

Western Canada Medical Journal

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SURGERY AND ALLIED SCIENCES

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WINNIPEG, CANADA

VOL. II.

SEPTEMBER, 1908

NO. 9

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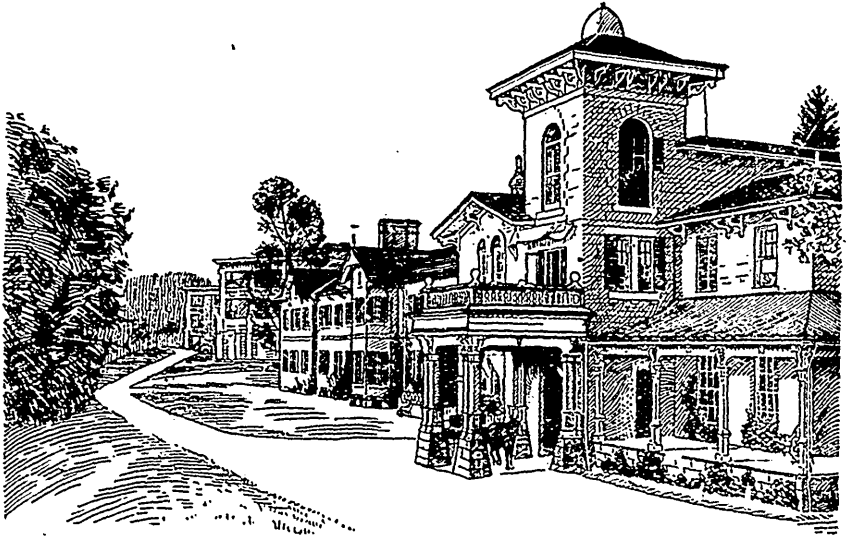
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ORIGINAL COMMUNICATIONS.

REPORT OF THE ANNUAL MEETING OF THE ALBERTA MEDICAL ASSOCIATION

The Annual Meeting of the Alberta Medical Association, held at Banff, August 11th and 12th, 1908.

The following physicians were present: Drs. Lafferty, Sisley, H. G. Mackid, L. S. Mackid, McEachern, Gunn, Pirie, Egbert, Smith, Costello, Graham, Lincoln, Madden, Johnson, Berrie, Shipley, Aull, (Calgary); Drs. Wells, Revell, Biggar and Dunn, (Edmonton); Dr. Rowntree, (Red Deer); Dr. Malcolmson, (Frank); Dr. Sharpe, (Lacombe); Dr. Park, (Cochrane); Dr. Weart, (Didsbury); Dr. Learmonth, (High River); Dr. Smythe, (Medicine Hat); Dr. McIntyre, (Strathcona); Dr. Mewburn, (Lethbridge); Dr. Kennedy, (Macleod); Dr. Townshead, (Canmore); Dr. Brett, (Banff); Drs. Lehmann and Rorke, (Winnipeg).

The meeting was called to order Tuesday morning, August 11th, at 10 a.m., Dr. H. G. Malcolmson, (Frank), the first Vice-President, in the chair. A telegram was read from the President, Dr. H. C. Wilson, (Edmonton), regretting his inability to be present. The minutes of the last annual meeting, held in Edmonton, October 10th, 1907, read by the Secretary, Dr. Dunn and adopted. The following papers were contributed:

"Chorea Gravidarium," by Dr. A. C. Robertson, Edmonton. The paper was read by Dr. Biggar in Dr. Robertson's absence.

"The Recognition of Certain Rheumatic Manifestations in Children," by Dr. E. G. Learmonth, High River.

"Chronic Diseases of the Mastoid and Its Relation to the General Practitioner," by Dr. J. N. Gunn, Calgary.

"Neurasthenia in Alberta," by Dr. W. A. Lincoln, Calgary.

"Clinical Reports," by Dr. G. H. Malcolmson, Frank.

"Bier's Hyperaemia, Its Application and Use," by Dr. J. E. Lehmann, Winnipeg.

"Traumatic Laceration of the Urethra," by Dr. W. V. Lamb, Camrose.

"Typhoid Fever," by Dr. R. G. Revell, Edmonton.

"Salpingo-orphorectomy," by Dr. J. W. Rowntree, Red Deer.

"Haemorrhage in the Young Infant," by Dr. Geo. R. Pirie, Calgary.

"Hyperchlorhydria," by Dr. R. F. Rorke, Winnipeg.

"Puerpural Gangrene," by Dr. D. J. Dunn, Edmonton.

"Anaesthetics," by Dr. J. W. L. Biggar, Edmonton.

The papers were very well received and many valuable points were brought out in the discussions, which were of a most interesting nature. A special feature was the presence of Doctors Lehmann and Rorke, representing the Winnipeg Clinical Society, who read valuable papers and contributed much to the interest in the various discussions. A resolution was introduced by Dr. Brett, of Banff, seconded by Dr. Smith, and carried unanimously, "That this Association is in favor of the formation of a Western Medical Association whereby medical men of the West could meet to discuss subjects of interest peculiar to the West."

The committee upon inter-provincial registration presented the following report, which was adopted unanimously: "That the four Western provinces, or as many of them as are willing to join together, form a federation, and require for registration therein an examination before a joint Board of Examiners made up of representatives from each province. That each province, if a satisfactory arrangement can be reached, shall proceed to procure the necessary legislation, to repeal the power of the Provincial Councils to register within their own

boundaries, and new legislation to carry out the above idea. That all members now registered shall be entitled to registration in the federation."

The committee upon Public Health and Venereal Diseases submitted the following resolution, which was adopted unanimously:

1. That the Provincial Board of Health require every medical man in the province to make a quarterly report of the cases of venereal disease coming under his care, without reporting the names of the patients, but giving age, sex, married or single, and occupation. This to be done in order to secure reliable statistics of the number of venereal cases occurring in the province.

2. That the Provincial Medical Association appoint a committee and instruct them to take steps to form a Provincial Society composed of influential members of the laity throughout the province as well as medical men, for the purpose of carrying on an educational propaganda among the people along the lines of venereal prophylaxis, and that the secretary-treasurer of the Provincial Medical Association be instructed to advance the committee a sum of money to carry out the initial work of organization of such Provincial Society.

Moved by Dr. Lafferty, seconded by Dr. Lincoln, (and carried) that the committee of last year, namely: Dr. R. G. Brett, D. S. Revell, H. R. Smith, J. S. McEachern, together with C. E. Smythe be re-appointed, and take steps to carry out the above resolution.

On report of the Nominating Committee it was decided to meet next year at Calgary. The Nominating Committee also suggested the following names as the Officers for the coming year and this report was adopted unanimously:

- President—Dr. J. S. McEachern, Calgary.
- 1st Vice-Pres.—Dr. C. E. Smythe, Medicine Hat.
- 2nd Vice-Pres.—Dr. A. J. Weart, Didsbury.
- 3rd Vice-Pres.—Dr. J. W. L. Biggar, Edmonton.
- 4th Vice-Pres.—Dr. E. G. Learmonth, High River.
- Sec.-treasurer—Dr. W. A. Lincoln, Calgary.

The thanks of the Association were tendered Dr. and Mrs. Brett for their kind hospitality at Banff, and also to the Retiring Officers for their efforts in providing such an interesting and instructive programme.

NEURASTHENIA IN ALBERTA

BY

W. A. LINCOLN, M.D.

CALGARY

It is not my purpose to give a treatise on Neurasthenia but rather to consider it as found and observed in Alberta and to determine as far as possible the effects of this climate upon the nervous system.

A little over a year ago the Rev. Chas. Heustis read a paper before the Edmonton Medical Society entitled, "The Effect of the Sunlight Upon the White Man," (with special reference to conditions in the West). In this paper some rather startling statements were made regarding residents in the West, but largely from a theoretical standpoint. The prevalence of Neurasthenia was taken for granted without bringing forward any facts in support of this view. The opinion was expressed that many complaints whose origin is obscure, may be laid in this country to lack of nervous vigor due to excessive sunlight, and that the male adult is able to bear the sunshine for sometime but that women go down under it faster, while children suffer both directly and indirectly; for children begotten by parents whose nervous force has declined cannot be a vigorous race, and that nature balances accounts by producing sterility in the third generation. Doubt is also expressed whether the white man will ever be able to permanently colonize the West. This is a subject which is of interest not only to every medical man, but also to every resident in Alberta. My object in bringing up this question is that we may investigate and discuss it, not from a theoretical standpoint, but from the knowledge gained from every day practice and observation of the lives of the people. Are these broad acres and wonderful resources only to be claimed

at the expense of our nervous force? And is this country to become a mere resort for the accumulation of wealth and not a place where the white man may come and prepare his home with the prospect of handing it on to a prolific and healthy progeny? Such would the writer of this article have us believe and such is the problem we are called upon to discuss.

Let us first see what are the elements of our climate and consider the physiological effects of climates of this nature, then going on to see how far the effects are manifest in the lives of the people. Alberta, situated as it is, on the Eastern slope of the Rockies, presents an elevation varying from two thousand to four thousand five hundred feet above the sea level. It is marked notably by great dryness of the atmosphere, a large amount of sunshine, and a small annual amount of rainfall. The seasonal variation is not very great, but there is a rather high daily variation of temperature and the tendency for high winds is at times marked. Now in estimating the effects of climate, there are several factors to be considered. Mr. Heustis in his paper touched only upon sunlight, altitude and the relative humidity must also be considered, and it must also be remembered that in a high altitude where there is much sunshine with low humidity and tendency for winds, that the electrical potential is greatly increased. The winds set up an electrical tension by their friction upon the earth, and what is upon it. The dry air is a poor conductor so that the relative electrical potential so set up cannot neutralize itself by meeting a potential of the opposite kind in the higher regions of the atmosphere; consequently all bodies upon the earth's surface are in a state of high electrical tension and the nervous system of animals is constantly keyed up to a more or less exalted degree. Respirations are stronger and deeper, the pulse is slightly quickened, metabolism and all physiological functions are increased. The effects of a climate of this nature on the nervous system is of a stimulating character. The nervous system is toned up to a higher pitch, the individual is inclined to be more active in his movements, and he requires more sleep and relaxation. Whether this stimulation will lead to exhaustion, and the resulting Neurasthenia is the problem for us to discuss. In the first place, is Neurasthenia a frequent

disease in Alberta? There is an impression among the laity that this country is "hard on the nerves." As they express it their nerves are "on edge." If we analyze this impression we will find that it is the state of stimulation, and not exhaustion, that is indicated by this belief. The term, "nervous" as used by the laity almost always denotes an excitability of the nervous system while the most profound cases of Neurasthenia will frequently deny that they are nervous.

This impression then indicates a belief in the increased excitability of the nervous system, a condition which from our knowledge of the climate, we would expect, and it remains to be seen whether this is injurious. Clifford Allbutt remarks: "That no nervous matter was ever too excitable, to be excitable is its business, in over excitability a race horse differs from a jack ass. The more excitable our nerves the quicker and higher our life." The question which enters my mind is whether a long continuation of this excitability will not in time lead to exhaustion. To ascertain some facts upon this question, I addressed two hundred and twenty-five letters to physicians practicing in this province, and the replies received are interesting. It is difficult to draw correct conclusion about such a disease as Neurasthenia with its many manifestations, from the difficulty of determining when to draw the line between certain nervous symptoms manifested at certain times by most people and a true case of Neurasthenia. Of two men with equal opportunities, one will report several cases, while the other will report very few. I think this arises from the fact that a patient with a few nervous symptoms is classified as a Neurasthenic, rather than that any true cases are overlooked. A case of well marked Neurasthenia is usually so insistent about his complaints that he cannot easily be overlooked; so that in estimating the reports received, I think we may consider them excessive rather than too few. The general tend of the replies indicate a very low percentage of true Neurasthenia, although many point out the prevalence of certain nervous symptoms, such as Insomnia, increased irritability, etc. Eight men practicing from one to six years have never seen a case. The total number of cases reported were 347, of which only 193 were primarily consulted for Neurasthenia. An average of about

four per man, extending over a period of from one to thirteen years. One man practicing in the western portion of the Province remarks: "I must say that the impression is one that considering my own experience I cannot fall in with, as in my four years practice I have not had a case of Neurasthenia." A man in the north says: "These figures show that in this section of the Province, at least, Neurasthenia, in a form severe enough to cause the patient to seek the aid of a physician, is a very rare disease. A man in the eastern portion of the Province says: "I cannot recall at the present time more than two or three cases of true Neurasthenia in all the time that I have been in practice in Alberta, thirteen years." I do not think a man could practice thirteen years, doing a large general practice and only see two or three cases if it was very prevalent. There are a few men who hold an opposite view, but they are decidedly in the minority, and do not, as a rule, present facts to substantiate their belief. One man states, "I myself have not had a great number of cases, but I feel sure that Neurasthenia is very prevalent." In regard to the Etiology of the cases which do develop, can they be said to be due to climatic influences? The Etiology of Neurasthenia is complex, and it is difficult to estimate what part is played by the climate. As you know, the main causes are a hereditary pre-disposition, upon which has been added excessive work, or more correctly, strain, as it is doubtful if work per-se ever causes Neurasthenia, but excessive work, accompanied by strain and worry, is what plays havoc with nervous systems of our people. In this country where the vast majority of people are here for the purpose of worldly gain, and while they are straining every fibre to attain it, at the same time depriving themselves of many of the comforts of life which they have been accustomed to enjoy and exposed to solitude and monotony, the wonder is that Neurasthenia is not more prevalent. I see no facts in support of the view that this climate is conducive to it's development. In fact there are some data to lead to the opposite conclusion. I myself know of several cases who suffered in the East and who have been entirely free while residing here, and I also have reports from other men who have observed the same thing. One man remarks, "Two

of my patients, one from Ontario, the other from Nova Scotia, have materially improved and have been practically cured since coming here. I knew them professionally in the East before locating in Alberta."

In regard to the effect of sun light, there are no facts to prove that it occupies a prominent place as a causative factor. If the effect of sunlight was a prominent factor, we would expect to find the larger number of cases in the country districts, where the inhabitants are much more exposed to the sun than in the city, where the labor is confined largely to interiors. But in looking over the reports we find that from the country districts the number reported is 84, while from the cities and larger towns the number is 252, or taking into consideration the number of years practice covered by these reports, the average per year from the cities and larger towns, is .27, while from the country districts it is only .18.

In regard to the ages and length of time the cases have been in this country, the reports present great variation but show the greatest number to be middle or old age individuals. This I believe to be contrary to the findings in the Eastern Provinces, where the majority of these cases are found in the active stage of life. The inference to be drawn from this, I take it, is that elderly persons coming to this country are less able to withstand the effects of the change. Their nervous systems are less plastic, so that stimulation, which in younger individuals would be beneficial, is to them a burden, which may result in nervous exhaustion, as indicated by the large number of cases seen in elderly people on recent arrival. Among the old-timers the opinion seems pretty universal that there is very little Neurasthenia. I have a few reports of individuals who have contracted the disease after long residence in this country, but in these cases the factors of excessive work and strain are also very prominent. One man remarks: "No Neurasthenia among old timers, and I have met many of them." This is certainly contrary to what we would expect were the climate a prominent feature in the Etiology. Mr. Heustis states: "It is doubtful whether persons of a very light complexion should attempt to live in the West. To be a true inhabitant of Alberta one needs to have

the complexion of a Cree or a Stony." To obtain some facts upon this point, I collected some statistics, and of 317 cases reported, 159 were Brunettes, while only 158 were Blondes. Considering the fact that Blondes largely predominate in our population, it can easily be seen that instead of the Blondes being more susceptible they seem to suffer less frequently than the Brunettes. Mr. Heustis states: "In cases of Neurasthenia and other conditions due to loss of nervous control, it is doubtful whether a cure can be effected here." This, I feel sure, is entirely erroneous. In my own practice I have been agreeably surprised by the results accomplished. All my cases have shown marked improvement and the majority have been entirely free from symptoms for periods varying from six months to a year and a half. The treatment adopted has been largely one of suggestion, and a correction of false hygiene and living, in a very few instances was recourse had to drugs. I would like to emphasize a little the need for less drugs and more mental Therapeutics for these cases. It would seem that with the great advance in Pathology and Bacteriology that we have treated these conditions which cannot be seen and estimated by the microscope with a certain amount of contempt, with the result that these poor unfortunates have been allowed to wander away to quacks and Christian Scientists. The Emmanuel movement among the laity and the interest that is being taken by many of our best men in mental Therapeutics would indicate that men are recognizing the great influence of mind over matter. The results of treatment indicated from the reports received show 50 per cent. to be good, 40 per cent. fair, and only 10 per cent. unfavorable. This, it seems to me, is a good record when we remember that it comes from men practically engaged in general practice, and in connection with a disease which many times cannot be cured even under the most favorable circumstances. The country is not yet old enough for us to estimate the effects of the climate upon children and reproduction, and I have no data upon this subject.

I wish to thank most heartily the medical profession of Alberta who so kindly furnished me with statistics and in many

cases notes of their cases upon which I have been able to base the subject matter of this paper.

I think we are justified from the facts at hand to draw the following conclusion:

1. That Neurasthenia is not more prevalent in Alberta than in other places.
2. That there are no facts to support the view that this climate is conducive to its development.
3. That Blondes in this country at any rate seem less susceptible than Brunettes.
4. That its treatment here presents no greater difficulties than in other parts of the country.

I can do no better than close with the words of John Morley, quoted by Mr. Heustis: "Things are what they are; they will be what they will be, then why deceive ourselves."

HYPERCHLORHYDIA

BY

R. F. RORKE, M.D., M.R.C.S.

WINNIPEG

Mr. President and Confreres:

As a representative of the Winnipeg Clinical Society I bring you their fraternal greetings and their cordial good wishes coupled with their desire to co-operate with you in the advancement of our profession in whatever promotes to influence and usefulness.

Allow me to assure you that I fully appreciate your kindness, and if I may make a comparison your thoughtfulness in making me a member of your domestic medical family thus becoming a partaker of the excellent medical menu which you have provided for the meeting.

However, my pleasure in being with you today is somewhat tempered by the responsibility of bringing something of interest before you.

My reason for dealing with the medical question which I have selected is because it has seemed to me that it as symptom complex has not received the attention its importance demands.

Other terms used to designate this condition are, Hyperacidity, Superacidity, Hyperacidity-Hydrochlorica.

The abnormal increase in gastric secretion occurs in two forms. In the interest of clearness it will be necessary to define both.

(a) Hyperacidity, which is an increase in the secretion brought about by the stimulation of the gastric secretory apparatus due to the taking of food. The distinctive features of this form of Hypersecretion is that it contains an abnormally high percentage of free Hydrochloric acid. That is the stomach so to speak, miscalculates the amount of Hydrochloric acid necessary and provides too much.

(b) Hypersecretion is an anomaly of the secretory function in which it continues not only during the time of the presence of food in that stomach, but also after the food has left that viscus. The stomach seems oblivious of the fact that its contents have been digested and emptied into the bowel, but continues to secrete an active digestive fluid containing a high percentage of Hydrochloric acid.

In both conditions the digestive power of the gastric secretions is very active shewing that all the constituents as well as the Hydrochloric acid are present and perhaps in increased quantities.

The above described differences of the gastric secretory functions are not accepted by some investigators, especially Bickel, of Berlin, who holds that the percentage quantity of Hydrochloric acid in gastric secretion varies very little, if at all. Hyperchlorhydria is due to the secretion of an excessive quantity of the digestive fluids caused by the stimulation of the food and continuing until the food passes into the bowel; while in Hypersecretion the secretion goes on after the food has left the stomach as well as quite actively while the food is in it. Bickel also makes a distinction between the gastric secretion and the gastric contents. He claims that in normal digestion with an normal amount of secretion the Hydrochloric acid is combined so that the quantity of acid remains at what is considered normal, but in cases of increased amount of secretion the stomach contents cannot dilute or neutralize the acid sufficiently, hence the Hyperacidity. The same result

is brought about by an increase of motility of the stomach; the digestive food leaving the stomach rapidly, thereby again preventing the dilution and neutralization of the Hydrochloric acid.

These contentions of Bickel are supported by experiments of himself and others upon dogs as well as upon persons requiring fistulae owing to benign strictures of the oesophagus.

Therefore these two conditions are closely related and may be so associated that the one may go over into the other. Hyperacidity may be looked upon as the result of a moderate amount of stimulation of the gastric secretory glands while Hypersecretion is the result of a much stronger and more lasting effect.

However these two conditions cannot be considered as identical at least in their pronounced forms, besides they behave differently in the power of digesting many kinds of food and the measures required in their treatment differ in many respects.

Many authorities classify Hyperacidity and Hypersecretion as Neuroses of the gastric secretory function. No doubt these disturbances may have a nervous basis for the normal secretion depends upon nervous influences cortical as well as reflex.

However, Tabes is a disease in which patients occasionally suffer from gastric crises. In those so affected some show a condition of Hypersecretion with Hyperacidity, others exhibit a varied condition of the gastric secretions. At least the nervous origin does not produce a constant reaction.

In Gastroynsis of Rossbach one has a secretion neurosis. Here a person, who was entirely well until some psychological effect such as anger or grief, is followed suddenly by pressure and weight in the stomach, sour eructations, nausea, vomiting of sour masses containing a considerable amount of Hydrochloric acid. Such a case is certainly a neurotic product.

Physiological experiment and clinical observation both prove that gastric secretion follows the stimulation of various nerves, both directly and indirectly. Two French observers produced secretory activity in a beheaded criminal by stimulating the vagus nerve forty-five minutes after death.

No doubt many instances of Hyperacidity and Hypersecretion are due to a neurosis, but there are certain other cases that do not. These two conditions are only functional disturbances in the same sense as gastric motor insufficiency. Just as a neurosis does not explain all instances of atony or motor insufficiency, so it will not account for all cases of increased gastric secretion.

A nervous cause should be assumed only where some pathological changes are found in the nerves governing the functional activity of the stomach and not because no organic changes are found in that organ.

In the remainder of this paper only that form of gastric Hyperacidity will be discussed that occurs during the digestion of food and due to its stimulation and lasting only so long as there is food in the stomach.

Aetiology—The frequency of Hyperchlorhydria is still unsettled; some authorities being of the opinion that it is a frequent functional disease of the stomach, others that it is rare.

On account of the difference in the statistics of different clinics local influences have been thought to be a cause, but Riegel thinks the difference is due more to the methods of physical examination of the patients, than to locality. In his clinic all patients with gastric disturbances are given a test breakfast or meal in order to estimate the chemical and digestive value of the contents. In this way he believes Hyperacidity is more frequently seen in mild or indefinite cases and quotes case reports to defend his position. He thinks also that the disease rarely becomes severe enough for the patients to seek a hospital, therefore the general practitioner sees them more frequently.

Age—Young persons are much more commonly affected than the old, but it is fairly frequent in the middle period of life.

Sex—Both sexes are attacked, but possibly the women are more frequently affected by it than the men.

Chlorosis—Hyperacidity is very common in those suffering from this form of anaemia. It was present ninety-five per cent. in a series of chlorotics examined in Reigel's clinic by Oswald.

Occupation—All classes of society are pre-disposed to this affection, but it is found more frequently in those of good social position. It is frequently found in those of a nervous temperament; those who undergo much mental exertion, and delicate nervous women are more disposed to it than the robust. In neurasthenics one meets it fairly often and according to Von Noorden also in melancholia.

Psychical influences are important such as anger, anxiety, care or mental overwork. They may predispose to Hyperacidity or be the direct cause of it. Nervous persons, those who have heavy work and those who are easily excited may by over-work or psychical irritation, suddenly become affected by a distress in the epigastrium which when carefully examined is associated with Hyperacidity. Abnormal stimulation of the mucosa of the stomach may be cause in other cases, especially where the irritation has been long continued. Among these causes are too hasty eating, incomplete mastication, frequent taking of very cold drinks, excess in alcoholic beverages, sharp spices and condiments. A sudden change from one's food and methods of living may be a cause. If any pathological changes occur in the stomach from these last mentioned causes is not known, as there is scarcely an opportunity for a post mortem examination in such cases. Besides it is very difficult to decide if the slight changes present are due to the functional changes or are a mild form of gastritis.

Ulcer of the stomach is as a rule associated with Hyperacidity. It is still considered by many to be an open question whether the ulcer is the cause or the result of the Hyperacidity. Riegel thinks that the ulcer is much more apt to occur in a case of Hyperacidity owing to the fact that injury to the mucous membrane of the stomach is considerably more likely to be followed by an ulcer and less certain to heal.

Certain forms of food or beverages serve as a cause in some persons, for instances coffee which may give rise to heart burn, eructations and even cardialgia which on careful examination are found to be due to a temporary Hyperacidity. Smoking to excess may also be a cause. It is more frequent after an acute excess in tobacco, especially strong cigars. Gall stone is frequently accompanied by Hyperacidity which

disappears after the stone is passed into the bowel. Some claim the same results from renal calculi.

Symptomatology—The symptoms may vary markedly. Not infrequently the condition may be almost without symptoms; at other times they are moderate and at still other times there is severe distress amounting to a cardialgia. However, the symptoms are always associated with taking of food, its quantity and quality being of especial influence. Occasionally the onset is gradual, slowly increasing at others suddenly becoming intense. It may occur as a transitory and recurring affection or may persist for years.

These differences are easily understood when one classifies it as a functional disturbance, which arises from many conditions. It only occurs from the taking of food. Normally the stomach re-acts differently to different foods in the amount of gastric secretion and the patient reacts differently to different grades of acidity.

Some patients have symptoms after nearly every meal, even when the meal is small; others only after the mid-day meal and more especially if they have eaten freely. In my experience distress is much more common after a mid-day meal in those who have their heavy food at that time of day. Some have attacks only after psychological irritation. When the stomach empties itself the distress ceases unless there is the hypersecretion with it. In some the symptoms come on only after certain kinds of food which may or may not be difficult of digestion, in others it occurs irregularly and some patients are surprised at the uncertainty of the attacks. At one time absent after a full meal of food difficult to digest and again appearing after taking light and easy digestible substances. In such cases one may assume that the nerves of secretion are more sensitive to irritation at some times than they are at others.

Those suffering from this affection do not impress one as being very ill. They are mostly well nourished though not fat. They are often slightly reduced in weight.

The discomfort comes on some time after taking food, usually between one and two hours, depending upon the kind of food and upon the amount taken. It begins with a feeling

of fullness in many cases, in others there is severe distress of the nature of strong muscular contractions of stomach wall forcible enough to cause pain localized in the epigastrium. The duration of the pain varies. It may last half an hour or it may go on for several hours, being accompanied by heartburn and acid eructations. The severe attacks usually occur at intervals of considerable length. The cause of the attack is in the amount of Hydrochloric acid. In the beginning of the secretion the free Hydrochloric acid combines with the salts of the food and with the albumens, but if the secretion continues there is produced an excess of the Hydrochloric acid which causes pain. If a very full meal, rich in materials to combine with the Hcl. is taken; then the pain comes on later, therefore the time of the appearance of pain depends upon the food. When the distress first comes on it may be relieved by taking food rich in albumen as eggs or milk, but if it reaches a certain intensity this measure has little effect and in fact when the distress becomes great patients cannot take food. Alkalies act in the same way. Sodium bicarbonate fails to benefit owing to increased contractions set up by the production of carbonic acid gas. Under such conditions the pain is relieved only by an attack of vomiting.

Starch seems to stimulate the stomach to increased secretion more than meats. Some patients seem to have an idiosyncrasy in respect of the offending agent, such as after taking coffee or from smoking immediately after the heavy meal of the day.

Vomiting is not common unless there is severe *cardialgia* and then it occurs at the height of the attack. The vomitus has a burning acid taste and a very acid composition. The amount of the vomited mass depends upon the preceding meal.

After the vomiting the patient's distress disappears and he feels completely well. Food often relieves the pain. The patient is usually free from symptoms at night and if such occur repeatedly, Hypersecretion or other complication is associated.

Patients may complain of a burning feeling along the back or in the oesophagus. This is due to eructations of the strongly acid contents, causing irritation in the oesophagus.

The appetite is usually changeable, some always having a good appetite and others not. Some eat often owing to desire for food, others eat because their experience teaches them that they get temporary relief in that way. Some have frequent desire for food but cannot take much at a time, feeling satisfied after a small quantity. Others have a morbid hunger associated with weakness, but this disappears after taking a little food. Thirst occurs only where there is a gastric dilatation associated with the Hyperacidity.

The action of the bowels is irregular but tend mostly to constipation. Hyperacidity produces no malnutrition or cachexia when there are no complications.

External examination as a rule gives no results. If examined in the interval between attacks there is no tenderness in the epigastrium, but if at the time of an attack there is a moderate amount of tenderness over the whole gastric area. In a few cases the sensitiveness may be very marked, even to slight pressure and some times there is also tenderness in the region of the pylorus and may be limited to that area alone. Among the objective symptoms are absence of dilation of the stomach or succussion splash in the interval between attacks. The stomach is often distended at the time of the height of the attack. The most important point is the condition of the stomach contents. If one passes a stomach tube six or seven hours after a test meal the stomach is empty. Even three or four hours after such a meal the stomach may be empty, or contains a very little finely divided food. The same is found one hour after a test breakfast, the stomach being empty or containing only a few cubic centimeters of thin contents. This would go to show that the motility of the stomach is usually intact or increased in those suffering from Hyperacidity. Riegel, contrary to the opinions of some authorities, believes that the patient with Hyperacidity has a rapid digestion except in the cases of those with severe cardialgiac symptoms, in whom the contraction of the pylorus prevents rapid emptying of the stomach. A complicating Hypersecretion; gastric dilatation or a displaced stomach may prevent egress of the contents at the proper time, but in an uncomplicated Hyperacidity the digestion is rapid and the stomach promptly

evacuated.

The testing of the stomach contents by the usual color agents, especially Congo red, gives a very strong Hcl reaction. The deciding point is the quantitative estimation of the Hcl not only for the total acidity, but also for the free Hcl.

Both are increased. Normally the total acidity after the test breakfast is 40 to 60 and about 75 after the test meal. In Hyperacidity the quantities are 100 or may be 150 to 160. The important factor is the free Hcl, which may reach 60, 70 or 80 after a test meal and 50 to 60 after a test breakfast.

Organic acids have no part in pure Hyperacidity. If fermentation and gas formation occur it is an indication of an associated gastric insufficiency.

The digestive power of the stomach contents is very good, that is, the tablets of egg albumen are dissolved in from one-half to one hour.

If one gives such a patient a proportionately large amount of meat and a small amount of starch the digestion goes on much better than to give a large amount of starch, as the ptyalin of the saliva does not get time to convert the starch before the free Hcl becomes strong enough to inhibit the starch digestion. This may bring about a stagnation of the ingesta, as the undigested starches do not leave the stomach readily. This in turn causes the formation of more Hcl and as a consequence more distress. The absorption of food in Hyperacidity is not disturbed.

The urine shows nothing characteristic. The more severe the Hyperacidity the more the acidity of the urine decreases after meals. In marked cases of Hyperacidity the chlorides of the urine are temporarily decreased after meals.

The course of the disturbance is usually variable. A patient may be completely free from symptoms for days or weeks or even months, to be followed by periods in which the distress returns in a milder or a severer form. In some cases these attacks only follow excesses in the forms which usually cause them. The effects of Hyperchlorhydria may then show itself not only upon the stomach, but also in a constitutional way. Besides the symptoms from the stomach such persons complain of being low spirited, of lack of energy, of sleepless-

ness and headaches. They give the impression of being neurasthenic and this sometimes causes a difficulty in deciding which condition is primary and which secondary. Migrane may depend upon Hyperacidity, the latter being the cause of attacks of the former. Treatment for the stomach condition relieves the secondary malady. There are also some cases where though Hyperacidity is constantly present the symptoms do not develop except at irregular intervals. At the time of the relapse there is no increase of HCl, but the food remains longer than usual in the stomach. The pain then usually comes on later in such persons, being 2 to 3 hours or more after food. For instance such a person may take their evening meal at eight o'clock, and be awakened about midnight by the pain which increases until relieved, it may be by vomiting. The vomited mass being composed of food so acid that it produces that condition of the teeth commonly called "set on edge." If one examines such a patient in the interval one will find that the food leaves the stomach early, but little being left after two or three hours and being completely empty in three and a half to four hours.

Prognosis—Hyperacidity does not appear to shorten life in uncomplicated cases. In the same class or cases the outlook as to relief is favorable. Some may be cured and all may be relieved by proper diet and habits. The longer the condition has existed the more difficult the treatment. Relapse is frequent in many of these patients, even after they have been free from symptoms for a long time. Where complications as atony and dilatation are associated with Hyperacidity treatment is not so successful, and the condition may become that of Hypersecretion. In cases of cholelithiasis or chlorosis accompanied by Hyperacidity, the prognosis is that of those affections. The pure nervous cases are hard to improve by treatment, unless the primary cause, the disposition is benefited.

Pathological Anatomy—Hyperchlorhydria being a functional disturbance of the gastric secretory apparatus constant organic changes would scarcely be expected. Owing to its not causing death post mortem reports are few. Oesterreich reports one case in a man who suffered from attacks of Hyper-

acidity from time to time finally dying of Pneumonia. On careful examination at the autopsy except for a few small erosions nothing abnormal was found. Associated pathological conditions such as ulcer, gastritis and gastric dilatations, would of course show the organic changes characteristic of them.

Diagnosis—The quantitative estimation of the Hcl of the stomach contents is perhaps the most important step in arriving at a diagnosis. The pain coming on some time after the taking of food would lead one to suspect the Hyperacidity, more especially if the distress was relieved by taking albuminous food or alkalies at its onset. However continuous Hypersecretion, gastritis, or ulcer of the stomach may give similar symptoms. Where the pain is trifling and recurs at irregular intervals, being completely without distress in the meantime, and it may be accompanied by many neurasthenic or hysterical symptoms, the diagnosis is difficult. Removing the stomach contents two or three hours after a meal and finding only a small amount of finely divided, fairly well digested food and the filtrate shewing a well marked Hcl reaction is of great value in deciding in favor of Hyperchlorhydria. In Hyperacidity the fasting stomach is empty, while in Hypersecretion there is a considerable mass supplied by the abnormal secretion.

Recovering the stomach contents is the only way one can decide if there is an abnormal retention of a motor insufficiency associated with the Hyperacidity.

To exclude gastritis acid the same measures are necessary. Here the large amount of mucus is the important point. The finding of cell nuclei in the contents indicates the same cause. It is also well to inflate the stomach to find out if there is a gastric dilatation or a vertically placed stomach present with the Hyperacidity.

Having decided that a Hyperacidity is present it is necessary to differentiate the functional form from the organic and direct irritation of the gastric mucosa, especially that due to gastric ulcer. This, of course, is not difficult where the symptoms of ulcer are fairly typical, that is the well defined tender spot in the epigastrium, the regularly recurring pain and heam-

atemesis, but where the signs are not well developed it may be almost impossible. Ulcer may exist a long time without causing symptoms. A haemetemesis with Hyperacidity is characteristic of ulcer, but slight haemorrhages from small erosions may be associated with Hyperacidity. The localized tender point of ulcer may fail because it is on the posterior wall of the stomach. Attacks of cardialgia are as a rule more regular with ulcer than with Hyperchlorhydria. Still this is not absolute as the symptoms may behave vice versa. Some atypical symptoms due to gall stone may give rise to uncertainty. Where the liver is enlarged and tender to pressure, the gall bladder painful, icterus present and the attacks come at irregular intervals it is not difficult to decide. Those cases of Hyperacidity in which the chief site of the pain is the pylorus may give rise to doubt, as in both there may be irregular attacks without jaundice, but Hyperacidity is caused by taking food while in cholelithiasis the attacks may occur hours after taking food owing to the congestion of bile from its not being needed in the bowel to act on the chyle. Hernia of the linea alba above the umbilicus may give rise to symptoms very similar to Hyperacidity and a careful examination of the region should be made to exclude it.

Duodenal ulcer often gives symptoms simulating those of Hyperacidity, in that the pain comes on two to four hours after food. The presence of melaena or occult bleeding may help to decide the diagnosis. One may try the effect of alkalies to relieve the distress as it will in Hyperacidity, also the treatment for Hyperacidity may be used as a therapeutic test. However it must be remembered that Chvostek claims that taking some wine will close pylorus, thus relieving the pain of duodenal ulcer for some time.

Treatment must in the first instances be dietetic. All substances which would have a stimulating character must be excluded from the food. Among these are mustard, pepper, ginger, ethereal oils, lemon or orange peel, vinegar, especially in salads, the coarse cellulose in the coverings of oats or barley, the rind of fruits, and fruit acids. Food that is strongly salted or too piquant in its preparation, meat extractives in the form of bouillon, sauces, artificially prepared peptones,

also coffee, probably from its empyreumatic products. All forms of alcohol are to be forbidden and tobacco in the form of smoking reduced as much as possible or stopped.

The authorities upon this subject are not all agreed upon what kinds of food to allow such a patient. Some favor a diet rich in proteids, that is largely a meat diet, others again are strongly against this and favor vegetables as nourishment. Perhaps it is better to give those of neuropathic tendencies largely a vegetable diet rather than meat. The main disadvantage of such food is that a large quantity is needed to get sufficient nourishment. Also that where there is any atony the result is unfavorable. To avoid this one may add a quantity of the vegetable albumen.

Hydrocarbon digestion goes on in the stomach only until the HCl reaches a proportion of about one per thousand, therefore starches should be given finely divided and if possible partly inverted. That is converted into dextrin by adding malt extract with diastase. Syrups made from grape sugar are recommended as it dilutes the secretions and promotes transudation. For the constipation milk sugar may be ordered in $\frac{1}{2}$ ounce doses in the milk or cocoa. Some speak well of honey, but it may cause the production of formic acid.

Bread is best given in the form of toast or stale bread with a good deal of butter. All vegetables should be given in a puree form, for unless they are very finely divided the starch in them will not have time to be converted into sugar, before the increase of HCl stops the process. Potatoes with milk, spinach, green peas, cauliflower and asparagus may be used in the form of a puree in the milder cases. In the severer cases rice and tapioca with milk, also puddings made with eggs and milk. Some recommend taking food often, usually 5 or 6 times a day.

In discussing the diet it may not be out of place to draw attention to the mastication of the food. It should be chewed long enough to be very finely divided and thoroughly insalivated, any pieces not lending themselves to this action of the teeth should be rejected as they remain in the stomach a long time, stimulating it to increased secretion.

The finely divided food forms a smooth emulsion and

passes the pylorus easily, emptying the stomach much earlier as well as exercising the smallest possible amount of stimulation to the secretion. Fats are found to be the best sedatives for gastric Hyperacidity, besides forming a good agent for nourishment. Butter and sweet cream are the best. The former up to a quarter of a pound a day divided into three doses, the latter 16 ounces a day. Olive oil is also valuable in $\frac{1}{2}$ ounce doses before food.

Medicinal treatment to counteract the Hyperacidity—the alkalies are the most important. Among the agents employed the alkaline mineral waters have proved of value, especially those of Carlsbad and Vichy. Where there is no disturbance of motility 1 or 2 glasses in the morning and 1 at mid-day and another in the evening each a half hour before food has proved to be effective. The water according to custom is warmed before taking. Other agents may be added to the warm water. Sodium citrate by Boas; Sodium chloride by Soupault in quantities of $\frac{1}{2}$ to 1 drachm taken before meals.

For the pain and distress the alkalies may be used, especially a mixture of them, as

Magnesia ponderosa	3 parts.
Bismuth subnitratiss	1 part.
Sodium bicarb	1 part.

taken about the time the pain begins. Bismuth nitrate acts in the same way taken in $\frac{1}{2}$ teaspoonful doses.

If the alkalies are not effective in relieving the Hyperacidity, silver nitrate may be used. It is given in strengths of Grs. $1\frac{1}{2}$, Grs. $4\frac{1}{2}$ to $7\frac{1}{2}$ in 3 ounces of water and in doses gradually increasing to $\frac{1}{2}$ ounce 3 times a day before food. It is necessary to have the stomach as empty as possible, so that it may act directly upon the mucous membrane.

For the pain which may be severe it is sometimes necessary to prescribe a narcotic and for this purpose atrophine has proved much better than opium, because it reduces the gastric secretion as well as relieves the distress. Belledonna may be used in the place of the atrophine and given with the alkaline powder mixture mentioned above. Where there is much evidence of nervous disturbance bromides may be tried. Stontium bromide is recommended in doses of grs. 15 three times a

day. Where there is a disturbance of the motility, lavage may be used, washing out the stomach in the morning with a solution of Carlsbad salts.

Electricity has been recommended as a method of treatment. It is applied directly to the inside of the stomach by the faradic current unless there is pain in which case the galvanic current gives more relief. The small electrode is swallowed, the large electrode is placed over the epigastrium for 5 minutes. Then changed to the sponge electrode which should be moved about over the gastric region, and if constipation exists also along the colon. It is well also to pass the electrode around to the back on both sides remaining over the 7th dorsal vertebra for one minute.

The following list of articles of food may be taken as an example of a diet card.

7.30 A.M.	2 Eggs		160	Calories
	Wheaten Bread.....	50 Gms.	128	"
	Butter.....	20 "	165	"
	Milk.....	250 "	167	"
10.30 A.M.	Matzoon or Milk.....	200 "	135	"
	Cracker or Bread.....	30 "	77	"
	Butter.....	10 "	81	"
1 P.M.	Broiled Meat.....	100 "	210	"
	Mashed Potatoes.....	50 "	63	"
	Bread.....	30 "	77	"
	Weak Tea or Vichy.....	200 "		
3.30 P.M.	Same as at 10.30 A.M.		293	"
6.30 P.M.	Soup with Barley or Vermicelli.....	200 "	100	"
	Bread.....	90 "		
	Butter.....	10 "	158	"
	Meat Broiled or Cooked.....	100 "	210	"
	Potatoes Baked.....	50 "	60	"
	Green Vegetables. Spinach, Green Peas..	50 "	30	"
	Coffee, ½ Milk.....	100 "	34	"
10 P.M.	Oysters and Crackers or Cold Meat Sandwich and 1 glass Beer.....		260	"

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CHOREA GRAVIDARIUM

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Symptomatically, the Chorea which occurs in pregnant women is identical with infantile Chorea. The special conditions under which it develops, and the grave form it tends to assume in a large proportion of cases, give it a special significance, so that it deserves to be considered by itself as a definite complication of pregnancy, rather than as a modification of the more common chorea of adolescence.

Chorea in the adult, that is, in a patient who has never suffered from infantile chorea, develops usually during pregnancy: a period when the whole organism of the woman is subjected to marked alterations under the influence of the pregnant state. At this time as in the case at puberty, changes occur in the woman involving all the important organic systems. The circulatory, digestive and respiratory systems are all affected to a greater or less extent, and all the secretions more or less modified; the Nervous system is, perhaps, the most profoundly altered. At any rate it may be said that the effects of the pregnant state are most evident in the nervous system and that all the other organs are more or less influenced by the condition of the nervous system.

Chorea is not an accidental complication of pregnancy due to the occurrence of a previous infantile chorea, but in the majority of cases appears for the first time during pregnancy. Pregnancy is not the only causative factor but is the fundamental condition on which the other elements in the causation of chorea depend. In 1851 M. See described the various elements which go to cause Chorea in pregnancy as follows: "In pregnancy there exists a condition of chlorosis and hydremia, from which arise vascular disturbances, neuralgias, neuroses, and the loss of nervous equilibrium which accompanies them. These are followed by hysteria and chorea, separately or together, one predominating in accordance with the antecedent history of the patient. Add to this nervous instability, a marked predisposition to rheumatism, and the ef-

fect of pregnancy as an immediate exciting cause becomes evident, acting in the presence of the same predisposing causes which exist in the chorea of children."

Etiology and Pathology.

Previous infectious diseases probably have an etiological importance in chorea, in that they prepare the ground for its development. This theory has been thoroughly discussed by Triboulet. Although he eliminated from his study of chorea the cases occurring during pregnancy his conclusions apply to them equally as to the infantile cases, and in investigating the previous history of the patients it is often possible to get a history of a previous infection which will give the clue to the etiology of the chorea.

Furthermore, auto-intoxication is so frequent in pregnancy that it is unnecessary to invoke the aid of external infections to establish a satisfactory etiology for the chorea. Duchateau, in his classification of chorea places the chorea of pregnancy under the head of "chorea of auto-intoxication." When we remember that the disturbances which arise in the functions of excretion and assimilation during pregnancy, and the role they play in eclampsia, there is some reason for considering chorea at this time as more or less closely analogous to eclampsia in its origin.

Pregnancy, alone, is no more to be considered as the direct cause of chorea than is active growth in children the cause of infantile chorea. In almost all well marked cases of primary chorea during pregnancy, some more or less violent nervous shock is the apparent starting point of the trouble. Jaczoud reports a patient who was seized with violent choreic movements after a violent family quarrel. Mosler's case developed after a slight fall. Bamberg's case fell into the water. Hand's case fell from a ladder. Kemper's case waked at night to find the house on fire and was seized next day with violent choreic movements. Certainly if it is true as has been said that mental shocks are the cause, whose active influence can be pointed out in all neuroses, it is impossible to deny their influence in the causation of the chorea of pregnancy.

Aside from the hereditary influence, another important factor in the etiology of the chorea of pregnancy is the existence of a previous chorea during childhood. A woman who has once suffered from chorea, whether mild or severe is liable to return to the disease during her first pregnancy. Barnes says: "Pregnancy furnishes a proof of the cure of chorea." It is far from being true, however, that every woman who has chorea during pregnancy has had a previous attack during childhood. Of 96 cases which Charpentier records, only 20 gave a history of a previous chorea. Pinard, on the other hand, reports that of eight women in his practice who developed chorea during pregnancy, seven had had a previous attack. Chorea is most apt to manifest itself for the first time during the first pregnancy, but the role played in the etiology by the first pregnancy must not be exaggerated, for of 107 cases reported by Barnes and Bamberg only 56 were primiparae. Young women are most apt to be affected, chorea seldom appearing for the first time after the age of thirty. When a woman has had chorea in one pregnancy it is apt to recur in subsequent pregnancies in a more and more serious form, although the reverse of this may occur. For the evidence on this point to be of marked value it would be important that the same observer should follow the patient in all her pregnancies, and in hospital practice, from which the bulk of cases are reported, this is unusual.

It is a difficult matter to determine the influence of rheumatic fever, chlorosis, hysteria and the infectious diseases and auto-intoxications in causing an attack of chorea. The etiological importance attached to these various elements varies according to the prevailing belief at the time at which the cases were reported by the weight of authority carried by the various observers. For a long time, from the observations of Roger, See and Jules Simon, and others, chorea among children has been believed to be closely connected with rheumatism. Charcot admits a certain doubt of the etiological importance of rheumatism when he says: "In my opinion there is not a rheumatic chorea in the strict interpretation of the phrase." In other words I do not believe that chorea can even be considered as the equivalent in the nervous system of the articu-

lar or visceral changes of rheumatism. It seems to me, however, that although the opinion I am opposing is the result of error, there is no doubt that chorea and articular rheumatism often exist together either in the same individual or in the same family. The common coincidence or alternation of the two diseases is not enough, however, to show that they are identical or even closely related. It simply shows the existence of a certain affinity between them, the cause of which is unknown."

From the standpoint of the nervous system, the analogy between the changes which occur in the system at puberty during pregnancy may be cited to support the view of Jeffrey in regard to the etiology of Sydenham's chorea. He considers it a disease of evolution, affecting the cerebro-spinal system and allied closely to its development. The general opinion of authorities today, especially in England, is that the chorea of pregnancy is entirely of nervous origin. They consider it to be a neurosis due to the stimulation of the utero-ovarian plexus. Barnes lays stress on the relation of the establishment of the menstrual function and the development of chorea, and Barton-Hurst reports a curious case of chorea in which the movements were increased at the time of the periods. Fontenau explains the physiology of the disease in this way: "In pregnant woman the excitation of the nervous system begins in the utero-ovarian plexus, and passes through the great sympathetic to the cord and brain and thence to the muscles through the motor and sensory nerves. In these cases there arises a depression of the intellectual centres, which should inhibit the movements, due to either hyperstimulation or, on the contrary, to a complex mechanism analogous to that described by Brown-Sequard."

Whatever physiological explanation may be invoked to give the key to the choreic movements the fact remains that the whole organism is in a state of unstable equilibrium ready for the stimulus which causes the outbreak. This state of nervous instability is closely related to hysteria, and has caused at times more or less confusion between hysteria and chorea. The hysterical stigmata are, as a matter of fact, to be noted in a large proportion of the cases of chorea during pregnancy. If

it is admitted, as has been claimed, that chorea is a manifestation of hysteria in pregnant women, it is impossible to assert that infantile chorea is only infantile hysteria, yet the fact remains that hysteria is a predisposing cause of chorea during pregnancy.

Symptoms.—The disease occurs most commonly in young women from eighteen to twenty-four years old. It is relatively common from twenty-four to thirty, but very rare after that age. It usually occurs in the first pregnancy but occasionally it occurs for the first time in later pregnancies. It may begin at any period of the pregnancy. In some cases its beginning coincides with conception, and it has been said to be one of the earliest signs of pregnancy. It most commonly develops during the first five months, although it occasionally does begin in the last four months of pregnancy, becoming the more rare the nearer to term. A few cases have been reported in which the choreic movements have first made their appearance after delivery.

In the majority of cases the movements come on gradually, becoming more violent as the time of delivery approaches. In certain cases, however, the onset is violent and the progress rapid, acquiring a considerable degree of intensity in a very short time. In other cases periods of remission and exacerbation alternate. The movements are usually bi-lateral, although at times only one side is involved. Hemichorea is very rare, however, although one side is usually involved before the other. The intensity of the movements is apt to be much greater on one side than on the other, being more marked on the side which was first involved.

Prodromal symptoms may or may not be present, but when present are apparently nervous in their nature. The temperament of the patient may change abruptly, and marked irritability and loss of self-control develop. Loss of memory and hallucinations of sight and hearing may be present. If these symptoms do not precede the outbreak of chorea they often accompany it and form part of the general picture of the disease.

The choreic movements most often begin in the left hand and arm. The hand flexes and extends on the fore arm. The simultaneous or separate contraction of various groups of

muscles in the arm produces movements of pronation, supination or flexion of the forearm, in accordance with the muscles involved. The movements are involuntary and abrupt, and become exaggerated if the patient tries to control them. The fingers become useless for the more delicate work the patient is accustomed to use them for, and the attempt at grasping objects in the most ordinary acts of life shows an awkwardness which is diagnostic when noted. In a short time the other arm and lower limbs become affected. This results in an alteration in the gait, in the sitting posture, and in a series of abrupt changes of position as strange as they are unexpected. When the patient tries to remain motionless in the erect position, an abrupt contraction of the extensors changes her centre of gravity, and necessitates a series of awkward movements in the attempt to regain her balance. In severe cases walking is rendered difficult or impossible by the in-coordination of the muscles.

The abrupt abnormal contractions may be observed even in the body and shoulders. The respiratory muscles may be affected in severe cases to such an extent that breathing, particularly slow and sustained expiration, is rendered difficult. All the muscles of the head and neck may be involved so that not only the muscles of facial expression, but also those of the pharynx and larynx may be the seat of twitchings.

The movements cease during sleep, but only when ideation is suspended, that is, in sleep without dreams. According to Jaccoud, the mental process which produces dreams stimulates the Medullary axis as in the waking condition, and produces inordinate movements, less marked it is true than when the patient is awake, but still unmistakable.

The mental disturbances which accompany Sydenham's chorea are found in certain cases of the chorea of pregnancy before the motor disturbances. Modifications of the moral sense, imperfect ideation, hallucinations may be present. Sleep is apt to be restless and troubled by dreams. Mania and dementia have been observed.

The nutrition of the patient suffers in grave cases from the difficulty of feeding the patients, and from the great exhaustion which accompanies the incessant muscular activity.

The spasms of the soft palate and lips favor the introduction of food into the air passages.

The foetus may in mild cases live and be born at term. In severe cases it usually dies and causes abortion or miscarriage.

The chorea usually lasts during the whole term of gestation and sometimes days or weeks after delivery. As a general rule the spasms become less violent after delivery, a fact which indicates the appropriate treatment in such cases of a severe nature. This is not an absolute rule, however, and in any case after a temporary amelioration the spasms may again increase and become chronic. Hart reports three cases in which the chorea, after repeated attacks in successive pregnancies, became chronic. Cardiac complications may appear as in infantile chorea but in a much smaller proportion of cases. They are more apt to appear in the severe cases than in the milder ones. In grave cases a rapid loss of strength occurs, and such a degree of emaciation and debility may be produced as to render the loss of blood which accompanies abortion or premature labor, a serious if not a fatal complication. A fatal termination may occur before the expulsion of the foetus in patients in regard to whom a temporizing method of treatment is adopted. Although it is to be considered in all cases a serious disease, with a doubtful prognosis for the future, it is in many cases definitely cured or may only leave slight traces.

Prognosis—The disease is a rare one during pregnancy, and months may go by in a large hospital without a single case being seen. Considering, however, the short time that a woman is under observation in a lying-in hospital, it is probably true that many cases in which the movements are very slight are not included in the published reports. It is also true that the choreic movements may not attract the attention of the obstetrician sufficiently to be reported, unless they threaten the continuance of pregnancy. These facts explain the difficulty of obtaining true statistics of chorea, especially the percentage of its occurrence. For this reason any prognosis based on statistics is not reliable.

The mortality in the published tables varies from one to seventeen cases to one in three and a half cases. In the more

recent papers the statistics are better and more cases are reported. Pinard says that the prognosis which would have to be given, if the published statistics were relied on, is more grave than the true condition of affairs warrants, provided that the patients receive adequate treatment. Nevertheless the prognosis of chorea in pregnancy is much more grave than in early life. The foetal life is always seriously compromised.

According to the older statistics, pregnancy is interrupted in one half the cases. According to the later reports the prognosis for the child is better as well as that for the mother. Pinard reports in 8 cases 8 well-nourished infants at term. The viability of the infant necessarily depends on the general condition of the mother as well as on the severity of the chorea and its complications. Children born from choreic mothers occasionally show choreic movements soon after birth.

Treatment—In the treatment of chorea the principal drugs which are used are the sedatives, Bromide, Chloral and Morphia and the alteratives, Arsenic and Iron. In grave cases Ether and Chloroform may be given as in Eclampsia. Rest in bed and freedom from worry are also valuable adjuncts to treatment. Every effort to improve the general nutrition of the patient should be made. Pinard uses large doses of chloral to the point where the patient is in a condition of continuous sleep. She is only waked for food. This treatment is continued until considerable improvement in the choreic movements occurs. The doses are then diminished, but are continued until the movements entirely disappear. In very grave cases the early induction of abortion or premature labor is imperative. The success of the sedative treatment serves to demonstrate the importance of the nervous element in the chorea of pregnancy, which differs from ordinary chorea more in its nature than in its symptomatology.

Case 1., G. R., Age 28 years, Para. 1.

Had the usual diseases of childhood, Measles, Scarlet Fever, Etc., but since the age of ten years had never been ill. Of a nervous temperament, over average height, Anaemic and of slender build. Family history so far as could be ascertained, Negative.

Present Illness—Consulted me in November, 1903, the only

symptoms present being those common to early pregnancy, that of vomiting being most prominent, and sufficiently severe to confine patient to her bed. The chorea was insidious in onset, first noticed in upper extremities, inordinate movements being first manifestation, these were followed by difficulties in enunciation, and some time later extended to the lower extremities.

At no time were the movements of a violent character, mentality was dulled, the vomiting continued until the expiration of the third month. Choreic movements steadily developed until induction of premature labor was deemed necessary, but the suggestion was promptly over-ruled by the patient and her husband, owing to their anxiety to produce a child, when at the end of the fifth month the patient miscarried, she recovered from the effects of the mis-carriage but in spite of continuous treatment for eighteen months thereafter, had not regained full use and control of her limbs. About this time she removed to the State of Carolina and was lost to view.

Treatment—At the onset of the illness, the usual remedies, Chloral, Bismuth, Cereii Oxalate, Ice Bag to Medulla, Diet, etc., even Iodine in minute doses, to control the vomiting were employed without securing much relief, finally cocaine applications to the cervix were employed with apparent benefit, but owing to the period of pregnancy at which these latter were employed, it is questionable if the relief was due to them alone. For the chorea, Bromides, Chloral, Iron and Arsenic were employed, the latter being pushed to the physiological limit.

Case, II., E. V., married, French extraction, of a family of seven.—Excepting for the usual disorders of childhood, early history negative, until in July, 1903, she with two younger sisters were subjected to a lightning stroke, one sister being killed instantly, the other recovered consciousness after twelve hours, both sisters suffered from the effects for over two years the younger being fully relieved after menstruation came on for first time. E. V. being only partially relieved, but apparently recovered fully a year later. Whether these recurrent attacks were choreic in character could not be clearly determined. Two sisters married, both have children, and all enjoy good health. Father in good health, mother has not enjoyed

good health since marriage and is of a very nervous temperament, but has never had chorea.

Present Illness.—Consulted me on April 18th, '08, reporting onset of illness as sudden, general choreic movements of very pronounced type, enunciation labored and very difficult to understand, simultaneous onset in upper extremities followed by difficulties of speech, severe tetanic spasms at angles of jaw, patient being unable to open jaw except in very slight degree, these symptoms were followed later by choreic movements in lower extremities, which condition had existed for about four weeks before she consulted me, when from history and examination, she appeared to be about two months pregnant.

There was no nystagmus and reflexes were normal, while insomnia was persistent and marked and mentality much impaired.

Physical examination—Well developed woman of average height and weight, speech almost inarticulate, co-ordination almost impossible in upper extremities, lower limbs greatly affected, walked with difficulty and reeling gait. Secretions normal.

Treatment—Bromides and Chloral in large doses with hypodermic of morphine, Gr. $\frac{1}{4}$ with hot tub baths which at first had soothing effect, but on following days in spite of increased dosage, symptoms became more aggravated, so that on the 21st after consultation, I cleared out the uterus, using wire curette, which treatment resulted in almost instantaneous relief from the chorea, and the following night she slept uninterruptedly for ten hours, no medicine having been given, and there being no return of the symptoms, the stiffness and pain at the angles of the jaw persisted for a few days but at the end of a week had entirely disappeared, speech became clear at the end of five days. Fowler's Sol. of Arsenic was given in full doses until she left the hospital two weeks after operation.

From the reports of cases in the very meagre literature on the subject and from my experience in the two cases cited, I am strongly of the opinion that the best results are obtained by the early removal of the uterine contents, recovery being more rapid and complete in the woman, to say nothing of

bringing into the world a child which may become a burden either to its parents or upon the State.

I am indebted for much of the material for this paper to Dr. Arthur S. Hamilton, instructor in Pathology of Nervous diseases in the University of Minnesota and to contributions on the subject by Dr. F. S. Newell, of Boston, Mass.

THE RECOGNITION OF CERTAIN RHEUMATIC MANIFESTATIONS IN CHILDREN

BY

E. G. LEARMONTH, M.D.

HIGH RIVER

In this paper I desire more especially to emphasize the value of a proper recognition of certain of the frequent, as well as the infrequent, manifestations of acute articular rheumatism in childhood.

I have been led to a consideration of this subject chiefly by the fact that in my practice articular rheumatism and many of its earlier manifestations have been somewhat frequently met with, and I have found that unless one is particularly careful he is apt to overlook certain of these evidences.

Just as Cheadle¹ and Barlow and certain other English observers, some twenty years ago, did much towards bringing light out of darkness, order out of seeming chaos, in regard to the varied manifestations of acute rheumatism in children, so of late years have the researches of Klebs, Leyden, Loeffler, of Trilboulet and Apert, and more especially of Poynton and Paine² in determining the specific bacteriology and exact pathology of the lesions of the same disease brought us still nearer the light, and given us a fuller understanding of the sometimes elusive phases of this affection.

Concerning the status of each of the micro organisms laying claim to being the active causative factor of the disease, of the diplococcus rheumaticus of Poynton and Paine, the micrococcus of Walker, and the streptococcus of chorea of Wasserman we can only repeat what Sir Dyce Duckworth³ and other English, and certain German observers have stated, that

in all probability these three organisms are identical. Though there is not at the present time a unanimity of opinion regarding the specific organism, certain American observers dissenting, yet in all probability the micro organism described by Poynton and Paine finds most favor, especially since it has fulfilled practically all the obligations required to entitle it to specificity in the causation of the disease in question. It has been demonstrated in the endocardial and pericardial tissues in the pleurae, peritoneum pia mater, synovial membranes, fibrous nodules, urine, and blood. Rabbits have been inoculated with it reproducing various manifestations of the disease and finally the organism has been recovered from these lesions. This micro organism is a small micrococcus .5 M. in diameter; usually grows in pairs or in short chains; stains readily with aniline dyes; in a bouillon medium at 37° C. in 24 hours produces a turbidity with a flocculent precipitate. This medium at length becomes acid. On blood agar, one of the best media, blood is smeared on the agar and incubated for twenty-four (24) hours, small white colonies appear and tend to remain discrete and alter the blood pigment to a rusty brown color.⁴ Of the various other theories brought forward regarding the causation of articular rheumatism I will say nothing since the one I have mentioned is becoming more generally accepted today, especially as the infective nature of the malady is certainly recognized.

Since there is a greater resemblance to the adult type of the disease after the child has passed the eighth or ninth year what I have to say applies particularly to the varied symptomatology met with between the ages of two and eight years. Under the age of five rheumatism is comparatively rare. Whilst in infancy the greater number of cases of supposed articular rheumatism are really due to infantile scurvey as both Holt⁵ and Lafetra⁶ have pointed out.

Frequently in the prodromal stage of the disease there are manifestations which go unrecognized, or if recognized are passed by as being of little moment, and as most likely due to some slight disturbance from which the child will shortly recover. Such initial symptoms as growing pains, tonsillitis, anaemia, functional nervous disorders, loss of energy, epistaxis,⁸

should be carefully watched and rheumatism suspected. The dictum of "examine the heart, and do so repeatedly" applies here, as in the primary acute endocarditis of children there may be few prodromal symptoms, besides we must ever remember that the invading organism has a peculiar predilection for the endocardium. In the Prodromal stage as Poynton⁹ has stated, the temperature may run to 99.5' F., though none may be present at this stage, during the attack there is no characteristic type of fever profuse sweating is rare in the child just as it is usual in the adult. Regarding the character of the joint symptoms I will take this up later in discussing arthritis.

I have noticed especially that acute articular rheumatism is more frequent during the months of October and November and also April and May. During these periods in Alberta there are rapid changes in the temperature, from mildness to coldness with chinook wind blowing possibly for several days, then a change to strong Northerly or North-easterly winds.

Regarding the subsoil water during this period I have not made definite observations.

The first case history which I wish to present to you partly on account of the comparative rarity of certain manifestations, but more especially as showing the many symptoms pointing to the early development of the disease, is as follows: I was consulted November 2nd, 1907, concerning a little girl, Edith S., age four years and seven days. She complained of feeling out of sorts, and of a pain in the neck (right side). During the previous four or five months has been unwell, easily fatigued, appetite poor, sleep has been restless, has been irritable, pale and anaemic looking.

The present illness began two days ago when she complained of pain in the neck, in the right side, over the area of the sterno-cleido—mastoid muscle, the pain became somewhat severe, and caused her to cry considerably. Head was drawn to right side (torticollis); was very peevish; took little nourishment.

Child was born in British Columbia, has lived here during past year. Never had any of the diseases of childhood; never been robust; mother had difficulty in raising the child after

she ceased nursing her. Parents are in comfortable circumstances and have given her a great deal of care. Neither parent has ever had acute articular rheumatism. Both are in good health as are two sisters and a brother. Patient is a girl, age four years, blonde, very poorly nourished; mucous membranes pale, skin dry, lies in dorsal decubitus, limbs flexed, facies drawn and pained; right side of neck over sterno-mastoid very tender (torticollis). Pulse 130, R. 26, T. 100 F., tonsils and throat slightly reddened; patient did not complain of sore throat; tonsils enlarged. An examination of the heart revealed a somewhat accentuated 2nd pulmonary sound.

Respiratory System Negative

The following day the child complained of sore throat but there was but slight change in the appearance from the day before. I took a smear from the tonsils and also a culture on glucose agar, (being out of Loeffler's blood serum at the time). The smear showed very numerous small diplococci,—not unlike those described by Poynton; they seemed to be the predominating micro organism. Staphylococci also were present. The culture produced a growth of Staphylococci after 36 hours. With the development of the sore throat, mild arthritis in the right elbow joint appeared, evidenced by tenderness, slight redness, and later a slight swelling. The left elbow joint was affected next, and also two of the finger joints of the left hand (middle joints of the ring and fifth fingers).

About the time the right elbow joint was affected there appeared over the upper third of the left tibia a small erythematous patch about 1.5 c.m. in diameter; some hours later a second patch appeared; these grew in size (size of a penny) and finally coalesced. They were hard and tender to the touch, and slightly raised. A single patch appeared over the left forearm on the exterior surface. These erythematous nodules lasted some four days leaving much discolored patches which I noted were present some weeks later.

By the end of the first week the child had become markedly anaemic and had lost much in weight

The temperature never rose higher than 102' F., at any time. The pulse reached 150 and respirations 28.

I took a culture of the blood according to Mallory and Wright's¹⁰ method early in the disease but with negative results. This result is explained by Poynton,¹¹ in part, who states that the diplococci rheumatici are located in the various lesions and are difficult to isolate from the blood. This can be done sometimes when the disease is very severe and generalized. Poynton has had success in isolating the diplococcus rheumaticus from the blood by using a blood agar culture.

The child remained weakly and irritable and markedly anaemic during several months. In March of this year she had an attack of measles, and in April following, a recurrence of the attack of acute articular rheumatism in which the articular symptoms were more marked than in the former and both the knees and elbow joints were affected. Erythema nodosum was also present again, the patches being more numerous and larger than in the previous occurrence. It has taken many months for the child to regain a moderate amount of strength.

I have repeatedly examined the heart up to the end of July and so far have discovered no symptoms of endocarditis.

I have no doubt in my mind as to this being a case of articular rheumatism though considerable has been said in regard to erythema nodosum being in itself a distinct disease entity.

Concerning the various manifestations in this case of anaemia, tonsillitis, arthritis, erythema nodosum, I will take each up seriatim and endeavor to demonstrate the relationship of each to the rheumatic infection though they are all found in this and other affections.

In practically all cases of rheumatic infection anaemia is present varying from a mild to a severe grade which may be so marked that, as Holt¹² remarks, one may have difficulty in distinguishing cardiac murmurs which are haemic, and those which are due to endocarditis. There is usually during the acute phase of the infection a rapid fall in the number of red corpuscles and a moderate leucocytosis.

Goodhard¹³ emphasizes the fact that in all cases of anaemia in children without obvious cause he makes enquiry as to the possibility of a rheumatic history.

In my case the anaemia lasted over many months and was specially marked between the attacks.

It has been recognized for many years that the occurrence of tonsillitis bears a close relationship to acute articular rheumatism and the tonsil has been regarded as an important point of entry of the infection into the system just as in pneumonia, scarlet fever and diphtheria and certain other infections. There does not seem to be any definite form which the inflammation assumes. Different observers vary considerably in their descriptions of the various types.

Probably Holt¹⁴ is nearer the mark when he states that any form of tonsillitis may be met with, in his experience quinsy has been the most frequent. The condition is often but slightly painful and on this account the affection is very frequently overlooked. R. H. McConnell, of the Vanderbilt Clinic, New York, in a study of 500 cases of acute articular rheumatism in children, found that tonsillitis was present in 35% of cases.

Gurich¹⁵ in a series of 17 cases of acute rheumatic infection noted tonsillitis in 13 cases. Contrast with these 223 cases of acute rheumatism in children reported by Dunn¹⁶ of the Children's Hospital, Boston, recently, in which tonsillitis was noted in only 6 cases. As he himself critically remarks, "it is very possible that the number of cases in which such inflammation was actually a symptom of onset might have been larger if proper observation could have been employed.

Blackader¹⁷ in a recent paper on rheumatism in children emphasizes the fact that the condition of the tonsils in children with a rheumatic tendency should be carefully looked into. That all necessary treatment should be prompt and thorough, and that adenoids should be removed and that the general health of the child should be improved. It is interesting to note that the experiments of Fritz Meyer in Germany, of Frissell of the Presbyterian Hospital, New York, and of Poynton and Paine, England, in which organisms were isolated from cultures taken from the throats of patients suffering from acute rheumatism, which in a series of inoculation experiments always gave rise to an arthritis, demonstrates to a reasonable degree that the organs have gained access to the system by the

way of tonsils.

Another symptom torticollis present in this case is often alluded to as being of a rheumatic nature, though it may occur in many of the local and general conditions yet in conjunction with other rheumatic manifestations, it is usually of a rheumatic origin. Poynton¹⁸ alludes to this symptom by stating that in all probability there are localized connective tissue inflammations which, when chronic, produce fibrous nodules or strands in the muscular tissue. These nodules or strands may hamper muscular action or press upon nerve fibres and produce in certain cases severe pain.

Probably the most marked contrast between the type of acute articular rheumatism in the child and that of the adult is in the mild arthritic manifestations in the child compared with the acute arthritis in the adult, as in the case that I have reported, at no time were the arthritic symptoms very marked. Unless carefully watched for these symptoms of joint involvement are apt to be overlooked, especially as only slight temperature may be present, and it is only when endocarditis has developed that we realize that some of the early symptoms of the disease have been passed by. The joints most frequently attacked are the ankle, knee, wrist, elbow and finger. The great toe joint is occasionally affected and Poynton¹⁹ mentions the fact that in these cases it may have the appearance of the joint found in a gouty man.

According to a recent report of 129 cases in the Annas Children's Hospital at Graz, Germany, the ankles are among the first joints involved in 97 per cent. of cases, the knee 73 per cent. and the wrist in 22percent.

Hunter Dunn²¹ in a recent article remarks that, "the joint symptoms of rheumatic fever in children deserve detailed mention. The first peculiarity of the disease which struck my attention in analyzing a series of cases was the comparative infrequency of joint symptoms in children. Out of 223 consecutive cases admitted to the Children's Hospital (Boston) suffering from rheumatic fever, only 102 (45 per cent.), had joint symptoms. A second point is their great mildness in comparison with rheumatic fever in adults.

"Not only are the objective manifestations of swelling,

redness and heat comparatively infrequent, but the pain on motion is much less severe." In his series of cases the duration of the joint symptoms was very brief, averaging only two days.

The last symptom of the disease which I will discuss as being present in the case is that of erythema nodosum. This cutaneous manifestation is rare in a child of four years, and more so as regards a recurrence. In 108 cases of erythema nodosum analyzed by Stephen McKenzie²², especially regarding the relationship of the disease to rheumatism, in only 14 cases did it occur in children under ten.

Considerable discussion has arisen as to whether erythema nodosum is really a rheumatic infection and the conclusion arrived at by the best of observers is that when present with marked rheumatic manifestations such as anaemia, arthritis, tonsillitis, we must regard it as most likely of rheumatic origin.

According to Stelwagon²³ the eruption makes its appearance suddenly, either concomitantly with the systemic symptoms, or some hours or a day after their onset, the lesions are seen for the most part upon the tibial surfaces.

A case history revealing early rheumatic manifestations in a girl of three and a half years I will detail briefly: During the past five months she has complained, generally towards evening, of pains about both knee joints. These would last with some severity for about one-half hour; she has been very irritable at times; has had rather frequent attacks of sore throat, nervous, easily fatigued, and generally out of sorts. The mother has had two severe attacks of acute articular rheumatism, the first nine years ago, and the second three years ago.

It is in these early cases that much can be done for the welfare of the child. Frequently the pains are passed over by the parents as the so-called "growing pains" and sometimes the child may drift along into what Poynton²⁴ terms the rheumatic state and then develop an acute attack of acute articular rheumatism.

In this case there is a rather marked hereditary tendency which in the light of our present knowledge, exerts considerable influence on the predisposition of the child to the disease.

These "growing pains" are evidences of a mild arthritis and as McDonough²⁵ has pointed out, in these cases the heart should be carefully watched. He mentions a case in which he has been consulted practically for this symptom alone, and on later examination found a marked endocarditis.

As a rule these cases do well on salicylates, which fact points towards the rheumatic origin of the disease.

A third case of my series is one of acute endocarditis followed by chorea minor in a girl eight years of age. There is probably no more formidable early manifestations of articular rheumatism than that of acute endocarditis, and in certain cases it comes upon the scene with scarcely any previous manifestation.

As evidence of the great frequency of the disease in articular rheumatism, I cite Dunn's²⁶, 300 cases in the Children's Hospital, Boston, in which 91 per cent. at some time showed signs of endocarditis. Statistics of various observers the world over evidence the very large percentage of cases caused by rheumatic infection. Hochsinger of Vienna, in Pfaunder & Schlossman's²⁷ system, notes that 60 per cent. of Weill's large statistics of endocarditis in children were caused by rheumatic infection, whilst 80 per cent. of Church's cases had the same origin. I do not intend to touch upon the later signs of the disease since the clinical picture is familiar to you, but to detail some of the earliest symptoms met with at the outset.

The acute dilatation of the heart mentioned by Poynton and other English observers as associated rather frequently with endocarditis, early in the disease, is comparatively rare in America, according to Blackader²⁸, though pericarditis is more frequent, and as Osler remarks, is more frequently overlooked. As a rule in children there are definite heart symptoms at the onset. There is generally a rise in temperature and certain symptoms of cardiac weakness, precordial pain, dyspnoea and orthopnoea according to Dunn, some palpitation. A bruit may be heard in an area dependent upon the particular valve that is attacked.

As soon as the lesion has become manifest regurgitation takes place, and, as in the case of the mitral valve, a systolic murmur is heard.²⁹

For many years the association of chorea minor with certain rheumatic manifestations has been recognized, especially with endocarditis, and the infectious nature of the disease has been demonstrated in several cases reported³⁰ during the past few years.

Regarding the close connection of chorea and endocarditis, Thayer³¹, in a study of 808 cases of chorea in the John Hopkins Hospital, found that in 689 cases studied during one or more attacks 25.4 per cent. gave evidence of cardiac involvement and 50 per cent. of the cases in the wards of the Hospital showed endocarditis. As demonstrating more particularly the infectious nature of the disease, in some cases Poynton³² has shown that when careful examinations of the brain are conducted after death, the more frequently are some definite lesions found. Poynton and Paine, Wasserman, Westphal and Malkoff have isolated micrococci from the meninges cerebrospinal fluid, and the brain in a few cases of fatal chorea, and these microorganisms thus isolated have produced polyarthritides and twitching movements in rabbits.

Sr Dyce Duckworth³³, in a recent article, expresses his positive belief in the infectious nature of chorea and demonstrates the very strong relationship existing between chorea and acute articular rheumatism.

Whilst we lay stress on the infective nature of chorea we are mindful that in a large percentage of cases no such cause can be demonstrated. Since the clinical features of the disease are familiar to you, I will but emphasize the importance of a recognition of the early manifestations of the malady. In children between the ages of eight and fifteen such premonitory signs as worrying over school work, nervousness, irritability, headache, should make us take heed and advise the release from any mental toil and the taking of a large amount of bodily rest.

In a recent case of mine which was preceded by several attacks of tonsillitis, the girl was continually dropping the dishes, her manual movements were clumsy and later on the characteristic spasmodic movements appeared.

As regards the differentiation of acute articular rheumatism in children, from certain other affections, there may be

some difficulty at first in arriving at a correct conclusion, and we have to bear in mind such diseases as infantile scurvy, congenital lues, Still's disease, arthritis deformans appendicitis, acute tuberculous arthritis, gonorrhoeal arthritis and acute anterior poliomyelitis, haemophilic arthritis and acute osteomyelitis³⁴. Of these probably infantile scurvy, Still's disease and acute anterior poliomyelitis, offer considerable difficulty in diagnosis.

Infantile scurvy, as stated by LaFetra³⁵ is met with usually between the seventh and fourteenth months, whilst rheumatism is rare under two years of age and almost unknown under one year. Usually in scurvy there is no fever or local heat in the swollen part and the swelling is along the shaft of the bone primarily instead of in the front. In addition, the presence of hemorrhages from the mucous surfaces, the spongy gums and the extreme pallor are diagnostic. Besides the remarkable way in which these symptoms disappear when a suitable change of diet is made, clears up any doubt Still's disease³⁶, which is a multiple arthritis, begins before the second dentition—occasionally the onset is acute. There is a peri-articular enlargement of the joints and the wrists, fingers, toes and cervical spine are most frequently affected. The effusion is usually small, there is usually, too, glandular enlargement in the neighborhood of the joint. The spleen is frequently enlarged³⁷. In acute anterior poliomyelitis in the early stages there is fever and considerable skin and certain deep muscular pain. There are also marked wasting and loss of reflexes. There is no swelling of the joints nor do we get cardiac involvement as in acute articular rheumatism.

In conclusion I would emphasize the fact that acute articular rheumatism in the child is manifested in an almost entirely different way from the same disease in the adult.

2. That we must appreciate to a greater extent the infectious nature of the disease.

3. That the endocardium of the child is particularly susceptible to the infection.

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CHRONIC DISEASES OF THE MASTOID AND ITS
RELATION TO THE GENERAL
PRACTITIONER

BY

J. NISBET GUNN, M.R.C.S. and L.R.C.P.
CALGARY

Mr. President and Gentlemen:

I have not attempted to make a text book picture of the subject Mastoiditis with its etiology, pathology symptoms and

treatment, but I have selected a number of points, some of which I hope will be of sufficient interest to elicit discussion and to help in a better understanding of the diseases of that part of the anatomy, which may well be described as the appendix of the brain.

I will take up in order the indications for the different operative procedures and combine with this the knowledge we have at hand to decide on the condition present, and the method of treatment.

We will first consider the indications for, a simple opening of the mastoid:

1. If Paracentesis does not cause the symptoms to subside in four to six weeks, even if symptoms are not severe.
2. Pain, fever, persistent headache, chills, etc., with perforation.

3. Narrowing of the posterior upper wall of the bony meatus, e.

4. Cranial complications, meningeal irritation.

5. Swelling over the mastoid in the first few days.

6. Complications from pyocycemius (if during the course of an otorrhoea, the discharge suddenly stops and pain starts, it is most probably due to pyocycemius invasion. The picture through the Otoscope and the symptoms of the complications must be in keeping, viz.: if while pyocycemius is present the mucus membrane of the middle ear, looks dry and greenish and covered with scales, there is pain in the tragus from the external canal being also involved, Cocci in a middle ear disease do not exist with pyocycemius and the Cocci give over to the pyocycemius. These capsulated bacteria such as the pyocycemius offer the best prognosis before the healing up of the middle ear, but are more liable to late complications, even after the disease is apparently cured. Do not hesitate to a paracentesis for an acute otitis media if an otitis externa is present. Pyocycemius often causes a perichondritis in the plastic operation following a radical, this is due to an infection of the cartilage, therefore, in a radical mastoid always paint the external canal for several days previous with a solution of silver nitrate. It is not an uncommon occurrence to find after a paracentesis and the condition apparently healed that the

patient will come back after some weeks with an acute mastoiditis, this is invariably due to a pyocyemius infection).

In the handling of a chronic suppuration of the middle ear, we will consider it under the removal of polypi, the extraction of the bones of the ear and the radical mastoid:

Do a paracentesis to spare a mastoid.

Do an ossilectomy and polypi removal to spare a radical.

Polypi whenever found should always be removed, except:

1. Where cranial complications present.
2. Where granulations so large that they cannot be removed.

3. Where the labyrinth affected: Labyrinth suppuration is a condition about which very little was known until quite recently, previously it was not an infrequent occurrence to find that a patient died after an operation for chronic otitis media, the cause of this was, in most cases, a latent labyrinth suppuration. This localized suppuration was disturbed by the hammering of the operation, the bacteria got free and the condition extended to the meninges.

Suppuration in the labyrinth is confined to small space and readily extends to the brain as the fluid in the semi-circular canals communicate with the brain. Ocular nystagmus enables us to diagnose the condition of the internal ear. Nystagmus consists of two movements, one quick and one slow, the slow is always first, the quick second, we call the direction of the nystagmus after the direction of the quick movement. Normally, if we rotate a person to the right, the head upright on stopping we get an nystagmus to the left.

Rotate to the right, head on the right shoulder, get a vertical nystagmus. If rotate to the right with the head thrown back, get rotatory nystagmus to the right. If rotated to the right with head flexed, get rotatory nystagmus to the left. Nystagmus always much stronger, if patient looks in direction of nystagmus and inhibited in part by looking in the opposite direction. Do not change the position of the head from the shoulder to the vertical, it will cause nausea and sickness.

Associated with nystagmus is vertigo which may be described as a slight loss of consciousness or confusion, perhaps

illness or nausea; color vision altered, some darkness, others sparkling. If the impression is that the patient is falling to the right there is a reaction movement and he falls to the left. If the position of the head is changed you get reverse movements.

Application—If the labyrinth is destroyed and if the patient is turned to the ill side and then stopped, the patient will have normal nystagmus. If on the other hand, he is turned to the sound side and then stopped he will have no nystagmus or very slight.

The same results can be obtained by the use of hot or cold water, or by the application of the anode or cathode poles, if cold water is syringed into the right ear, the right ear is depressed, therefore the left acts stronger and you get a nystagmus to the left. If warm water is syringed into the right ear, it irritates and excites and you get a nystagmus to the right. The anode pole acts as a depresser, therefore get the same results as with cold water. The cathode acts like warm.

If the right labyrinth is destroyed by pus, the left overacts and you get a nystagmus to the left.

A circumscribed labyrinth affection irritates and you get nystagmus to the same side.

In cerebellar abscess the nystagmus goes to the side where the abscess is.

If a patient has nystagmus to the left only when he looks to the left, he has the smallest amount of nystagmus.

If the labyrinth is intact you are pretty safe in excluding cerebellar abscess for the symptoms of this are much like those of labyrinth affection in two-thirds of the cases of cerebellar abscess, are caused by affection of the labyrinth.

If both labyrinths are destroyed there is no nystagmus or dizziness.

If both ears syringed out at the same time with cold water under the same conditions you get no nystagmus and no dizziness.

If deafness comes suddenly it is usually due to affection of the labyrinth.

There is no dizziness from the ear without nystagmus, but this may only be found by placing the head in a certain posi-

tion, therefore you must try all positions.

When a patient comes, with nystagmus to the diseased ear and dizziness, and if deaf in this ear he has a labyrinth affection, and if an operation is performed without opening the labyrinth, you will likely get a diffuse suppuration of the labyrinth and meningitis.

Ossilectomy or removal of the bones of the middle ear.—This is indicated where the bones have no function, viz.: where the ambros and stapes do not articulate, this is found in most cases of long standing suppuration, as the arm of the ambros which articulates with the stapes is very poorly supplied with blood and readily undergoes a necrosis where two-thirds of the drum is destroyed.

3. Where the cause lies in the attic or antrum and conservative treatment does not help it.

4. Where the disease is due to disease of the bones of the ear.

5. In Cholesteatoma, do it before a radical if no cranial complications.

It is an operation for private practice.

Removal of the bones of the ear is contrary indicated in cranial complications. Labyrinth affection.—Where removal will not help the condition as sequestrum in the ear, cholesteatoma,—Fistula behind the ear,—large number of polypi.

Radical Mastoid:

1. Indications.—Where the results from a removal of the bones does not improve the condition.

2. Where an ossilectomy is contra indicated as above.

3. Fistula of the Mastoid.

4. Stricture of the external meatus.

5. Abscess forming during a chronic suppuration.

6. Caries of the temporal bone.

7. Cholesteatoma.

There are two forms of cholesteatoma.

(1) True cholesteatoma is a tumor from embryonic tissue. It is from the ectoderm and lies between the bone and periosteum, or between mucus membrane and bone, or in the bone. It is a very rare condition.

(2) Cholesteatoma from wandering in of the epithelium

from the external canal, here it becomes cast off and by its accumulation causes bone destruction by pressure, it may cause a fistula into the labyrinth which may remain latent then suddenly light up and the infection spread through this opening with resulting cranial complications. Cholesteatoma may be diagnosed by the applications of sulphuric acid and lugols solution, or by the smell alone which is likened to bad cheese or old socks.

8. Facial paralysis is also an indication for the radical mastoid. This is important not only in chronic but in acute conditions, it shows that an necrosis is going on and that the labyrinth is liable to become affected. The facial is most often affected in chronic suppuration and more often in children than adults. In some cases it may be difficult to tell whether the paralysis is due to otitis or to rheumatism. In rheumatism the whole nerve is affected except the branch to the mouth which may not be. If due to otitis the paralysis comes on gradually and different branches become affected one after another. If due to otitis the patient complains of pains before the paralysis comes on. If due to otitis the branch to the mouth is usually affected. In some congenital forms the facial canal is not closed and you may get paralysis during the operation from the sponging alone, but this as a rule disappears. You may get paralysis in three to five days after the operation from re-action. Usually the facial nerve heals even if cut because the two ends are held together by the narrow bony canal, but if pressed on by a piece of bone it remains paralysed.

9. Radical mastoid operation is indicated in chronic suppuration with symptoms of commencing tuberculosis in the middle ear. Flat, pale granulations speak for tuberculosis. Tuberculosis especially in children, is very liable to start in the zygomatic process and may be mistaken for a periostitis or mastoiditis. In a perforation from tuberculosis there is a greater defect in hearing than in an ordinary perforation, there is no pain, the perforations are numerous and irregular in shape: the secretion is fluid and very persistent. Perforations in the upper anterior quadrant of the drum are usually tubercular.

You may get a mastoiditis without spontaneous pain and

without pain on pressure, if no periorbitis is present there will be no pain on pressure and if the pus is not under pressure there will be no spontaneous pain. To elicit pain on pressure is much more important in the diagnosis of mastoiditis than spontaneous pain. A fistula in the mastoid is caused by the disease within and the periostitis without, these two join and form a fistula. If an abscess from the antrum breaks through the tip of the mastoid as in a Bezold and extends under the sterno mastoid muscle the head is bent towards the sound side.

After the radical operation the hearing, if previously good, is made worse, but if it is bad it may be improved.

From the hyperdermia of the pericosteum of the middle ear over the promontory, hyperaemia of the endosteum of the internal ear often results which causes a caries of the promontory. After operation on these cases the epithelium will not heal in this part, this is spoken of as post-operative caries. In these cases the patients are usually very hard of hearing, therefore you can promise that if the patient has good hearing before the radical operation it will be healed and epidermized in seven to eight weeks, if deaf or very poor hearing it will take a long time to heal. The most successful way to treat it is by the Bier treatment by using a siegel for fifteen minutes daily. Granulations and polypi from the promontory and lateral attic wall speak for a deep extending process in the bone or periosteum. If granulations come from the promontory the bone is affected and the patient is deaf. You can therefore diagnose, if the granulations come from the inner wall or not.

Pain on pressure over the mastoid in the first few days of an acute otitis speaks for a pneumatic mastoid therefore give a guarded prognosis. A pneumatic mastoid is more dangerous than a diploic; in the former all the cells communicate, as a rule a pneumatic mastoid is more pronounced but this does not hold where the muscles are well developed over a diploic. Temperature at the onset of an acute otitis media gives an unfavorable prognosis. A late perforation gives a bad prognosis because in the meantime you may get disease of the bone. It is possible to get an acute otitis without pain when there has been a previous condition with a large perforation.

It is questionable as to how much help lumbar puncture

gives in diagnosing meningitis, brain abscess, etc., prior to operation, the results are so unsatisfactory that one might be easily prejudiced in favor of meningitis and overlook during the operation a brain abscess, therefore where it does help it is better not to be influenced. Lumbar puncture helps in the prognosis but not necessarily in the diagnosis, although it may in tubercular meningitis. In fifteen per cent. of all cases it is impossible to get the needle into the spinal canal.

After an operation in an acute mastoiditis you may get the middle ear has cleared up. Afterwards you will get a chronic mastoid healing too fast, viz.: before all the mucus from the mucus catarrh with diminished hearing, you can tell if this condition is present by the inflammation in the drum and by the interference with the hearing. You may have to do a paracentesis and politzerize, or you may have to take a probe and make the opening into the antrum free.

Therefore you should make it a rule in, the after treatment of an operation for acute mastoid abscess that as soon as the discharge stops the hearing should be tested from time to time.

WESTERN CANADA MEDICAL JOURNAL

EDITORIAL NOTES

Reciprocity for the West

We note from an editorial in "North-west Medicine" that our cousins over the Line are also agitating for medical Reciprocity. One would think if these States, the population of one of which must be more than equal to the whole of Western Canada, see the great advantage to the profession of such arrangement, surely it is easily proved as the best for us. What the West needs is unity. The first great advantage of such would be the breaking down of provincialism, which simply nourishes materialism and narrowness—two qualities which go to destroy all that is best in individuals and nations. At least, we can rejoice to see that the public, through the Daily Press, are getting interested in the question and so far seem to wonder why on earth there are such absurd restrictions between one province and another. As a proof, let any medical man tell his patient that, although he can practice in Manitoba, he cannot practice in Ontario, and watch the outsider's amazement. Let the advocate of the "closed door" explain the same to a company of educated business men and hear their comments. It is good to "see ourselves as others see us" often. The only argument that can be really supported is the materialistic, and that can be proved to be a "penny wise and pound foolish" one. In reforms only the inefficient go to the wall, and as our profession lives for the good of the race we should rejoice thereat. The province which is standing for the "closed door" in the West is British Columbia. However, the "Victoria Colonist" as an expression of the opinion of the public, criticises the shortsightedness of the profession in not having a single registra-

tion. We have tried hard to get at the reason of British Columbia's attitude and so far can only find that those who express the profession's opinion there, say they cannot see an advantage to be gained for the men of that province. We are not working for any province to have an advantage, but for mutual benefit. Still we can even point out that B. C. would gain. We remember a case some years ago of a doctor who had been years in B. C. becoming a victim to rheumatism and unable to work. He was advised to try the mountain air, and went to Alberta. After six months he was able to work, went back to B. C., suffered the same. Fortunately at that time any qualified man could practice in Alberta. He settled there, recovered his health and is doing well in practice. What would have been his fate had he been kept out by the present regulations! B. C. is a beautiful province, but men have to think which place is best for their success, and so should Reciprocity be obtained there is no fear of a rush from the other provinces to B. C. Manitoba has attractions, climatic and otherwise, and surely there are many who say they would rather spend their lives in the bracing air of Alberta and Saskatchewan than anywhere. Add to this the great possibilities to the enthusiastic worker in these new provinces. The fear that B. C. would be inundated with men from other parts can be put aside. One great advantage would be the possibility of doctors with their families exchanging practices, as they do in the old country. The Alberta man would get great benefit from a month at the coast or in Manitoba. In this week's B. M. J. we read that the death rate of medical men is high. Why? Simply from the lack of change of air and scene. Exchanging practices is both economical and educating. The coast man learns something of conditions in the interior and vice versa. Why do men go on year after year without change? They simply cannot afford it. However, those who are looking thoroughly into this matter and getting individual opinions are finding that, without exception, the younger men desire Reciprocity. In the province of B. C. the opposition comes really from the older members of the profession. This seems strange, because, as they can have no material reason having none of their names, one would expect

a broader view. Perhaps an objector to Reciprocity will send us his reasons for publication. It is to these older and experienced men the others look for advice naturally, and we would be glad to hear the reasons against. The younger provinces all declare for Reciprocity and it is they that have taken the initiative in the progressive movement for a united profession and high standard of medical education.

No one can doubt eventually we shall have Reciprocity, not only in the West, but in the Dominion. It is only a short time since the subject was seriously discussed. This year it is enthusiastically discussed. The profession are interested and, better still, the public. Let us all have the courage of our convictions in the discussion.

The profession in Manitoba are actively engaged in the formation of a provincial association as a means to a Western Canada Medical Association. The question of this union of associations in the West was enthusiastically discussed at all the annual meetings. Alberta passed a resolution in favor, the Winnipeg Clinical did the same and the others discussed it and are to bring it up at their next meeting. The interest taken is great. Some have objected that, while they desire a federation of provincial societies in the Dominion, they are not in favor of a Western. We hold that a Western union, like the Maritime, **will hasten and help the federation.** The West thus will have more efficient service, economy achieved and abuses put down and business facilitated. Organizations only become evils when, instead of assisting progress, they restrain. An organization formed purely and simply for reasons given above can only help progress. A professional organization's great purpose is to raise the individual's ideal—to take a large view of matters, to prevent petty conclusions.

Let us have done with petty considerations and hasten to appoint a Central Western Council and organization which shall give such disinterested direction to the individual powers that the great strength that comes of accord be obtained.

The report and several papers read at the B. C. annual meeting will appear in October. This month is devoted to Alberta's meeting. Both provinces are to be congratulated on their splendid meetings.

We must ask anyone sending in original contributions to either register them to ensure safe delivery to the editor or send copy only. We have had enquiries lately regarding papers sent in. Many have not yet been published owing to the large number received and are being held. Anyone anxious regarding the safe delivery of his manuscript had better write the editor at once. All except reprints are acknowledged personally.

Dr. Rogers, the President of the College of Physicians and Surgeons of Manitoba, on being notified by the Registrar of the receipt of the following resolution: "THAT the Committees from the Clinical Society and the Medico-Chirurgical Society report to their respective Societies that the Committees favor the organization of The Western Canada Medical Association, and that they think the first step should be the formation of a Provincial Association, and request that The College of Physicians and Surgeons be asked to take the initiative in the formation of The Provincial Association," called a meeting of the executive of the College of Physicians and Surgeons and the committees of the two Societies. After discussion it was decided to call a general meeting of the Profession of Manitoba, on October 8th and 9th, for the purpose of forming The Manitoba Medical Association.

GENERAL MEDICAL NEWS

VITAL STATISTICS

August—Winnipeg, three deaths from typhoid; 26 outside.

Typhoid.....	69
Scarlet fever	11
Diphtheria.....	9
Measles	3
Chickenpox	2
	<hr/>
	94
Births	375
Deaths.....	205
Marriages.....	134

MEDICAL NEWS

Edmonton is to have a Maternity Hospital and Rescue Home established by the Salvation Army.

It is said that in the Province of Quebec infant mortality is 33 per cent of the total death rate, and that in Montreal it is 65.61 per cent.

There is a modern hospital at Prince Rupert under charge of Dr. Ewing; and two others in telephone connection with this on the line of construction.

The B. C. Provincial Government has contributed \$1,000 in aid of a hospital being built at Queen Charlotte, a new townsite on Skidegate inlet. Dr. Cross, formerly of Revelstoke, will be physician in charge.

“La Revue” of July gives some statistics of the consumption of alcohol in Europe. In France during the last 50 years it has increased from 2 to 9 litres per head. In other countries it has decreased. In Germany it is still 8 litres, but in England it has fallen to 5 litres, in Norway to 3 and in Switzerland to 4. In Sweden in 1850 it was 22, but in 1900 it was 7.

The B. M. conference held at Sheffield this year was educationally the most important that has been held for years. The debate on Medical Education was given great prominence. Everyone agreed that reform was needed. There was also a very general agreement as to the line on which reform should

be made. Professor Starling contended that much of the student's time could be saved and his training improved by focussing his attention on what was necessary for his life work. Six months could be saved by looking on chemistry, physics, botany, zoology, anatomy and physiology as being introductory only to the practical work of medicine. Sir Felix Simon agreed on broad lines and proposed that the students, before entering the hospital, should have three or six months course on the practical use of the test methods he would be called upon to apply in hospital and later on in practice. Dr. Armstrong urged the necessity for the proper scientific training of boys in the schools.

Dr. Francis J. Allen, the medical officer of Westminster, has conclusively proved that tuberculosis germs exist in telephone mouthpieces.

At Nokomis, Sask., August 4, "Dr." W. Robertson, late of North Dakota, was charged with practicing medicine, although not qualified under the medical act, and fined \$20 and costs.

The government returns of convictions for drunkenness give the following per 1,000: P. E. Island, 1.19; Nova Scotia, 6.28; New Brunswick, 5.48; Quebec, 2.76; Ontario, 3.36; Manitoba, 10.68; British Columbia, 6.93; the territories, 4.62.

PERSONALS

Dr. and Mrs. Wallace of Emerson paid a visit to Winnipeg.

Dr. Reid, from Prince Edward Island, visited Westaskiwin and Edmonton. He will probably practise in the West.

Dr. G. L. Cash, M.P., visited Winnipeg.

Dr. L. V. Dolbey of Victoria, B. C., left September 1st by the Mauretania for Liverpool, England.

Dr. Mustard of Nome, Alaska, visited Winnipeg.

Dr. G. E. Bayfield, medical officer of health for South Vancouver, has gone for a yachting trip to the islands of the north coast.

Dr. J. S. Clancy, a graduate of Queens has started practice at Simons, Sask.

Professor Adami, McGill, has been visiting Golden, B. C.

Dr. Lehmann of Winnipeg has gone for three months to Europe.

The American Public Health convention was attended by the following Western men: Drs. Cleghorn (Baldur), Fagan (Victoria), Whitelaw and Revell (Edmonton), Seymour and Meek (Regina), Underhill (Vancouver), Manion (Fort William).

BORN

HARGRAVE—At Medicine Hat, Alta., August 11, the wife of Dr. Hargrave, of a daughter.

PATTERSON—At Trail, B. C., July 21, the wife of Dr. F. P. Patterson of a daughter.

SANDWITH—At Nokomis, Sask., August 13, the wife of Dr. Bertrand A. Sandwith, of a daughter.

MARRIED

BURRIS-BARKER—At Victoria, B. C., August 15, Dr. J. S. Burris of Kamloops, B. C., to Miss Bessie Barker of Edmonton.

OBITUARY

FORBES—The death occurred last month of Dr. W. R. V. Forbes of Macleod, aged 35 years. He leaves a wife and three children. Dr. Forbes had been a resident of Macleod for 12 years, having for several years served as doctor for the Mounted Police. He was born at Brandon, where his parents now reside. Dr. Forbes was held in high respect by the citizens of Macleod and the greatest sympathy is felt for his family.

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THE WESTERN CANADA
MEDICAL JOURNAL
Winnipeg



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NOTICE

ODD-NUMBERED SECTIONS

As already publicly announced, odd numbered sections remaining vacant and undisposed of will become available for homestead entry on the coming into force of the Dominion Lands Act on Sept. 1, next.

As the records of only the even numbered sections have hitherto been kept in the books of the various land agencies in the western provinces and the time having been very limited since the passing of the act within which to transfer the records of all odd numbered sections from the head office at Ottawa to the local offices, it is possible that the transfer of records in some cases may not have been absolutely completed by the 1st September. In any case where the record of any quarter section has not been transferred, application will be accepted but will have to be forwarded to head office to be dealt with.

As it has been found impossible as yet to furnish sub-agencies with copies of the records of the odd numbered sections and in view of the large probable demand for entries, all applicants for entry upon odd numbered sections are strongly advised to make their applications in person at the office of the Dominion Lands Agent and not through a Sub Land Agent. Applications for even numbered sections may be dealt with through the Sub-Land Agent as before if desired.

J. W. GREENWAY,

Commissioner of Dominion Lands,
Winnipeg, August 22, 1908.



Synopsis of Canadian North-West Homestead Regulations

Any even numbered section of Dominion lands in Manitoba, Saskatchewan and Alberta, excepting 8 and 26, not reserved, may be homesteaded by any person who is the sole head of a family, or any male over 18 years of age, to the extent of one-quarter section of 160 acres more or less.

Application for entry must be made in person by the applicant at a Dominion Lands Agency or Sub-Agency for the district in which the land is situated. Entry by proxy, may, however, be made at an Agency on certain conditions by the father, mother, son, daughter, brother or sister of an intending homesteader.

DUTIES:

(1) At least six months' residence upon and cultivation of the land in each year for three years.

(2) A homesteader may, if he so desires, perform the required residence duties by living on farming land owned solely by him, not less than eighty (80) acres in extent, in the vicinity of his homestead. Joint ownership in land will not meet this requirement.

(3) A homesteader intending to perform his residence duties in accordance with the above while living with parents or on farming land owned by himself must notify the Agent for the district of such intention.

Six months' notice in writing must be given to the Commissioner of Dominion Lands at Ottawa, of intention to apply for patent.

W. W. CORY,

Deputy of the Minister of the Interior.

N.B.—Unauthorized publication of this advertisement will not be paid for.

Bacteria Cannot Produce Disease
except under conditions favorable to their growth.

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Exerts a powerful influence in increasing physiologic resistance against the growth of disease-producing microorganisms.

As a reconstructive and nerve tonic Cod Liver Extract with Glycerophosphates "Stearns," possesses exceptional merit. It is agreeable to the taste and promptly and readily assimilated.

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Can be administered in inflammatory conditions of the mucous membrane, as it has no irritant effect.

Has the remarkable property of arresting certain kinds of vomiting—notably the vomiting of pregnancy—due to a peculiar bitter principle.

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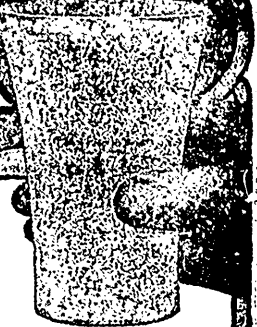
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