

Dr. W. J. Burns, Caledonia; Dr. Wallace, Metcalfe; Dr. Preston, Carleton Place; Dr. Lynch, Almonte; Dr. Munro, Perth; Dr. Sutherland, Valleyfield, Que.; Dr. Burns, Almonte; Dr.

Milne, Victoria, B. C., and Mr. Davis, Chelsea, Que.

The President referred to the great pleasure of seeing present a representative from such a distant province, and upon the suggestion of Dr. Proudfoot, invited Dr. Milne to a seat upon the platform.

REPORT OF NOMINATING COMMITTEE.

On motion the Report of the Nominating Committee was received and considered clause by clause, and was unanimously adopted.

The thanks of the Association were tendered to Dr. Sheard for the long and valuable services rendered to the Association as Treasurer.

Dr. Mullin having called attention to the fact that no allowance was made to the Treasurer for travelling expenses, etc., it was moved that the travelling and other expenses of the Treasurer, Dr. Sheard, for this year, and that of 1887, be defrayed by the Association.—Carried.

On the suggestion of the Committee, that the next annual meeting be held at Banff, N. W. T., a general discussion ensued.

Invitations were extended to the Association to hold its next annual meeting at London, Ont., by Dr. Eccles; at Toronto, Ont., by Drs. Sheard and Graham, and at Victoria, B. C., by Dr. Milne, and a letter received by Dr. Ross from Lucius Tuttle, Passenger Traffic Manager of Canadian Pacific Railway Company at Montreal, dated September 11th, 1888, was read, stating that if the Association desire to meet at Banff, a trip will be given from Montreal, or from other Stations in Ontario or Quebec on the line of the Canadian Pacific Railway to Banff and return, first-class, including a double berth in the sleeping car for each person, meals in the dining cars on the way west of Montreal and back, and four days living at the Banff hotel, for a round sum of \$95, and that similarly low rates will be made from other points in Canada, and as far as possible from cities in the United States.

Dr. Walker, Dundas, moved in amendment to the Report of the committee that the Association meet next year at Toronto to receive the President's Address, and then adjourn to meet at Banff for the transaction of other business. Dr. Horsey, Ottawa, seconded the amendment.

Dr. Mullin, Hamilton, moved in amendment to the amendment, seconded by Sir James Grant,

that the next meeting of the Association be held at Toronto on such date as may be deemed advisable by the officers of the Association, and that, in addition, an excursion to Banff be organized by them to take place immediately after the meeting.

The amendment to the amendment, and the amendment to the Report of the Committee were lost on division, and the recommendation of the committee carried that the next annual meeting be held at Banff in the early part of August, 1889.

Dr. Bray, Chatham, moved, seconded by Dr. Trenholme, Montreal, that the Executive make satisfactory arrangements with the railway authorities for members to go to the end of the line.—Carried.

Dr. H. P. Wright, Ottawa, thanked the Association for the honor conferred upon him in electing him President for the coming year.

The meeting then adjourned to meet in Sections.

JAMES BELL, M.D.,

Secretary.

MEDICAL SECTION.

Thursday, September 13th, 1888.

Morning Session.

Dr. Bray in the Chair.

Dr. Graham, Toronto, was called upon to read his paper on a case of extreme rapidity of the heart's action. He reported two cases, one of which was characterised by a rapid beating of the heart, the beats numbering over 140, and being uncountable. His illness lasted three weeks, and the peculiar features in the clinical history were the absence of dyspnœa, the absence of renal changes, discoverable on examination of the urine, and any physical signs directly referable to the lungs. The case was treated by rest, regulation of diet and the administration of digitalis, and after a comparatively short treatment, the patient recovered his accustomed health. The second case was more prolonged and peculiar in the fact that continued muscular exertion reduced the heart's beat to normal. This had been discovered by him only after repeated examinations, and during a period of rest, the heart again became accelerated. There was nothing in this case to account for such acceleration.

Dr. Mills explained in extenso the influence of the cardiac nerves upon the heart's action, dealing mainly with the sympathetic and vagi-

He spoke also of embolism in the coronary arteries as a possible cause of such acceleration. He referred to blood pressure, as slowing the heart's action rather than accelerating it. Dr. Sheard discussed the case, and suggested embolism, or toxic matter in the blood as a possible cause for such acceleration, and referred also in commendation of digitalis as a method of treatment, particularly the infusion of digitalis. Dr. Mullin thought it was an important case, and had direct bearing upon the importance of acceleration of the heart as affecting a life insurance risk. He would like to ask Dr. Graham what influence he thought such acceleration of the heart would have in shortening the ordinary duration of life. Dr. Milne, Victoria, also spoke, referring to a case of modified heart's action associated with tetanus, and stating that such cases were evidently due to a close association between the nervous and cardiac action.

The section then adjourned to meet at 2 o'clock.

CHARLES SHEARD, M. D.,

Secretary.

SURGICAL SECTION.

OTTAWA, Thursday 13th, 1888.

Morning Session.

Only one paper was read at this session, that by Dr. Fenwick, of Montreal, upon Retropharyngeal Tumors. The operation is formidable and its literature rather scanty. Dr. Cheever, of Boston, Mass., appears to have been the first who operated on these tumors. Velpeau operated in 1836 on a large tumor, operating by the mouth, tying the common artery first. The patient died on the seventeenth day. Dr. Fenwick was early convinced that operating from the outside is the correct method. These tumors are usually sarcomatous or cancerous, and in a large majority of cases recur. Dr. Fenwick then proceeded by diagrams to illustrate Dr. Cheever's method by cutting from without. A long, straight incision is made, beginning on a level with the lower border of the ear, and extending down the neck in the line of the great vessels. If sufficient room is not thus given, he makes a transverse incision from the straight incision across the jaw. The jaw is not divided, the vessels and nerves are drawn aside, and the tumor enucleated in the usual way. Czerney's operation is modified from Cheever's. He opens the trachea and keeps up respiration in this way during the operation. He divides the jawbone

between the second and third molar, and in getting down to the tumor, has to sacrifice the chief nerves and vessels in that region. He then removes the tumor with a hot knife. Dr. Fenwick then described his own operation by a curved incision following tolerably well the line of the angle of the jaw. In two cases, the operation was easy, no vessels or nerves of importance were divided, except the facial nerve in one case. The bleeding in both cases was practically nil.

Dr. Sheard thought that the distinction ought to be made between cancerous and sarcomatous tumors. He thought cancerous tumours, which were not neglected, required a more serious operation, and that more room should be given, as they could not be removed solely with the finger without dissection.

The section then adjourned until 2 o'clock p. m.

R. W. POWELL, M. D.,

Secretary.

THURSDAY, Sept. 13th, 1888.

Dr. Smith, Montreal, delivered his paper upon "Some minute but important details in the management of the continuous current in the treatment of Fibroid and other diseases of the Uterus." He insisted upon attention to the antiseptic treatment, and upon performing all the operations with care. The results in his own hands had been very satisfactory. He recommended the Electrode of Dr. Inglemann in preference to Apostoli's clay electrode. The different forms of Electrode of sounds were shown, and that of Martin he favored most, as being the least expensive, and, at the same time, serving the purpose. He referred to the necessity of exact dosage, and the after care of patients where much electricity had been used.

This paper led to a very interesting discussion as to the field for which it was intended to be useful. Dr. Trenholme, Montreal, favored an antiseptic method apart from irrigation, simply advising that the vaginal passage be washed out with soap and water, and a plug of antiseptic cotton left in contact with the Cervix, when the sound was removed. Other members took part in the discussion.

The session was then brought to a close.

MEDICAL SECTION.

Afternoon session.

Dr. R. P. Howard, Montreal, read an interesting paper on Ophthalmoplegia Externa, illustra-

ted by diagrams. He spoke of a case of Ophthalmoplegia Externa, and explained as a cause the close association of the cerebral centres. He referred to cases recorded where both Ophthalmoplegia Externa and Interna had been caused by hysteria. He noted also the association of this condition with locomotor ataxia and pseudo-hypertrophic muscular paralysis. He was convinced, however, that Ophthalmoplegia Externa could exist without such association. He also discussed the relation of syphilis to this ocular disease.

The paper of Dr. Campbell, Seaforth, "Myxœdema, with report of a case," was taken as read, and accepted.

Dr. Playter, Ottawa, read a paper on a few facts relative to Communicable Diseases in man and animals, especially as brought out at the recent Paris Congress and British Medical Association, referring particularly to Tuberculosis. His paper was listened to with much attention, and was discussed.

The Medical Section then adjourned.

CHARLES SHEARD, M. D.

Secretary.

SURGICAL SECTION.

Afternoon session.

Dr. Bell, of Montreal, read a paper on "Exostosis Bursata," in which he gave the notes of a case which he believed to be the only one reported by an English speaking surgeon. Dr. Shepherd, Montreal, referred to the great rarity of the disease and drew attention to the explanation which was offered of the existence of floating cartilages in the joints.

Dr. Shepherd followed with a paper on Mania following operations. He reported six cases. Dr. Bell, in the discussion which followed, related two cases, in one of which he attributed mania to the use of Iodoform. He asked if there were any cases on record due to Iodoform. Dr. Buller related his experience of one case of mania following the operation of a cataract. Dr. Dickson, of Pembroke, asked Dr. Shepherd, if mania from Iodoform would be apt to occur in the use of the drug when applied to small surfaces. Dr. Shepherd replied that the danger would be greatest when Iodoform was applied to a large surface, as, for instance, to the interior of a large abscess cavity.

Dr. Buller then made a few remarks on Penetrating Wounds of the Eye Ball. Dr. Proudfoot

related a case of a penetrating wound of the eye-ball produced by a pen. He agreed with Dr. Buller as to the urgency of an immediate and prompt treatment, and cleansing the wound. In reply to Dr. Dickson, Dr. Buller advised, for the control of inflammation, the application of cold to be changed to warm applications with antiseptic solution of bi-chloride of mercury one part in 10,000, and one or two doses of 10 or 15 grains of Antipyrin.

Dr. J. Stirling, Montreal, followed with a paper on some eye symptoms due to Cerebral Lesions. Dr. Buller said that in cases of fracture of the orbital plate, the blindness may be due to infiltration of blood in the sheath of the nerve, and reported a case which had occurred in his practice of that nature.

Dr. A. Laphorn Smith's paper on the treatment of Varicocele and Orchitis by the electrical current of tension was then read; also a paper by Dr. Smith on a case of Resilient Stricture of the Urethra cured by electricity. Dr. Dickson enquired if Dr. Smith had ever used the treatment in neuralgia, sciatica, or enlarged prostate. Dr. Buller suggested the decomposition of water as an easier method of determining which is the negative pole. Dr. Smith, in reply to Dr. Dickson, said that the use of a continuous current would probably prove useful in the enlargement of the prostate. In reply to Dr. Church, Dr. Smith said that his cases had been under observation for a considerable time and certainly after a lapse of three years might be considered cured. Dr. C. Dickson, Kingston, said that in his large experience in the use of electricity in neuralgia, he had found the negative pole of tension often increased the pain, especially if any neuritis existed.

J. W. PICKUP.

Secretary.

GENERAL MEETING.

THURSDAY, 6 o'clock p. m.

Dr. Ross, President, in the Chair.

The minutes of the last session were read and approved.

Moved by Dr. Milne, Victoria, B. C., seconded by Dr. Sweetland, Ottawa, that in view of the apparently increasing prevalence of tubercular disease in domestic animals, more especially in cows, it is the opinion of this Association that it is desirable that some legislative action should be

taken by the Dominion Government to check the progress of the disease, and we urge that the Government take this matter under their consideration at as early a date as possible.—Carried unanimously.

Dr. Mullin, seconded by Dr. Smith, that the cordial thanks of this Association be tendered to the members of the profession in Ottawa for the courteous manner in which they have treated the Association, and its members individually

It was moved by Dr. Sheard, seconded by Dr. Pickup, that the thanks of the Association be tendered to the Railway and Steamboat Companies for travelling privileges accorded to members of the Association.—Carried.

Dr. Fenwick moved, seconded by Dr. Sweetland, that the thanks of the Association be tendered to the Dominion Government for the use of the Railway Committee Rooms for the purpose of holding the present meeting.—Carried.

On motion of Dr. Mullin, Dr. Wright, President-elect, took the chair.

Dr. Sheard, Toronto, in moving a vote of thanks to Dr. Ross, retiring President, said that he was sure that all the members of the Association appreciated the whole-souled manner in which Dr. Ross acted in the position of President of the Association. Much is due to Dr. Ross, for the success, the vitality and the perseverance which was characterized, and which has blessed the Dominion Medical Association, and he hoped that he might be long spared to give us his guiding counsel.

Dr. Church, Ottawa, seconded the motion, which was carried unanimously.

Dr. Ross thanked the Association for the vote of thanks tendered him, and said that as regards the Association he had always felt a very keen interest, and had always endeavored to do his share in supporting its interests. With reference to the coming year, the President's duties, according to our present regulations only begin with his presidency over the annual meeting of the Association. I may, therefore, be of some service to the Association in assisting in making the next annual meeting a success; and as we have come to a decision as regards the place of meeting I hope that members will use every endeavor to be present, and to make the meeting a successful one. Every exertion should be made to attract a large number of our Canadian graduates, who are now scattered

throughout the North-Western States and a number of American physicians to the next annual meeting at Banff.

Dr. Sweetland, Ottawa, was appointed Auditor.

On the motion of Dr. Mullin, Hamilton, the thanks of the Association were tendered to Dr. James Bell, Montreal, for his valuable services as secretary.

The twenty-first annual meeting of the Canadian Medical Association was then brought to a close.

JAMES BELL, M.D.
Secretary.

Progress of Science.

ON THE TREATMENT OF HABITUAL CONSTIPATION IN INFANTS.

(Eustace Smith, M.D., F.R.C.P., in *Brit. Med. Jour.*)—Sluggishness of the bowels in infants is a common source of trouble in the nursery, and the derangement is one which it is not always found easy to overcome. Occasional aperients in such a case give only passing relief. The bowels, indeed, are unloaded for the time, but when the action of the aperient is at an end, they are left no less sluggish than before. Habitual constipation is very common in infants who have been brought up by hand; and on inquiry, the trouble will often be found to date from the time at which bottle feeding was begun. Still, infants at the breast are not exempt from this annoying derangement. A deficiency of sugar in the breast milk, or, as is sometimes seen, a milk the curd of which makes a firmer clot than is common in human milk, will often cause habitual torpor of the bowels, which resists treatment with some obstinacy.

It is, no doubt, to improper, or at any rate inappropriate, feeding that the bowel trouble is usually to be referred. An excess of starch in the diet, or any food which overtaxes the child's digestive power, and thus burdens the alimentary canal with a large undigested residue, may set up the costive habit. By such means a mild catarrh of the intestinal mucous membrane is excited and maintained. There is excess of mucus, and the fecal masses, rendered slimy by the secretion, afford no sufficient resistance to the contractions of the muscular coat of the intestine, so that this slips ineffectually over their surface.

Another cause of constipation is dryness of the stools. Even in the youngest infants the evacuations may sometimes be seen to consist of little round hard balls, often the size of sheep droppings, which are passed with difficulty every second or

third day. The form of costiveness is generally due to insufficiency of fluid taken. The food is made too thick, or the needs of the system in the matter of water are in some way overlooked. But whether the constipation be due originally to excess of mucus or deficiency of fluid, it cannot continue long without affecting injuriously the peristaltic movement of the bowels. As the colon grows accustomed to be over-loaded, the intestinal contents can no longer exert a sufficiently stimulating influence upon the lining membrane, and the muscular contractions begin to flag. If the infant be poorly fed and badly nourished, this languor of muscular contraction may be aggravated by actual weakness of the muscular walls; and as under these conditions the bowels are apt to be over-distended by accumulation of its fecal contents, the expulsive force at the disposal of the patient is seriously impaired. Constipation, resulting from the above causes, is often made more obstinate by the infant's own efforts to delay relief. A baby whose motions are habitually costive knows well the suffering which undue distension of the sphincter will entail, and often yields to the desire to go to stool only when it is no longer possible for him to resist it. The pain is sometimes aggravated by the formation of little fissures about the anus, and the violent contraction of the sphincter set up by the presence of those fissures forms an additional impediment to free evacuation.

There is another form of constipation in infants, which we should be always vigilant to detect. This is the torpidity of the bowels induced by opium. In well-to-do families the use of soothing syrups and other narcotic preparations is now less common than was at one time the case; but now and then we find a baby drugged, for reasons of her own, by an unscrupulous nurse, and showing the earlier symptoms of narcotic poisoning. So long as the sedative continues to be given the bowels are costive, the child often vomits, his relish for food in great part disappears, and he lies with pupils firmly contracted in a dull, heavy state, from which he cannot easily be roused. In young babies the use of opium seems to lessen the action of the kidneys, the urine is scanty, and on examination of the surface of the body the healthy elasticity of the skin will be found to be seriously impaired. When pinched up between the finger and thumb the skin lies in loose folds on the abdomen, or only slowly recovers its smoothness. If this inelasticity of the skin be noticed in a baby whose pupils are closely contracted, and who seems habitually heavy and drowsy, with little relish for his food, it is well to remember that these symptoms may possibly be due to the action of a narcotic.

An infant whose bowels are habitually costive is not necessarily injured by the want of a daily relief. Often the child seems perfectly well in health, and, except for occasional local discomfort when he gets rid of an unusually large or hardened mass, may appear to suffer no inconve-

nience at all. In other cases there is flatulent distension or frequent colicky pain, the child sleeps badly, has a furred tongue, and cares little for his food; the motions are often light coloured from undigested curd, and are passed with violent straining efforts, during which the bowels may prolapse or the navel start. This straining is a not uncommon cause of hernia.

In remedying this condition, attention to the feeding and clothing of the baby is of little less moment than the use of drugs. When the infant is at the breast, a teaspoonful of syrup given three or four times a day before a meal will often quickly restore the normal regularity of the bowels. If the stools are habitually dry and hard we should see that the child takes a sufficiency of liquid with his food. In addition, it is useful now and then to make him drink some plain filtered water. In the case of a baby in arms, the possibility that the child may be thirsty and not hungry seems rarely to be entertained; but in warm weather, when the skin is acting freely, the suffering amongst young babies from want of water must often be acute. At such times the urine is apt to be scanty and high-coloured, and may deposit a streak of uric acid on the diaper. When fluid is supplied, the secretion both from the bowels and the kidneys quickly becomes more healthy; and a dessert-spoonful of some natural saline aperient water, given at night, aids the return of their natural consistence to the stools.

The form of constipation which is due to mild intestinal catarrh is common enough in young babies. This is owing, no doubt, in great measure to over-abundant feeding with starchy matters, or to the giving of cow's milk without taking due precautions to ensure a fine division of the curd. Still it cannot be denied that we sometimes find the same derangement in infants whose diet is regulated with proper care and judgment. In them the intestinal catarrh is frequently the consequence of exposure, for the sudden withdrawal of all protection from the lower limbs and belly which the process known as "short-coating" too commonly involves, is a fruitful cause of chill. In children so denuded, the feet and even the legs as high as the knees may be quiet clammy to the touch. Under such conditions the susceptibility of the patient to alternations of temperature must be extreme, and the bowels are, no doubt, often kept in a state of continued catarrh from rapidly recurring impressions of cold.

Where the constipation is due to this cause, our first care must be to protect the infant's sensitive body so as to put a stop to the series of catarrh. To do this it will not be sufficient to swathe the belly in flannel. The legs and thighs must also be covered, for a lengthened experience of these cases has convinced me that so long as a square inch of surface is left bare the protection of the

child is incomplete. We should next see that the infant's dietary is regulated with due regard to his powers of digestion. Excess of starch must be corrected, and it is best to have recourse to one of the malted foods. Mellin's food is especially valuable in cases where there is this tendency to constipation, as in many children the food has a very gentle laxative effect; but as Mellin's food contains no unconverted starch, and can do nothing to prevent the formation of a dense clot when the curd of milk coagulates in the child's stomach, it is advisable, when giving it with milk, to insure a fine division of the curd by the addition of some thickening material, such as barley water. A child of six months old will usually digest well a good dessert-spoonful of Mellin's food, dissolved in milk, diluted with a third part of barley water. A certain variety in the diet is of importance in all cases where the digestive power of the infant is temporarily impaired. Therefore, it is advisable to order an additional food, to be given alternately with the Mellin and milk. Benger's "self digesting food" is useful for this purpose, and rarely disagrees. It must be given, like the Mellin, with cow's milk, but without the barley water, for the pancreatine it contains has a digestive action upon the curd, and removes the tendency of the latter to firm coagulation. In addition to the above, if a child has reached the age of ten months, he may take a meal of veal broth or beef tea once in the day, and with this it is advisable to give some vegetable, such as broccoli or asparagus, thoroughly well boiled. At this age, too, the milk for the morning meal may be thickened with a teaspoonful of fine oatmeal, and sweetened with a teaspoonful of malt extract. In the cases of many infants suffering from habitual constipation, the appetite is very poor, and great difficulty is found in persuading them to take a sufficient quantity of nourishment. This indifference to food is almost invariably associated with coldness of the extremities, and usually disappears when measures are taken to supply necessary warmth to the feet and legs.

In all cases where an infant's bowels are habitually costive, it is of the first importance to enter thoroughly into these questions of clothing and diet. In addition, care should be taken that the bowels are regularly stimulated by manipulations from without. The sluggishness of peristaltic action, which forms a part of every case of habitual constipation, may be very materially quickened by judiciously applied frictions. The nurse should be directed to rub the child's belly every morning after the bath. She should use the palm of the hand and ball of the thumb, and, pressing gently down upon the right side of the abdomen, carry the hand slowly round in a circular direction, following the course of the colon. The frictions may be continued for five minutes. In obstinate cases the child may be laid down upon the bed, and the bowels gently kneaded with the thumbs placed side by side; but in this case, too, the

movements should follow the course of the larger bowel.

In addition to the above treatment, more special measures have often to be employed. These may be divided into two classes: the class of suppositories and injections, and that of remedies given by the mouth.

The class of suppositories and injections aims at producing an immediate evacuation of the bowel, and in no way tends to promote more regular action in the future. These remedies are, therefore, useful in clearing the way for further treatment, but there their value ends. A suppository of Castile Soap introduced into the rectum is a time-honored method of inciting an evacuation in the child. Another old-fashioned plan has lately been revived, which consists in the injection of forty or sixty drops of pure glycerine into the lower bowel. In each case energetic peristaltic action of the alimentary canal is induced, and the bowel is thoroughly emptied of its contents. Of these applications the action of the glycerine is very rapid, and in a few minutes the effect of the injection is seen. The soap suppository acts more slowly.

Injections of soap and water, or other liquid, have an entirely mechanical action in relieving the patient. To be effectual such injections must be large, consisting of at least half a pint of fluid, and should be thrown very slowly into the bowel. Still, although of service when given only occasionally, the frequent use of large injections is not to be recommended; indeed, this method of treatment is distinctly hurtful in cases where the costiveness has become a habit. Even in young babies great dilatation of the bowel and serious weakening of its muscular coat have often followed the daily use of the enema pump.

For the permanent cure of habitual constipation remedies given by the mouth are greatly to be preferred, but, at the same time, strongly acting purgatives are worse than useless. Our aim should be to find the smallest dose which will awaken a normal degree of energy of peristaltic action, and to give this dose regularly so as to induce a habit of daily evacuation. The daily dose is most efficacious when combined with a remedy which tends to give tone to the muscular coat of the bowel. For this purpose a useful draught is composed of half a drop of tincture of nux vomica, combined with ten drops of tincture of belladonna and twenty of infusion of senna, make up to a fluid drachm with infusion of columba. This draught should be given at first three times a day before food, but soon two doses in the day will be sufficient, and it is rarely long before one dose given at bed time has a sufficiently laxative effect. Our object is not to excite watery evacuations, but to induce as faithful an imitation as possible of a normal action of the bowels. The liquid extract of cascara is useful in many cases, especially if combined with tincture of belladonna.

Twenty, thirty, or more drops of cascara extract, with ten of the belladonna tincture, may be given with a few drops of glycerine in a little water every night. In the west of England a remedy held in high esteem consists of half a grain of sulphur, colored red with cochineal. That this apparently insignificant dose is often efficacious, when given regularly every night, I can testify from my own experience.

In cases where the motions are dryer than natural, as if from imperfect secretion of the intestinal glands, the addition of liquid to the diet, already recommended, may be supplemented by the administration of some saline aperient two or three times a day. This treatment is made more effectual when the saline is combined with small doses of nux vomica and quinine. For a baby of six months old five to ten grains of sulphate of soda may be given with one quarter of a grain of quinine, half a drop of tincture of nux vomica, and a minim of aromatic sulphuric acid, in a teaspoonful of water, three times a day before food. As in all cases where the remedy prescribed has been chosen with judgment and given in appropriate quantity, the continued administration of this draught, so far from rendering the bowel dependent upon the medicine, stimulates it to act spontaneously, so that the dose has soon to be given less frequently, and in no long time can be discontinued altogether.

By means such as the above, the most obstinate case of constipation in the infant can be cured with little difficulty, but to be successful the treatment must not be restricted to mere drug-giving. The food of the child must be regulated with care, his clothing must be inquired into, and his general management passed under review. Where this is done, drugs given in comparatively small doses will act with sufficient energy, and will soon restore their normal regularity to the bowels.

DYSMENORRHEA.—Barthelow:

R.—Ex. stramonii.....—
 Ex. hyoscyami.....—
 Ex. opii.....aa gr vj
 M.—Et f. pilulas No. vj.
 S.—A pill every three, four or six hours.

FOR HEADACHE.

Dujardin-Beaumetz recommends the following:

R.—Caffeine..... gr. iv
 Salicylate of sodium..... gr. iv
 Hydrochlorate of cocaine..... gr. iss
 Water..... f ʒ ij
 Syrup..... f ʒ ss
 M.—Take the whole at one dose at the beginning of the attack.

NOTES ON ANTIPYRIN.

It is not my intention to make any remarks on the uses of antipyrin as a febrifuge. Antipyrin has been long used for this purpose, long enough indeed for a host of rivals to have arisen, one of which—I mean antipyrin (acetanilide)—bids fair to displace it. I wish rather to bring before the meeting some account of the various diseases for which antipyrin has been used, in which it has a more or less specific action, apart from its property of lowering temperature. Antipyrin has been so largely used, during the last year, more especially upon the Continent, that it runs the danger of degenerating into a universal panacea for all ills. So great in fact has been the demand for the drug, that it is believed that the supply has with difficulty kept pace with it, and complaints are now made that the drug is suffering from over-popularity, and that its purity is being sacrificed by the makers to insure a sufficient quantity in the market.

Antipyrin has been very largely used as an anodyne, and a claim has been made for it by Professors Germain Sée and Lépine that it is a reliable substitute for morphine, while in cases where morphine is contraindicated, such as advanced kidney disease, acute gout, or certain forms of cerebral irritation, antipyrin may be given freely to allay pain. It has the great advantage over morphine that it does not cause cerebral symptoms; thus there is not any vertigo nor vomiting, and according to Professor Sée the use of the drug is not followed by sleep or nerve stimulation. Professor Lépine, however, considers that antipyrin acts both as an anodyne and a nerve stimulant, so that though it relieves pain, it at the same time quickens the intellectual faculties of the patient, and renders him disinclined for sleep.

Taking his view of the action of antipyrin as an anodyne, we may say that it is diametrically opposed to morphine in that it acts as an anodyne without depressing the higher brain centres. In only two cases in which I have given antipyrin has it caused sleep, and in these instances I believe the sleep was rather the result of relief from pain than that of any somnolent action of the drug. The fact that antipyrin acts as a nerve stimulant as well as an anodyne is a decided objection to its employment when we wish to relieve pain and at the same time insure sleep. The best method in such is to follow the antipyrin by a hypnotic, such as chloral.

For the immediate relief of pain the drug should be used hypodermically, and, as it is very soluble in water, a fresh solution may be made by dissolving one of the tablets prepared by Burroughs & Wellcome in an equal weight of water.

The dose for an adult, of antipyrin used hypodermically to relieve pain is five grains. This has been calculated by Dr. Fränkel, of Berlin, to be equivalent to one-thirtieth of a grain of morphine. The dose may be repeated if the pain is

not relieved. Beyond the pain caused by the injection, and a certain feeling of tension which lasts a few seconds, no bad effects have been noticed. The drug usually gives relief in from fifteen seconds to half a minute, and the effect lasts for some hours (six to eight hours—Fränkel).

As an anodyne, antipyrin has been used chiefly in herpes zoster, lumbago, ataxia, hepatic and nephritic colic, acute asthma, acute rheumatism, and acute gout.

If given in sufficiently large doses it appears to give relief in the majority of cases. Dr. Fränkel gave it in all cases in which morphine appeared to be indicated, and did not meet with a single failure. Dr. Jennings, of Paris, however, side by side with many cases successfully treated by antipyrin, mentions a case of acute gout which was influenced by the drug.

If given by the mouth as an anodyne, antipyrin must be used in large doses; thus Professor Sée recommends a dram to a dram and a half in the twenty-four hours, and Professor Lépine one hundred and fifty grains divided in two doses.

In rheumatism and gout the drug appears to be both sedative and curative in its action; it not only allays the pain, but in many cases shortens the attack. Professor Sée gave it in fifteen cases of hydrarthrosis, which had resisted treatment with the salicylates and also counter-irritation by the actual cautery. In all these cases he found that swelling and pain disappeared in a few days. Dr. Fränkel gave it in thirty-four cases, with the result that in all but two there was amelioration of the symptoms and shortening of the attack. In fifteen cases, however, a relapse occurred. He found that the average duration of acute rheumatism with antipyrin was twenty-five days, while with the salicylate treatment it was 35.2 days. Mr. Raymond Johnson tried antipyrin in four cases of acute rheumatism, with the result that it lowered the temperature in all, but in only one out of the four did it relieve the symptoms. The three cases which were unrelieved by antipyrin yielded to treatment with salicylates, while in the fourth, where salicylate of soda had failed to relieve the patient, antipyrin did so.

To give relief in acute rheumatism or acute gout, large doses of antipyrin must be given, one to two drams during the twenty-four hours being a usual dose. As a rule the drug produces free sweating and rapid defervescence. In chronic rheumatism it acts in allaying the pain and shortening the course of the disease. I have given it in a large number of cases of rheumatism, and in the majority I have found it successful. It appears to me to be a remedy which at least should be tried when the salicylates fail or produce disagreeable after-effects, as they occasionally do. Most of the cases recorded in which antipyrin and the salicylate treatment have been used side by side, for the purpose of comparison, yield either to the one or the other, the refractory

cases in either section usually yielding to the administration of the other drug. I have not any statistics to prove whether antipyrin is of use in preventing the secondary troubles in acute rheumatism, such as endocarditis.

Antipyrin has been used with great success in nervous disorders, and I believe it supplies us with a specific for many neuralgic and other allied complaints. Its success in the treatment of migraine and cephalalgia is now assured, and one rarely takes up a periodical without finding in it the description of various cases which, after being more or less intractable to remedies for years, have yielded to antipyrin.

In Germany and France especially has this drug been used in the treatment of migraine, and to a less extent in England. During the last few months I have used it in the out-patient department and in private practice in such cases with very good results. As a rule patients return after having taken the remedy, and ask pointedly for some more of the same medicine that they had last time, a fact which stamps its value at once on one's mind.

In treating migraine with this drug, I believe the best plan is to use the remedy as a specific against the attacks, and not to administer it continuously. If the migraine be periodic, or if there be a preliminary aura, the drug should be exhibited as soon as possible before the threatened attack. Thus, if an attack be feared for the morning, antipyrin should be given at night, and if the attack still threatens in the morning, a further dose should be administered. In this way the attack generally is aborted. Even if preliminary warning be absent, the medicine taken as soon as the attack comes on either aborts it or renders its symptoms less intense. In my experience it is very rare for antipyrin to fail to influence favorably an attack of migraine, and in this I am supported by almost all of those who have noted on this drug.

It is rarely necessary to give large doses to produce the specific effect. I generally give five to seven grains combined with alkalies and a bitter infusion, to be taken when an attack threatens, and to be repeated, if necessary, in an hour. I find that somewhat larger doses are recommended (fifteen to twenty grains); but patients rarely complain that the smaller dose fails.

I have found the drug useful also in those cases of bilious headache, which often occur in patients of full habit, who are addicted to the too frequent use of alcohol. These cases, which generally occur among women in a comfortable position in life, yield to the administration of antipyrin; I had the satisfaction of hearing a patient, who has suffered in this way for more than ten years, state that at last a remedy had been found which relieved her. Of course the remedy does not touch the root of the evil.

In some cases of cephalalgia, antipyrin relieves

for a time, but at length the patient becomes habituated to the drug, and the relief is less marked. In such cases, either the drug may be increased or antifebrin or some other of the substitutes for antipyrin may be used.

As antipyrin has so marked an influence over these nervous complaints, it seems natural to suppose that it may be useful in epilepsy.

Fraty concludes that it has a distinct influence over epilepsy akin to that manifested by the alkaline bromides, but he confesses that large doses must be given (one to two drams daily), and that in a considerable number of cases it has to be given up, owing to the *malaise* it produces.

I have not tried the drug in many cases of epilepsy, but I was not favorably impressed with the result when I did try it. As a sedative antipyrin has been tried in cases of nocturnal emissions, and it has been found that seven to fifteen grains, administered on going to bed, prevents the emission in many cases. It also acts in diminishing the excessive flow of urine, which not infrequently accompanies spermatorrhea, and which arises from the hyperesthesia of the nervous system. I would venture to think that this drug may be well worth a trial in those cases which so often are found to exist in young men, who have fallen into the habit of masturbation at school, and who, on coming into the world, learn the evils of it, and relinquish the habit, but in whom spermatorrhea frequently supervenes to a serious extent. I have given it in similar cases with good results, the best plan being to give ten grains of antipyrin in combination with ten grains of chloral hydrate at bed-time, the patient usually falling asleep shortly after getting into bed, and remaining asleep without disturbance till the morning.

Antipyrin was given by M. Bloch to a neurotic man with a tender spine, who was periodically overcome by attacks of drowsiness, which come on after each meal; these were accompanied by pains in the head and debility. His condition had been improved by the use of *nux vomica* to some extent; but, on the exhibition of antipyrin in fifteen-grain doses, given on waking and at 11 a. m., the drowsiness after a few days disappeared, and the remaining nervous symptoms abated. In this case it acted as a decided nerve stimulant.

The drug has been strongly recommended in cases of chorea by Legroux, who considers it a most rapid, certain, and inoffensive remedy. He administered it in six cases, giving forty to fifty grains daily. All his cases recovered rapidly in from six to twenty-seven days. I have not had the opportunity to use it frequently in chorea, but in such cases as I have used it the movements diminished rapidly. In one child to whom I gave the drug it had to be discontinued, owing to the cardiac depression which accompanied its use.

Antipyrin has been used with success in spasmodic nervous disorders, such as hay-fever and whooping-cough. Dr. Bloch tried it in a case of hay-fever, in which cocaine and the bromides had been given without result. He gave it in thirty-grain doses at the hours when the attacks usually came on, and found that the drug aborted the attacks. After taking antipyrin for some weeks the disease disappeared in this case.

Sonnenberger, from an experience of seventy cases in which he used the drug in whooping-cough, concludes that it is a very useful remedy in such cases. He gave it to infants in doses of one half to one and one half grains three times a day in syrup of tolu or raspberry, increasing the dose to ten or fifteen grains for older children. The remedy must be used systematically, to produce a good result in whooping-cough.

In nervous vomiting, especially in the vomiting of pregnancy, antipyrin is useful. If the vomiting be periodic, the drug should be given a few hours before the usual appearance of the attack. In sea-sickness the drug has been lauded as a specific, perhaps only to have its day as most other specifics for this disorder have had. More than one medical man has, however, recorded the debt of gratitude he owes to this remedy in crossing the Atlantic.

Antipyrin has been used as a hemostatic in cases of pulmonary hemorrhage by Dr. Olikoff. He made a solution of fifteen grains to the ounce in water, and made his patients breathe through this for four or five respirations, repeating the use of it every half hour. In all the six cases tried, the hemorrhage was diminished. As a hemostatic for general purposes, antipyrin is too costly a remedy to be employed lavishly, though it has been recommended for epistaxis and other forms of hemorrhage. Herpes zoster and locomotor ataxy have both been successfully treated with antipyrin. In locomotor ataxy it appears to act in alleviating the lightning pains and in giving ease to the patient rather than by altering the course of the malady.

Since antipyrin became a popular remedy, many cases in which the drug has produced disagreeable effects have been recorded, though, as far as I am aware, none of these cases has ended fatally, nor have there been any symptoms which have lasted more than a few hours. The cases which I have collected (more than twelve in number) appear to me to be pure examples of idiosyncrasy. They are usually isolated cases, occurring amid many others in which the same quantity of the drug was administered. They do not appear to depend on the quantity of the drug given, for in one case four grains, in another eight grains, and in a third fifteen grains of antipyrin produced symptoms of poisoning, though more than double the dose has been given in many hundreds of cases without bad effects. There is, as far as I can find, no special class of

cases in which the administration of antipyrin is likely to bring on symptoms of poisoning; but, as it appears in certain individuals to cause disagreeable symptoms, regardless of dose, we are likely to hear further of this property if it possesses from some of the large number of people who are now taking the drug as a preventive against sea-sickness.

The chief symptoms which manifest themselves in cases of poisoning by antipyrin are certain nervous sensations, such as restlessness, loss of memory, a feeling of general expansion of the body, and a sensation of great coldness. These are followed by swelling of the face and the appearance of an erythematous eruption resembling measles—so much like it, in fact, that those who have seen cases of antipyrin rash are careful to warn us to avoid the diagnosis of measles in patients taking antipyrin.

The chief points of difference between this rash and measles are that it appears but slightly on the face, that its chief distribution is on the extremities, that it is non-crescentic in distribution. In many cases it is not accompanied by catarrh of the eyes and nose, but in a few cases catarrh does occur, and when present it must make the differential diagnosis very difficult. Besides these symptoms, antipyrin may cause diaphoresis, feebleness of the pulse, and general collapse. Gastro enteritis occurs rarely.

The antidote which removes these disagreeable effects most readily is belladonna, given either as the tincture or in the form of atropine used hypodermically (one-seventieth of a grain).

THE SPECIFIC TREATMENT OF TYPHOID FEVER. (1)

BY WILLIAM F. WAUGH, A.M., M.D.

When Klebs told us of the bacillus typhosis in 1881, he recommended as a suitable remedy the benzoate of sodium or of magnesium.

His reason for preferring these salts over carbolic and salicylic acids, and other germicidal remedies, was that none of the latter could be given in really efficient doses, continuously, for a sufficiently lengthy period, to accomplish the object, without causing undesirable and injurious effects in the patient. He recommended that the benzoates be used by inhalation, by gargling, and given internally in doses of 320 grains per day. (2)

Since the publication of Klebs' discoveries in 1881, I have made use of the remedies he suggested in all my cases of typhoid fever up to last fall, with very fair results. The cases usually ran a mild course: were free, as a rule, from alarming accidents, and the death-rate was low. But on looking back over this period, and taking into

(1) Read before the Pennsylvania State Medical Society, June 7, 1888.

(2) *Phila. Med. Times*, Dec. 3, 1881, p. 152.

account the results of increased care in nursing, feeding and watching my cases, together with the disuse of irritants like quinine and the mineral acids, I am unable to say that there was any improvement distinctly due to the use of the benzoates. As a speaker once said, concerning the bacillus tuberculosis: "We do not need him; we can explain all the phenomena of the disease without him."

During the summer of 1887, I began the use of the sulpho-carbolate of zinc in summer complaint. The results of this treatment have been already published. Suffice it to say here that the success which ensued was, in my opinion, clearly due to the addition of this drug to the treatment.

There can hardly be a doubt that we have in summer complaint (using the word to cover all the varieties of summer diarrhoea) the action of a specific microbe which has made the gastro-intestinal canal the seat of its operations; and that the hot head, the fever and the symptoms of the so-called hydrencephaloid are due to the absorption and circulation in the blood of the poisons generated by these organisms in the intestinal canal.

That the cause of death is not exhaustion from diarrhoea in all cases is potent to every observer who has seen patients die, when the discharges had been stopped while the fever and cerebral symptoms increased.

Several notable phenomena followed the administration of sulpho-carbolate of zinc in this disease:

- 1st. The irritability of the stomach was relieved from the time the first dose was given.
- 2nd. The stools at once changed in their condition, losing the fetid odor which previously characterized them.
- 3d. The heat of the forehead disappeared, as did that of the epigastrium; the cerebral symptoms improved at once, and in case the fever was high, it fell to near the normal point.

That these results were due to the local germicidal action of the drug is shown by the fact that, when the discharges partook of the dysenteric character, the administration of the drug by the mouth proved insufficient; but a speedy cure resulted when the zinc salt was given by enema.

It was found that infants in their second summer bore two-grain doses of this drug very readily, showing it to be far less irritant than the ordinary salts of zinc.

These results, it will be seen, are quite consistent with the theory that the general symptoms of summer complaint are due to an intoxication of the blood with the products of the disease-germs; not an invasion by the germs themselves, as, in that case, the local action of a germicide in the intestinal canal could not account for the beneficial results.

This experience in summer complaint led me to give the same agent a trial in typhoid fever. Here we have a somewhat similar condition: a specific micro-organism inhabiting the intestinal canal and

producing general symptoms. If the sulpho-carbolate prove as efficient a germicide as in the other disease, it will enable us to separate the symptoms due to the poisons generated by the disease-germs in the intestinal canal from those produced by those germs which have penetrated beyond the reach of germicides.

I find on looking over my notes, that I have treated twelve cases with the zinc salt.

Three of these were diagnosed as incipient typhoid, including one in which Dr. Goodman called me in consultation, and in which we agreed as to the diagnosis. In these three cases the symptoms disappeared when the sulpho-carbolate was given; so that the diagnosis must be considered doubtful.

The others were well marked. In one case I was called in the second week. Repeated hemorrhages from the bowels had reduced the patient's strength greatly; her pulse was very rapid and feeble; the temperature rose to 105° ; and her stomach could retain nothing. During the afternoon following my first visit she had another hemorrhage; but, with this exception, her improvement was uninterrupted and remarkable for so severe a case. The gastric irritability disappeared with the first dose; the hemorrhage ceased, the stools became odorless, the diarrhoea stopped, the tympanites subsided, and the temperature never thereafter rose above 102.5° .

In another case, which I attended for my friend Dr. Woodbury, and in which, I am informed, Dr. Cleeman coincided as to the diagnosis, the temperature never rose above 103° and the diarrhoea ceased when the zinc was given. There were scarcely any cerebral symptoms, and the disease ran an unusually speedy course.

In one case the treatment failed to save the patient. This was a hospital case which had run on into the third week, with profuse diarrhoea, repeated intestinal hemorrhages, profound prostration, and the gravest cerebral symptoms. It was with difficulty his attention could be roused, and for some time he had recognized no one. It had been found necessary to give him stimulants hourly.

This was his condition when I went on duty. All that a local germicide could do was accomplished by the sulpho-carbolate of zinc; the temperature fell 2° ; the hemorrhages were stopped as well as the diarrhoea; and the frightful fetor of the stools disappeared. The man lingered for four days—thanks to the excellent regimen instituted by my predecessor—and then died, comatose. In this case there was evidently an invasion of the blood by the typhoid bacilli. This was the only death; and, under the circumstances narrated, I do not consider that it should be counted in estimating the value of the treatment.

Not to weary you with the repetition of case-histories, I will sum up the effects of the sulpho-

carbolate of zinc by saying that in every case its use was followed by:—

1. Relief from gastric distress.
2. Disappearance of fetor from the stools.
3. Moderation or stoppage of diarrhœa.
4. Ceasing of hemorrhage.
5. Ceasing of tympanites.

Reduction of temperature by two to three degrees, with a corresponding improvement in the cerebral symptoms, except in the case detailed above.

There are some cases occurring in this city of doubtful pathogeny, which are sometimes classed as typhoid, sometimes as typho-malarial. They are characterized by fever, which ranges from 102.5° in the morning to 104.5° in the evening, dry tongue, brown in the centre, but coated to the tip and edges; tenderness in the epigastrium, but not in the iliac fossæ; great debility; anorexia and gastric irritability, but no diarrhœa unless a laxative is given, in which case profuse catharsis ensues, with an aggravation of all the symptoms. I have never found the typhoid spots in these cases. Quinine could not be borne by the stomach, but gave great relief when given by suppository in scruple doses.

In these cases the sulpho-carbolate of zinc, in doses of three to five grains every two hours, effects a cure so rapidly that I am constrained to believe that the disease in question is due to a microbic invasion of the stomach.

Permit me, in conclusion, to advert briefly to the diet of typhoid fever. About a year ago a French clinician, Du Jardin Beaumetz, referring to the use of milk in typhoid fever, stated that this food could only nourish through its water and salts, as neither the casein nor the fat can be absorbed; and hence these substances are injurious. It struck me as significant that, although this statement was made in the Academy of Medicine, where so many keen-witted men are continually on the look-out for opportunities to distinguish themselves, and where, as in the case of Professor Peter, one man rather enjoys the prospect of being arrayed against the whole body of his fellows, not one was raised in defence of milk.

And yet there is a source of fallacy in the case against it, on which an argument might be hung: in that the typhoid process may not effect all the lacteals—at least not all at the same period, and hence some absorption may take place.

Be this as it may, the researches of Vaughan on tyrotoxin may well raise a doubt as to the propriety of introducing a highly organized and readily decomposed body like milk into such a sink of impurity as the gastro-intestinal system of a typhoid patient.

In all the cases in the series reported, predigested foods were substituted; and I cannot but attribute much of the freedom from tympany, diarrhœa; etc., to this cause. Very little stimulant was needed; in fact, not more than was to be found in

one of the beef preparations in the market, which was given in the weaker stages.

In conclusion, I will say that while my eight undoubted cases are too few to afford more than an indication of the truth, the uniformity of the results obtained leads me to believe that in the sulpho-carbolate of zinc we have probably a remedy for typhoid more nearly specific than any heretofore proposed—in that its use is a legitimate deduction from the pathology of the disease.

The food preparations most used in this series of cases were Carnrick's soluble food, with liquid peptonoids or Rudisch's sarco-peptones; and, when slight stimulation was indicated, Bovine was added to the proceeding. In addition to these, the white of egg was given in the raw state, mixed with cold water and a little pepsin added. In one case Wells and Richardson's lactated food was used.—*Phila. Times.*

LACTIC ACID AND DIET IN INFANTILE DIARRHŒA.

BY FRANK WHITFIELD SHAW, M.D., Physician to the Brooklyn City Dispensary.

Less than two years ago, Hayem, of Paris, presented to the Academy of Medicine in that city a report on the use of lactic acid in the green diarrhœa of children. In the preparation of this work he had been assisted by his interne, Lesage, whose particular share in it had been the development of some pure gelatin cultivations of a germ which Hayem had discovered as being present in the vomited and rectal discharges of this variety of diarrhœa. He said he had established beyond the possibility of a doubt, by clinical experiment, the direct relation of this germ to the green color, and as such he claimed for it the right of discovery.

However, soon after his report was published, this claim was contested by Damaschino, who said that, three years before he had discovered this same microbe, had shown its relation to green diarrhœa, and had presented to the Biological Society some micro-photographs of it.

Hayem admitted his priority to the microscopic discovery, but still claimed as his own the credit for showing the proper relation of the bacillus to the particular form of diarrhœa. He stated that Damaschino had gone no further than merely to recognize the germ, and then cited the experiments which Lesage had made of introducing into the intestinal tract of healthy animals some pure cultivations, and producing by them a characteristic green diarrhœa. He also showed that the discharges were contagious.

The microbes, which are rod-shaped and can exist only in an alkaline medium, show a disposition to bunch themselves into groups, and their number is in direct relation to the severity of the attack.

These are, therefore, the first successful attempts to establish the parasitic origin of at least one

form of diarrhoea, as probably also they are the first efforts to treat the disorder according to germicidal method. Since then, in this country, that attention has not been given to the experiments which the conclusions would seem to warrant.

It was my privilege, soon after the report of Hayem was published, to have an opportunity of testing clinically in dispensary work the statements made by him. After using the acid in the green form of diarrhoea for a short time, the suggestion I resented itself of trying the effect of it in all the varieties of diarrhoea without reference to the color of the stools. The idea of the universal application of germicides to diarrhoea was strengthened by the paper, a few months later, of Dr. Wm. Booker, read before the International Medical Congress at Washington, on the different forms of bacteria found in the discharges of summer diarrhoea. He stated that twelve varieties had been isolated, eleven being bacilli and one belonging to the variety cocci. He gave their action on milk as follows: "Some coagulated milk with acid reaction and evolution of gas; one caused coagulation with alkaline reaction; one gave the milk a peptonized appearance; and other varieties caused no perceptible change."

On account of its simplicity as well as its elegance, the employment of this universal acid treatment was a very easy one, and the results were such as to leave no doubt as to its usefulness. The trial began during the summer of 1887 and has been continued during the present summer, over one hundred patients receiving the treatment.

The age of the patients varied from ten weeks to twenty four months, and there was great variety in the severity. The stools, which ranged from three to twenty daily, presented all the varieties found in the different forms of diarrhoea. They were the watery-mucous, the yellow with coagulated casein, the slightly greenish with mucus, casein, and sometimes blood, and the distinctly green. In very few cases of the green diarrhoea so treated was there failure to afford some relief, and many of the recoveries were certainly remarkable. But, while the trial confirmed the conclusions of Hayem as to green diarrhoea, it also established the usefulness of the acid in the other varieties.

The significant features in support of lactic acid are these: It not only relieves the diarrhoea, but it also acts beneficially for the vomiting, fever, and restlessness. It changes also the very offensive odor of the stools.

The vomiting is controlled within a few hours so completely that the child can begin to take nourishment, and, although it may subsequently occur at intervals, a continuance of the treatment soon stops it. Again, the fever which attends every case of any severity is reduced by it. To not a single child in the one hundred cases was any antipyretic given, the fever usually subsiding before the diarrhoea had fully stopped. Attending

the reduction of temperature there was shown a disposition to sleep, and the intestinal pain, which was often severe, received no other medication than the acid. To none of them was opium given in any form.

Within a period varying from twelve to seventy-two hours, the discharges would begin to change, the greenish becoming less watery and assuming a yellow color, while the watery-yellow and sometimes bloody had a greater consistence without the unpleasant odor.

The general results have been so satisfactory that all astringent and alkaline remedies have been abandoned, lactic acid alone now being given, no matter what variety of diarrhoea presents itself.

But as the children so treated came largely from the tenement houses, where crowding, heat, poor ventilation, and improper food are important factors, it was found advisable to adopt some form of dietetic measure in connection with the acid. In a monograph on the treatment of the diseases of children, read by Dr. Jacobi in 1879, a valuable suggestion is given concerning the feeding of children. The frequency of diarrhoea in children fed wholly on breast milk had already presented itself, and for a considerable time it had seemed contrary to reason to so continue feeding, although good authorities advised, whenever possible, to insist upon a diet wholly of breast milk. This was done, and the results were no better, while in children somewhat older who had begun to take other foods, there was usually a benefit when these were alternated with mother's milk. An exclusive diet, either of breast milk or prepared food, did not seem to give good results, and the question was not satisfactorily answered until the method employed by Dr. Jacobi was tried. In his monograph he states that even normal mother's milk contains fat that is not digested, and that when diarrhoea occurs, if lumps are found in the passages, they are not wholly undigested casein, but, on the contrary, are mostly fat, and probably remnants of intestinal epithelium. These fats are olein, margarin, and stearin. Fatty acid in abundance is a common cause of derangement of digestion and assimilation, and it impedes the normal secretion of other digestive fluids.

He then quotes the conclusions of Wegscheider concerning the fat in breast milk: "Fat can not be completely absorbed: one part leaves the intestines in a saponified condition; a second part as free fatty acid; a third as fat in an unchanged condition." From this he concludes that one precaution to observe is to guard against food too rich in fat. As the mother's milk is best when it can be tolerated, he endeavors to make this possible by diluting it with some liquid farinaceous food. To do this, he suggests preceding the nursing by one or two teaspoonfuls of barley-water. Instead, however, of the barley-water, some of the prepared foods were tried according to this principle, and the results were beneficial, due, probably, to the small

percentage of fat which they have been shown to contain. There was less troublesome casein to act as an intestinal irritant, and, when they were taken in connection with the lactic acid, recovery was usually speedy. This dietic precaution has been adopted, and is recommended, whenever practical, in either variety of exclusive diet.

The size and frequency of the dose of lactic acid varies entirely with the age of the patient and with the number of discharges. A two-per-cent. solution is usually ordered. The following is the formula advised by Dr. Hayem:

R. Pure lactic acid..... 3 ss;
Syrup..... 3 j;
Water..... 5 iij. M.

Each drachm of the solution contains about one drop of pure lactic acid.

For a child under twelve months, half a teaspoonful every hour is sufficient. If the discharges are very frequent, a teaspoonful may be given every hour for six doses, changing them to half a teaspoonful. For over twelve months a teaspoonful every hour is the ordinary dose. Dr. Hayem recommends its use one day after the diarrhoea has stopped. The large dose at first suggested in the report do not appear to be necessary, and there is danger, if it is given in larger quantities, of causing irritation of the buccal mucous membrane. It is best to dilute even these small doses, as otherwise there is a decided acid taste, not unpleasant, however.

Other germicides have been suggested and tried, such as salicylate of sodium and naphthaline; but lactic acid, while possessing all the curative properties of the others, has additional advantages:

1. It is more palatable than salicylate of sodium or naphthaline, more readily tolerated, and simpler to administer.
2. It controls vomiting, and permits the earlier use of food.
3. Under it, temperature is reduced and intestinal pain quieted.
4. Restlessness is overcome, and sleep rendered possible without the use of opiates.

327 GREENE AVENUE, BROOKLYN.
N. Y. Med. Journal.

THE USE OF ANTIPYRIN DURING LABOR.

Although it is written, "In sorrow thou shalt bring forth children," it is the laudable aim of the obstetrician of to-day to mitigate, in so far as he is able, the pangs of childbirth. The means to this end, to which we may resort without damage to either the mother or the child, are few in number, and the most valuable of all justly finds its chief rank after the completion of the first stage of labor..... The excellent results yielded me by antipyrine in dysmenorrhœa and others affections, where it is a question of nerve pain, have led me during the past year to test it during the first stage of labor, and my results have been sufficiently gratifying to justify me in asking other obstetricians to try the drug. Possibly it has been simi-

larly used by others, but if such be the case I have seen no record of experience. My habit in regard to the administration of the drug is to give fifteen grains well diluted, and preferably with some stimulant, such as the aromatic spirits of ammonia, and to repeat the dose in one hour thereafter. In two hours after the second dose the patient receives ten grains, and so on every two hours if needed. The chloral mixture I administer, as has always been my custom, in fifteen-grain doses every three-quarters of an hour till three or four doses have been received. The result of this combination has been to nullify the pains so much as to be in two instances scarcely perceptible, and in others simply uncomfortable. The progress of labor has not been at all interfered with, and neither the mother nor the child have presented evidence of injury from the administration of the antipyrine.

I report this experience thus briefly, in order that others observers may test the validity of my results. Should there be concurrence of opinion, the first stage of labor will be rendered practically painless by antipyrine, even as the second and the third may at any time be made through resort to chloroform.—*Dr. Egbert H. Grudin, in New York Medical Journal.*

DYSMENORRHEA.—Calvin:

R.—Tr. gelsemii.....—
Tr. camphræ.....—
Tr. opii camphoratæ..... aa 3 ij
M. S.—Thirty drops every two hours p. r. n.

TREATMENT OF CARBUNCLE.

I have tried the expectant treatment of carbuncle recommended by Paget; but find it so long, tedious, and painful to my patients that I have completely discarded it. The treatment by excision and scraping is too severe to be generally adopted in private practice, although it has been apparently very successful.

I have adopted the following for the last three years, to which I have added the hypodermic injection of cocaine. I inject into the carbuncle hypodermically half a grain of hydrochlorate of cocaine, and wait about five minutes until the skin is quite anesthetic; then I make a small incision into the centre of the carbuncle with a tenotomy knife, and insert a small sharp piece of potassa fusa, and then push it home. Afterward a piece of belladonna plaster is cut circular, a little larger than the carbuncle, and placed over it. The plaster serves the double purpose of retaining the caustic and of alleviating the pain. This is kept on for eight hours, and then it is taken off, and hot linseed poultices are applied for the same length of time. The result is that the patient always recovers about three days after the commencement of the treatment, which in this way is carried out almost painlessly.—*Robert Muir, M. D., British Med. Journal.*

VOMITING IN PREGNANCY A SIGN OF THE SEX OF THE CHILD.

WINFIELD, ARK.

ED. REVIEW.—It would be a source of pleasure to most prospective fathers and mothers to be able to tell, or even to know with approximate certainty, what sex their child will be. At one time the number of foetal heart-sounds to the minute was thought to be an index, but this sign has been proven to be rather unreliable.

Some years ago, my attention was called to morning sickness as a sign of the sex of the foetus, and as substantiating this I will cite the following:

A woman, carrying her first child, was so ill from "morning sickness" during the first four months of pregnancy, as to be entirely unfit for household duty. The child when born was found to be a female. The second pregnancy was similar to the first, a female child being born.

During her third pregnancy my patient was not sick in the least, and would not believe that she had conceived till she felt the movements of the child. This one proved to be a boy. During the next two pregnancies no sickness occurred, and male children were born. During her sixth pregnancy she was greatly annoyed by morning sickness, and a girl was born. I foretold the sex of the seventh, a boy, by the absence of vomiting, and the eighth, a girl, by the presence of vomiting.

In searching the literature at my command, I find Cazeaux and Tarnier, in the last edition of their great work on obstetrics, say it is a sign of some importance, and Priestley in "Reynold's System of Medicine" refers to a physician, who claimed to be able to foretell the sex of the child by the absence or presence of vomiting during pregnancy.

I would be glad to hear from other readers of the REVIEW upon this subject.

CHEVES BEVILL.

The doctor who selfishly and unwisely sits in his office, or "knocks around town," lazily, and never attends at home or abroad the convocations of his brethren, thus putting himself in a position for receiving and imparting information, exchanging views and experiences, rubbing off rough corners, and brushing out the mental cobwebs from the darker areas of his mind, made dark by the absence of the light reflected from other's works against the best interests of himself and his patients, in that he is likely to be come rusty and slow as thinker, a laggard, a sluggard, a narrow, one-ideal, dogmatic, snarling, misanthropic, dyspeptic crank.

Go where you will in any community, and you will find the men who are the busiest, the most thoughtful, the best students, the happiest, the leaders in the front rank, are the ones who are never too busy to attend their home societies regularly, and get away to a distant meeting at least once or twice a year.

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FRANCIS W. CAMPBELL, M.A., M.D., L.R.C.P. LOND
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ASSISTANT EDITOR:

A. LAPHORN SMITH, B.A., M.D., M.R.C.S. Eng., F.O.S.
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THE CODE OF ETHICS OF THE AMERICAN MEDICAL ASSOCIATION

ART. V.—*Duties of physicians in cases of interference.*

1. Medicine is a liberal profession, and those admitted into its ranks should found their expectations of practice upon the extent of their qualifications, not on intrigue or artifice.

2. A physician, in his intercourse with a patient under the care of another practitioner, should observe the strictest caution and reserve. No meddling inquiries should be made—no disingenuous hints given relative to the nature and treatment of his disorder; nor any course of conduct pursued that may directly or indirectly tend to diminish the trust reposed in the physician employed.

3. The same circumspection and reserve should be observed when, from motives of business or friendship, a physician is prompted to visit an individual who is under the direction of another practitioner. Indeed, such visits should be avoided, except under peculiar circumstances; and when they are made, no particular inquiries should be instituted relative to the nature of the disease, or the remedies employed, but the topics of conversation should be as foreign to the case as circumstances will admit.

4. A physician ought not to take charge of or prescribe for a patient who has recently been under the care of another member of the faculty in the same illness, except in cases of sudden emergency, or in consultation with the physician previously in attendance, or when the latter has relinquished

the case, or been regularly notified that his services are no longer desired. Under such circumstances no unjust and illiberal insinuations should be thrown out in relation to the conduct or practice previously pursued, which should be justified as far as candor and regard for truth and probity will permit; for it often happens that patients become dissatisfied when they do not experience immediate relief, and, as many diseases are naturally protracted, the want of success in the first stage of treatment affords no evidence of a lack of professional knowledge and skill.

5. When a physician is called to an urgent case, because the family attendant is not at hand, he ought, unless his assistance in consultation be desired, to resign the care of the patient to the latter immediately on his arrival.

6. It often happens in cases of sudden illness, or of recent accidents and injuries, owing to the alarm and anxiety of friends, that a number of physicians are simultaneously sent for. Under these circumstances, courtesy should assign the patient to the first who arrives, who should select from those present any additional assistance that he may deem necessary. In all such cases, however, the practitioner who officiates should request the family physician, if there be one, to be called, and, unless his further attendance be requested, should resign the case to the latter on his arrival.

7. When a physician is called to the patient of another practitioner,*in consequence of the sickness or absence of the latter, he ought on the return or recovery of the regular attendant, and with the consent of the patient, to surrender the case.

8. A physician, when visiting a sick person in the country, may be desired to see a neighboring patient who is under the regular direction of another physician, in consequence of some sudden change or aggravation of symptoms. The conduct to be pursued on such an occasion is to give advice adapted to present circumstances; to interfere no further than is absolutely necessary with the general plan of treatment; to assume no future direction unless it be expressly desired; and, in this last case, to request an immediate consultation with the practitioner previously employed.

9. A wealthy physician should not give advice

*The expression, "patient of another practitioner," is understood to mean a patient who may have been under the charge of another practitioner at the time of the attack of sickness, or departure from home of the latter, or who may have called for his attendance during his absence or sickness, or in any other manner given it to be understood that he regarded the said physician as his regular medical attendant.

gratis to the affluent; because his doing so is an injury to his professional brethren. The office of a physician can never be supported as an exclusively beneficent one; and it is defrauding, in some degree, the common funds for its support, when fees are dispensed with, which might justly be claimed.

10. When a physician who has been engaged to attend a case of midwifery is absent and another is sent for, if delivery is accomplished during the attendance of the latter, he is entitled to the fee, but should resign the patient to the practitioner first engaged.

REVIEW.

A practical treatise on Materia Medica and Therapeutics. BY ROBERT BARTHOLOW, M.A., M.D., LL.D., Professor of Materia Medica and General Therapeutics in Jefferson Medical College, New York: D. Appleton & Co., 1887.

Of the many medical writers of which the United States can boast, there are few, if any, of a more practical turn of mind than the author of this volume. In whatever direction his investigations may proceed, there is but one object they have in view, and that is, that they shall lead to practical results. He is, moreover, no skeptic as regards the power of medicine to produce results; on the contrary, he is a firm believer on the therapeutics of medicine. With such qualifications, Dr. Bartholow could not but make this volume a valuable one, and it is valuable not only to students but to practitioners.

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