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## EDITORIAL

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### GAS POISONING IN WAR.

Dr. R. D. Rudolf, of Toronto, who has been on medical service at the front, and who has returned on account of temporary ill health, states that gas poisoning has not proven as fatal and serious as was at first feared. When the soldier does not receive too heavy a dose, he makes a good recovery. Dr. Rudolf says that out of hundreds of cases that came into the hospital he did not see a single death.

Dr. Rudolf did not see the severer cases, as these had to be placed in some hospital nearer the front; but even in these cases the death-rate was not high. Chlorine gas was the one used in the cases that came under Dr. Rudolf's notice. The chance of recovery is much better when no other poisonous gas has been mixed with the chlorine.

When the dosage is large the irritation is extreme, and asphyxiation may result immediately. When this does not occur and the dose has been a heavy one there results extensive bronchitis, and a marked degree of prostration. There are frequently many blotches and purple spots on the body.

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### THE DOMINION HOSPITAL COMMISSION.

The "Hospital Commission" appointed by the Dominion Government has a large and serious task. Upon it devolves the responsibility of making adequate hospital provision for sick and wounded Canadian soldiers invalided home from the front. Already many Canadian communities have received back from the front cripples or disabled soldiers who only a few months ago marched away full of health and hope. Of the ten thousand members of the Canadian contingents whose names have been in the casualty lists about seven thousand are wounded. Sir William Osler says that about 60 per cent. of wounded recover sufficiently to return to the front. Roughly, then, about 3,000 Canadian soldiers have already been wounded beyond recovery to war fitness. British despatches say that Canadian wounded are distributed

over nearly two hundred hospitals in the United Kingdom. In 46 hospitals in London alone, and 21 nursing homes, Canadian sick and wounded lie, and in 25 hospitals in Manchester, 8 in Bristol, 5 in Edinburgh, 4 in Glasgow, 4 in Dublin and others. As many of the more seriously wounded recover to convalescence, they will return to Canada, and the new commission will be charged with the duty of seeing that none of them is unprovided with proper care. This is one of the sacred obligations of a country to its brave defenders, and the personnel of the new commission, of which the president is Senator Lougheed, assures that its task will be well done.

The commission will be composed of Hon. Senator Lougheed, K.C., leader of the Government in the Senate and Acting Minister of Militia in the absence of General Sam Hughes. The other members of the commission are: Col. Sir H. M. Pellatt, K.C.V.O., Toronto; Hon. Col. Sir Rodolphe Forget, M.P., Montreal; Smeaton White, of *The Gazette*, Montreal; John S. McLennan, of Sydney, N.S.; Lieut.-Col. Thomas Walker, M.D., of St. John; Frederick W. Avery, of Ottawa; Col. C. W. Rowley, of Winnipeg; J. H. S. Watson, of Victoria, B.C.; the Director-General of Medical Services, Canadian Militia, Ottawa, and Clarence Smith, of Montreal.

One of the main duties of the commission will be to arrange for suitable hospital accommodation for all the wounded and sick Canadian soldiers who may return to this country for treatment. By this means their restoration to health will be greatly enhanced and their return to duty hastened, while the cost to the country will be reduced.

Among the powers vested in the commission are: To select medical and nursing staffs and to appoint such other personnel as may be needed for the management of hospitals and homes, provided that a general schedule of pay and allowances be submitted for approval by the Governor-in-Council; to call to the aid of any department of Federal administration in particular to use the machinery of the Militia Department, to draw on that Department for supplies, stores and equipment, and to utilize the services of divisional and district staffs; to incur, control and authorize expenditure connected with the treatment and care of the sick and wounded as well as with the organization, administration and maintenance of hospitals and homes.

All expenditures incurred or authorized by the commission will be made a charge against the war appropriation vote, or when that vote ceases to be operative, against some other special fund set aside by Parliament. This commission through its president will have direct access to the Governor-General.

## DISEASE IN THE ARMY.

One of the most noteworthy events of the war is the almost complete disappearance of typhoid fever. Nearly all the soldiers have been vaccinated, and there has been very little sickness from this disease, and almost no deaths. Para-typhoid fever has caused some trouble.

Mumps and measles have given rise to a considerable amount of invalidism. The many bath houses along the coast were made use of as isolation hospitals for these cases, and their spread was soon arrested.

The wastage in this war is largely due to injuries of all sorts. The bullet, the bayonet, the shrapnel, the shell, and the accidents of war have been responsible for nearly all the losses from the fighting ranks. Bullets and not bacilli have done the damage in the French-Belgian campaign.

The more frequent use of the high explosive shell has changed the nature of many of the wounds. As these missile inflict very severe wounds, that prove very difficult to treat.

Lieut-General G. Sterling Ryerson states that the large number of war casualties makes the medical service one of the utmost importance. But it is noteworthy that the Army Medical Corps is rendering a service never known before in the history of war. The wounded are removed by the brave stretcher-bearers at the earliest moment to a field hospital, where they receive proper care. Often doctors go right to the front at the risk of their own lives.

The field hospitals are placed within easy reach of the firing line, and from these go forth the ambulance men. As soon as possible the wounded are sent by motor ambulances, or other conveyances, to the base hospitals, where they are cared for until recovered, or are sent to convalescing homes. The most eminent physicians and surgeons of Britain and France are giving much time to the work of caring for the wounded, and consultations are very frequent events.

Of the work done by the Red Cross Society and the nurses, Lieut-General Ryerson speaks in very high terms of praise.

Speaking of the Canadian hospitals in France, Surgeon-General Ryerson says:

“The Canadian hospitals are remarkably fine in equipment, efficiency, and in the uniformly good results obtained. There are three at least at the front. One, under Lieut.-Col. Shillington, of Ottawa, is at Le Touquet. It is a splendid hospital, and all the staff, both doctors and nurses, are Canadian. It had formerly 620 beds, but has now 1,000. At Le Treport is another hospital, under Lieut.-Col. Bridges, of Ottawa. It is finely equipped, containing 1,000 beds, all under canvas. The third is at Wimereux, under the supervision of Lieut.-

Col. McKee. It accommodates 400 patients. Another Canadian hospital is being established at Etaples, and may now be handling the wounded.

“There are also three field ambulances, all under the direction of Col. Foster, Lieut.-Col. Ross, M.L.A., Kingston; Lieut.-Col. Watt, of Winnipeg, and Lieut.-Col. McPherson, of Toronto, are the commanding officers. Too much cannot be said of the splendid work done near the battlefield by these officers, all of whom have been mentioned in despatches.”

An eminent surgeon in speaking of wounds remarks that the nerves are markedly benumbed; and that soldiers often undergo severe operations without anodyne or anæsthetic. The shock to the nerves seems to render them incapable of carrying the ordinary sensation of pain. The observation of the wounded has done much to remove the common notion regarding the painfulness of war wounds.

With the most violent wounds, the only conscious sensations are usually a sort of cold numbness, preparatory to a fever, and the quieting descent of euthanasia. It is the smaller wounds, not serious enough to bring about this twilight state upon the nerves, which inflict most conscious pain.

In a very small percentage of cases, euthanasia takes on another phase which, though temporarily of benefit to the patient, is a warning of danger to the surgeon. In those rare cases, the patient seems to become unduly exhilarated. His eyeballs expand and he laughs and talks and sings as if inebriated. In such cases the danger of surgical shock following the operation is very grave and often fatal.

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#### MILTON DOCTOR PROMOTED IN BRITISH SERVICE.

Word has been received in Toronto that Dr. Howard D. Harrison, F.R.C.S., of Milton, who was taking a post-graduate course in surgery in England at the outbreak of the war, has been promoted to the rank of major in the Royal Army Medical Corps for his war services. Dr. Harrison is chief surgeon in the Welsh Metropolitan War Hospital in London of 900 beds. He has had many Canadian patients from the front, whom, in a letter to his uncle, Dr. W. S. Harrison, 40 Woolfrey Avenue, he describes as “very bright chaps.”

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A cablegram to Dean Connell from England states that the War Office desires to send Queen's University Hospital to the Dardanelles.

## ORIGINAL CONTRIBUTIONS

## DIPHtheria: ITS DISSEMINATION, PREVENTION AND CURE.\*

By JOHN F. HANLY, M.D.,

Almonte, Ontario.

DIPHtheria, a disease very infective and destructive to human life, long recognized and much dreaded, is now known to be a germ disease. It is caused by an invasion of the Klebs-Lœffler bacillus and by no other, though thought so by many investigators. This germ seems to have different forms due probably to different cultures or periods of growth. It attacks the mucous membranes and the skin denuded of its epidermis. After exposure to infection from 2 to 5 days elapse before manifestations of the disease occur: fever, inflammation of the throat and nasal passages, an exudate covering the tonsils back of the pharynx; at times the nose, mouth and larynx, occasionally the vulva and the skin if broken. This exudate, the chief clinical determining symptom, is ashy gray in color, with white edges and quite distinctive from other membranes. Though at times mistakes occur and good swabs each of the nose and throat will under proper culture soon clear up the diagnosis. The great point of danger in diphtheria rapidly absorbed into the blood and are very poisonous and destructive to cell life and to the organism. The present-day knowledge of the spreading of the disease has taken away from us as practitioners, when we are at a loss to establish a direct connection between our case and a previous one, the chance to talk learnedly of the bad state of the cellars, outhouses, drains and the rotting vegetable matter lying about, chiefly in the spring. Though we are assured by our most learned and scientific investigators that the disease is due solely to the Klebs-Lœffler bacillus, the above idea dies hard, and is not without its advocates to-day.

We do not now believe that the germ is wind-carried, but beyond the chance of droplet infection we must have contact direct; that contact may be through a number of individuals or objects, but to carry the germ contact must take place in some manner. The disease is one of childhood mainly, though often adults suffer. New-born children and elder people seldom suffer unless the exposure to infection has been prolonged to a virulent type of the disease.

Droplets of saliva driven into the air by coughing, sneezing and

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\* Read at Ontario Medical Association, Peterborough, May 25 to 27, 1915.

expectorating will carry the germ to anything within their range; the discharges from the nose and mouth will infect the hands, face, clothing, instruments, utensils of various sorts, bedding, furniture, walls and floor of the room occupied by the patient. Patients allowed out before their bodies have been freed from the germs are most sure to spread the trouble. Unrecognized and concealed cases are most dangerous, because, not being quarantined, they are more likely to come in contact with others. Carriers, those who have the bacilli flourishing in their throats, but who do not manifest any symptoms of the disease, are particularly dangerous, because they are hard to detect, do not know their dangerous condition and can often only be detected by excluding all other sources and then taking a culture of the suspect, which, if thorough, will likely clear up the mystery. One culture should never be entirely relied on, especially if negative; two or three should be taken to make sure. Carriers may be of three classes, those who have recently had the disease, in whose throats the bacillus is still flourishing, but in whose throats cultures have proved to have the bacillus present, and those suffering from a mild form of the trouble without showing constitutional symptoms, these are more than likely to spread the disease.

Arkwright states that on the whole about one-half diphtheria patients are free from the bacillus two or three days after the membrane disappears and about 50 per cent. more is from a week to ten days. Contacts are not likely to retain the bacillus as long as patients. In chronic carriers antiseptic gargles, sprays and swabs, antitoxin and vaccination have not always been successful in freeing the throats from the germ. Vaccination with killed bacilli has given the most reliable results. We may often be quite puzzled to establish contact, but if we remember how children will handle everything in sight and reach, and how incessantly their fingers are in their noses and mouths, one can easily see how the disease will spread. Domestic pets are often carriers and if even suspected should be quarantined where they can do no more harm. Books, papers, toys, and games have all been found to carry the trouble.

Prophylaxis of diphtheria is of equal or perhaps greater service to humanity than even the cure. The greater number are benefited thereby. It depends on the prevention of the spread of the disease and the care of those suffering from it. Should we find a case, our first duty is to quarantine it and give it proper treatment; if a child of school age, the school authorities should be notified as well as the M.O.H.

Dealing first with the patient presumably at home, or in centres of large populations in a hospital, he should be placed in a light, airy

room, well warmed and ventilated, on a bed with springs and mattress, not ticks, either feathers or anything else; all surplus furniture and curtains to be removed; his utensils and dishes all kept here and washed and cleaned here. All cloths, etc., receiving discharges of any kind to be burned, all others to be put in disinfecting solutions before being removed from the sick room. Those who have been exposed to the infection should receive an injection of antitoxin and should be quarantined for 10 days to two weeks, carefully watched during this time. If patient had been at school, the children of the school should be examined, especially those from the same room. All absences for the previous two weeks should be carefully enquired into and the homes visited, if necessary, to make full enquiries as to the health of all the inhabitants of those homes. In this way many cases may be traced and placed under proper supervision. The schools to be cleaned and fumigated properly. If more than one case appears the school had better be closed for a period more or less shortened by the condition of the epidemic. It has been found that the apparent immunity of the newborn has been due to the colostrum of the mother's milk and is good for a short period of varying length. This is a fact worth investigation. In disinfecting by heat it is well to remember that exposure of the gum to 60 degrees centigrade or 140 degrees Fahrenheit for five minutes destroys. The antiseptic solutions of various drugs at their ordinary strength are quite sufficient to kill the bacillus, and a really dry gum is a dead gum.

Hewlett has prepared an endotoxin which has given good results in clearing throats of the bacillus, but as it contains the toxins of the disease, great care and small doses are needed in its use. Various forms of cutaneous trouble due to bacillus of diphtheria when unrecognized have spread the disease rapidly. Antitoxin in such cases usually puts an end to this form. A spray of 24-hour-old broth culture of the staphylococcus pyogenes aureus for the local treatment of the throat of carriers used two or three time a day, has given good results and no bad effects noted. In children, enlarged tonsils and adenoids, to be treated properly, but if possible surgical operations to be avoided during an epidemic, those of low vitality to be built up and made strong. In immunization the New York City Hospital records state of 80,000 cases immunized with antitoxin, only 182 developed the disease, and of these 182 only one died. In immunization by antitoxin, Park, of New York, says the dose should be repeated in 10 days, because the antitoxin produced in one species of animal is rapidly eliminated in another. We also find that in some children after a dose of antitoxin the antibodies are increased in their own bodies for a time.

In a series of guinea pigs given 10 units of horse-produced serum, after 7 days less than one-half a unit was found, at the end of 14 days less than one-twentieth. Another series was given 10 units of a guinea-pig-produced serum and they held the immunity much better; at the end of 14 days one unit was still contained.

Another series was given 500 units of horse-produced serum; at the end of 14 days the guinea-pigs contained but  $1\frac{1}{2}$  units. We find that a certain percentage of antitoxin is destroyed daily and that larger doses prolong the immunity, so that a child that gets 300 units gets an immunity for 10 days or so. One thousand units will protect from months. If it was possible to produce serum from two to three times, and very likely anaphylaxis much less.

Adults require relatively smaller doses for immunization than do children. The amount of antitoxin to the c.c. of the blood of the individual to be protected should not be less than 1-20 to 1-10 of a unit, giving 10 days' immunity. There is no method of investigating clinically the amount of toxins in the blood, and if it was possible to do so how could the amount already absorbed by the cells be ascertained. The dosage of antitoxin can only be determined by experimentation, and we now have abundant data to go by.

The cure for diphtheria for nearly 20 years has been antitoxin. It has rapidly come to the point that no other form of cure is attempted unless a supply of antitoxin is not procurable. When it first became available, we used it with fear and trembling, due to the very radical change and newness in treatment. We gazed in amazed delight at the throats a few hours later and found the disease disappeared almost by magic, the patient better and showing it, and no bad effects. At first its cost was a bar, but when its effects became well known, that did not stand in the way. In administering antitoxin we must remember that it is antitoxic, not antibacterial, and we must not neglect the local measures that put an end to the bacteria of the throat and nasal passages. Spraying, swabbing and gargling with antiseptics such as peroxide of hydrogen, solution of biniodide and bichloride of mercury, and irrigations with salt solutions are all very useful for the local treatment. Some have applied antitoxin locally and report success. Antitoxin being antitoxic and having a disease that secretes toxins in the body rapidly and also the chief danger to that body being the poisonous action of these toxins, we desire to eliminate them as rapidly as possible and administer antitoxin by subcutaneous, intramuscular or intervenous method, sometimes by the mouth of rectum for the purpose of neutralizing the toxins, and our dose must be large enough to neutralize the toxins already developed and to have some over to



neutralize that being formed at the local point of disease, while we are exterminating the bacteria there. Antitoxin being harmless, all authorities are agreed that the serum of the animal from which it is produced is found to be the cause of the rare cases of anaphylactic shock. The large single dose of a concentrated antitoxin or globulin is more likely to eliminate the shock, as it very rarely seems to occur except in repeated doses. The unit of toxin is the amount that will kill a guinea-pig in four days. The unit of antitoxin is the amount that will just neutralize 100 units of toxin. The dosage of antitoxin differs the world over. In Boston light cases get from 6,000 to 10,000 units, repeating if improvement does not follow; in moderate cases 10,000 units, repeated every 6 hours, bad cases from 20,000 to 30,000, repeated every 6 to 8 hours till 200,000, 300,000 or even 400,000 units have been given. In Philadelphia Municipal Hospital one-half to one-third these doses are given.

Koplik, of New York, advises a maximum of 20,000 units.

Whyte, of the Isolation Hospital, Toronto, advises 10,000, 20,000 to 40,000 units. Many of our best physicians differ greatly as to dosage for either age, size, or severity of the disease. After 12 years' experimentation in New York the following dosage was found to be quite satisfactory: Very mild cases, 2,000 to 3,000 units initial dose; moderately severe, 4,000 to 6,000 units initial doses; very severe, 8,000 to 10,000 units initial dose; laryngeal patients, 6,000 to 10,000 units initial dose.

More than 25,000 for a child, or 50,000 units for an adult was found to be unnecessary and useless, and probably an initial dose of 10,000 units in a child to 20,000 units in an adult is sufficient for the whole course of the disease. Antitoxin by the mouth is found to have some efficiency, also by the bowel, but given subcutaneously is the best method to use except in severe cases of long standing; then intervenously gives much more rapid action of the antitoxin, which then acts immediately on the toxins in the blood and seems to induce the cells to give up rapidly the toxins they have absorbed. Subcutaneously the absorption of the antitoxin may be found to be the greatest at the end of the second day. The over-sensitiveness or anaphylaxis of some patients, particularly those who have asthma or status lymphaticus, to serums, raises a strong question as to whether these patients should receive a dose of serum at all. Goodall says pointedly that in severe cases of diphtheria he would risk the anaphylactic shock. In such cases a very good reason presents itself for a large single dose of antitoxin, in the fact that repeated doses increase the over-sensitization of the patient. Goodall also says that in using antitoxin as a prophylactic the life history of the

child should be closely inquired into, as those who are weak are often affected adversely by antitoxin. In February last I was called by a farmer some 10 miles from my home about 9 o'clock one night and was told to bring antitoxin enough for himself, his wife and six children, as they had been exposed to the infection of diphtheria that day. I went, and gave all a dose ranging from 300 units to baby eleven months old, to 1,500 units in the father and mother. One girl of 11 years, about twenty minutes after receiving 500 units, while watching me give another its dose, fell headlong to the floor unconscious, striking her head hard on the bare floor. She was picked up and placed on a couch, the mother assuring me that she often fainted; but she did not come out of it for some time, and I got very anxious. She was given hypodermically two 1-40 gr. of nitrate of strychnine, and after half an hour gradually came to. She was then put to bed and by morning was nearly herself again. I finished giving the serum to the rest, at the request of the parents, and had no further trouble and no infection. It is not within the scope of this paper or the time allotted to me to discuss intubation, tracheotomy, post-diphtheritic paralysis or any of the after-effects if complications.

In any case, the early use in the disease of a sufficient dose of antitoxin, these are very rarely or never seen.

I have to gratefully acknowledge my thanks for help to the officials of the Provincial Laboratory, to Dr. Whyte, of the Toronto General Hospital; to Mr. Wm. Grant, of Parke, Davis & Co., who kindly loaned me some literature, and to my own little library's various text-books.

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### THE NEW SERUM TREATMENT FOR EPILEPSY.

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**W**HEN discussing the treatment of epilepsy, our first thought is directed toward the large, the formidable array of remedies which have been lauded, used, abused and discarded in the treatment of this malady. Thinking of epilepsy, the general practitioner has in mind the awful chronic disease, considered incurable, the occurrence of which in his practice makes it incumbent upon him to disclose to the interested parties that his medical skill has encountered a foe which he cannot hope to successfully cope with.

Having thus done his duty, the family physician will often see the patient return to him with the request for such alleviation as he, under the circumstances, may obtain. At such time it is a patient who has

resigned himself to his disastrous fate, that now comes for treatment to the doctor who first diagnosed and prognosticated his case.

Before this the patient has, in most cases, consulted every person, layman and professional, and has been a victim of every remedy that seemed likely to afford relief. For epilepsy has more medicinal failures and more quackery to its credit than most any other human affliction.

Thus the first period in the epileptic's career is ushered in. The period of resigning himself to adopt the lesser of two evils, the evil of accepting medication which slowly but surely, as a limping messenger arrives in time at its goal; a goal that is everything but cheerful, an end that spells in most cases "mental deficiency" and worse, for the patient.

Epilepsy has engaged the mind of people ages ago, and we find indeed this condition referred to as the "morbus sacra," the sacred disease of the ancients. That a disease, such as epilepsy, should appeal most powerfully to the superstitious and ignorant and lend itself readily to exploitation by the designing, lies within the very nature of the thing.

So when we look back into the remedies once applied for epilepsy, and their number is legion, we encounter through the misty past the sorcerer, in all earnestness and with a self-assertion befitting a worthier thing, going through his antics in an attempt to "cast out" the demon from the epileptic, the possessed one.

Truth compels the admission that as far as the poor epileptic is concerned, the fervor of the holy medicine man of the dark ages, whose treatment consisted in banishing the demon from the patient's body by the use of red-hot irons, has done as little good as has the modern M.D. who followed in the wake of the ancient faith healer, with his armament of inefficient and too often harmful remedies.

At first thought it would seem that where so much had been tried, nothing new could be found; men's ingenuity to be exhausted and that epilepsy would continue to baffle science as it has done from time immemorial.

The question in the reader's mind must be whether this treatise will record the announcement of a new and really valuable remedy, something that is fit and better than our present-day treatment for epilepsy, something to supplant the old method of epilepsy therapy; or will the new remedy discussed here share the fate of countless other therapeutic measures and go down into oblivion as a new fad, a fancy, a tried and found wanting remedy?

We all have been taught to look upon epilepsy as a lesion of the

brain cortex and into the hands of all of us, metaphorically speaking, have the apostles of such teachings pressed a good-sized club with which to knock epilepsy into temporary abeyance whenever this enemy raises its head. The name of this club, as all know, is bromide, the accepted routine treatment for epilepsy. So we have indeed on our errands of ministrations to the sick met the dreaded foe and dealt a stunning blow with the chief anti-epileptic sedative. We have thus actually subdued epileptic attacks, for a spell anyway, and gave the patient freedom from seizures, which for social and physical reasons made him grateful to our skill of prescribing.

Experience has unmistakably shown that striking thus at epilepsy the patient could never be protected against part of the stunning force inflicting some injury upon him, too. Sooner or later, but at all events too soon for the unfortunate victim of epilepsy, there becomes manifest a general sluggishness, confusion and irritability of temper are becoming more frequent, mentally as well as physically, the patient retrogrades, forgetfulness may be noticed and often a very unpleasant skin eruption, the well-known bromide rash, makes its detested appearance. Thereupon we discontinue with the bromide and promptly the temporarily suppressed epileptic seizures reappear with renewed and increased severity, leaving the patient after the attack in a far worse mental stupor than was the case before the event of bromide medication. The observing physician begins to suspect that bromide has disguised, while not stayed the progressing mental decay of the patient, while being charged with the drug.

Other remedies are resorted to until, being pressed by the patient and family, who seem to consider the arrest of the attack the paramount desideratum, much advertised combinations of bromide are called to aid, and so the work of destructive bromide brutalization, if you please, is carried on.

All this is to no other avail than to keep the patient for varying periods from attacks at a price fearful in every respect, as it costs the patient's mental equilibrium, his mental soundness, his sanity.

Statistics and authoritative opinion support my claim, that the use of bromide has permanently deprived many epileptics of what sound mentality the disease itself had left them, has sped the way of many such patients over the borderline that separates constitutional disease from insanity. Those who incline to look upon this statement as an exaggeration, should look to the multitude of bromidized insane, incompetent, degenerated, homicidal, perverted epileptics who abound in institutions and private homes everywhere. After having seen enough of these unfortunates, compare them with the few epileptics whose good

luck, amidst their misfortune, it was to be under the guidance of people who stoutly refused to bromodize their charge. That epilepsy itself, without the agency of brain sedatives, does not rapidly deteriorate who do intellectual work and whose capacity for real work remains at par in the ratio to their abstinence from bromide. In connection with this one might mention well-known historical epileptics such as Nero, Caesar, Mohammed, Napoleon and others.

When a remedy is found that will reduce the number and severity of seizures, arrest attacks and gradually increase the length of spell-free intervals and do all this without in any manner impairing the mental or physical condition of the patient, then may we rightly assume to have entered the gateway which will ultimately lead to complete recovery from epilepsy. The new serum treatment for epilepsy, to which I desire to call attention, contemplates just such programme, and we shall see how far it has progressed.

A new therapeusis, the production of a anti-epileptic serum, could naturally follow only in the wake of a new pathology of epilepsy. It became evident that the present-day views of etiology and pathology of epilepsy were untenable, that our present-day theories do not harmonize with certain phenomina as elicited in carefully-selected and treated cases with the new serum.

The metabolism of the epileptic is pathological, as is evidenced by the fact that waste and food products are converted into epileptogenic toxins instead of being disposed of in the manner incidental to a normal non-epileptic metabolism. The appearance of septic infection in an epileptic results in an increase of epileptic condition, either in point of severity or frequency. This is due to the epileptic attractive principle of the epileptic's blood, which means that the blood possesses a specific affinity, a characteristic action of utilizing products of metabolism for the production of epileptogenic toxins, absorbing and retaining the same.

The intestinal flora furnishes a very important source of supply for the converting of septic material into toxins. Epileptogenic toxins are thus manufactured and absorbed into the blood stream where they accumulate. In turn these toxins circulate through the system, poison the brain centres and under symptoms of toxicity, autointoxication, give rise to confusion, mental derangement, paralysis, convulsions, epilepsy. Patients who commit gross errors of diet and in other ways cause intestinal irritation or sepsis, experience, as a rule, increased epileptic manifestations. Convulsions due to gastric irritation, in non-epileptics are not uncommon. The occurrence of intestinal fermentation and putrefaction, often accompanied by great abdominal disten-

sion, is equally characteristic as a forerunner of seizures in many epileptics. On the other hand, if a non-epileptic partakes of the same food and commits the same onslaughts upon his diet, or becomes burdened with intestinal conditions which mean so much trouble for the epileptic, no grave consequences ensue and certainly no epileptic attacks result therefrom.

Doctors have tabooed various foods and formulated a restricted diet, the gist of which dietary is the recognition that something in the epileptic's economy possesses the power to manufacture these foods into products, favorable to the release of epileptic seizures. Diet the patient as we may, there always seems active some agency drawing from whatever available food and waste material of the epileptic's system sufficient epileptogenic toxins, absorbing the same into the blood stream, bathing and saturating every cell of the body and registering its presence by the release of epileptic seizures. That these toxins are produced from foods and sources which do not effect the non-epileptic, strongly hints to a vast difference between the mechanism of the non-epileptic and epileptic metabolism. The converting of body material into epileptogenic toxins, neurotoxic material, is due to the pathological metabolism of the epileptic, the epileptic metabolism. It is part of the function of this faulty metabolism for the blood to possess a characteristic affinity for these toxins, to seize and retain such in contradistinction to the function of a healthy metabolism, which would throw off these products as waste. So we have a pathological metabolism plus toxemia, the latter depending on the first. This is the foundation upon which the new serum treatment is based. That the epileptic's blood possesses characteristics wholly unlike the blood of the non-epileptic is amply demonstrated by several interesting experiments. If, for instance, the blood serum of an epileptic is injected into a healthy, non-epileptic person, no noteworthy effects are elicited. But if such serum be injected into an epileptic it gives rise to a specific reaction, increase of attacks, sometimes very severe, confusion, headache, dizziness and other toxic disturbances, besides local reaction in the form of redness, soreness and swelling at the site of injection. These experiments are founded on the simple and wonderful mechanism of osmosis, so strikingly brought back to our notice and made valuable by the Abderhalden reaction principle. For instance, if a rabbit is prepared for anaphylactic reaction and the serum of an epileptic hypodermically injected in such rabbit and then the cerebro spinal fluid of the same or other epileptic be subdurally injected in the rabbit, their result, epileptic seizures in such animal. But if the serum or the fluid be from a non-epileptic, there will be no such reaction. The location of injection may

be altered, so that the serum is injected subdurally and the spinal fluid hypodermically, yet the epileptic attacks will result. The important point and the mechanical principle upon which the success of the experiment rests is that the two substances, spinal fluid and serum, be from epileptics, so that by the process of osmosis, one may meet the other. Accepting the theory of toxemia as the cause of epilepsy, it stands to reason that the proper remedy must be one that is capable of detoxicating the blood, free the system from epilepsy-producing toxins. This alone, despite its appealing importance, will, however, not suffice for their removal. Elimination and neutralization of these toxins, there remains what I have termed the epileptic attractive principle of the blood which is the responsible perverted metabolism. This continues to seize upon body material, waste and food, and convert the same into epileptogenic poisons. This, too, then, has to be overcome, something must be done to arrest or blight this epileptogenic function, some agency introduced into the patient's economy which will interfere with, counteract or destroy this pathological action.

As long as these toxins are manufactured they will accumulate until sufficient to irritate the cortex into epileptic explosions. Depending upon the degree of the amount of toxins present, but not less so upon the state of cortical resistance, the toxin influence will be light or severe, the attacks ranging from a slight, fleeting confusion of a few seconds' duration to the most violent and severe attacks of status epilepticus, consisting of perhaps a hundred spells, one succeeding another rapidly, accompanied by the violence of feces and urine and not infrequently terminating in the patient's death. It is self-evident that the greater remedy would be one which would, as mentioned before, give battle to the epileptogenic feature of the epileptic's metabolism. There are, no doubt, constituents in the epileptic's blood which exercise the pathological function of intoxicating. Everything in the field of experience and research points clearly that way. Could we introduce some element into the blood stream, in the presence of which the epileptogenic function could not assert itself, in the presence of which the *specific selective function of the brain cortex* were subdued, then we are justified in taking courage at the prospect. Such agency should attack the ultramicroscopic organism or whatever is the responsible element in the epileptic's blood; it should by the blood stream be carried *neutralizing the cortical cells' function of uniting with epileptogenic toxins such ferments as result in epileptic attacks*. The element introduced must be one that does in no way interfere with normal cerebration, it must not stun, not anesthetize the brain's sensibility, for if it does that it is no longer a curative step at all, but merely a disguise for

a condition still remaining. Such a substance, moreover, should not be of foreign element, but one closely, very intimately, related to the patient's body fluid, so that complex combinations, unattainable in chemical laboratory, may find entrance into the system and so that the still unrefuted principle of "like cures like" may assert itself.

Such a substance would have the office of charging the patient's blood with constituents, in the presence of which the epileptic attractive principle could not function, it should weaken or render powerless these forces. In theory the ultramicroscopic organism, responsible for epileptic seizures upon the introduction of antiepileptic elements, receives an abundance of material which they, by virtue of their own attractive character, are bound to attack. This attack, contrary to the attack upon other products, results in the splitting up, setting free or processing of antiepileptic toxins, perhaps more properly termed antiepileptic ferments. The more of these antitoxins are caused to course through the blood stream, the less becomes the activity of the epilepsy-producing constituents, toxins or ferments, present in the patient's economy. It is very likely that the cortical cells set free a specific secretion, not found in any other cells, and that such secretion (of a pathological metabolism) is responsible for epileptic seizures. Remembering that the various organs of the body produce secretions characteristic of the particular organ, which is a conglomeration of cells, like the adrenal, pancreatic, liver, etc, it is a very reasonable assumption that the cortex cells secrete a specific, characteristic substance, not produced by any other organ. This substance exerts the before-named affinity for introduced antitoxins consisting of similar cell substance and is thus supplied with additional ferments with which to ward off epileptic seizures. This process should be considered in the manner of supplying the brain cells with material in the presence of which epileptogenic material present there is neutralized. Repeated bathing and thus blighting of the epileptic brain substance by antiepileptic toxin, will ultimately produce a condition which I have termed the non-epileptic habit. To understand the application of this term we must remember the doctrine (expressed, I believe, by Herring) that every cell is possessed of a memory. Give every cell in the epileptic's economy cause to remember that the epileptic attacks have ceased, by preventing such, and they will actually cease. I would warn from construing these remarks as in any way relating to the otherwise efficient method of suggestion. The memory of cells must be accepted in the light of intricate biological and chemical function, a memory developed by habitual response on the part of the living cell, to the stimulus exerted by certain alkaloids. It may be compared to the drug craving



of a patient whose objective mind, realizing the danger of habitual drug ingestion and in full possession of his sound mentality, desires to discontinue the use of the habit-forming drug. Every drug-steeped cell of his system cries out against the sober judgment of his mind, demanding gratification of the habit, the memory. So in epilepsy, the longer the patient's brain cells are held free from epileptic toxins or ferments, the longer the spell-free intervals, the deeper will the non-epileptic habit be established.

All this applies, of course, only to epilepsy not suppressed by drugs. This epileptic habit demands recognition in connection with Jacksonian epilepsy. Here the reputed cause being pressure upon the cortex, does not give rise to continuous convulsions (*status epilepticus*) in the afflicted individual. The attacks recur with irregular periodicity and severity, sometimes several times daily, then again not for weeks or months, exactly as in other cases (the idiopathic type) of epilepsy. One is justified in asking why the Jacksonian epileptic is not all the time, while the pressure upon the cortex persists, under the influence of such pressure, why not in a "*status epilepticus*"? The confusion increases (if we credit the pressure theory) when we notice that after trephining, exact location of cortical pressure and removal of the same, the attacks do by no means decrease, and that after the operation it is required that the "epileptic habit" be treated. Persistent administration of the accepted standard remedies directed against this "epileptic habit" remains too often utterly fruitless.

May one not reasonably assume that in case of Jacksonian epilepsy, the damaged cortex presents a *locus minoris resistentia*, hence a hypersusceptible area for epileptogenic toxins coursing in the patient's blood and also creative of epileptogenic ferment production by the injured brain cells. The weakened brain cortex offering no resistance to the responsible substance, whether ferments or toxins, are poisoned first or perhaps alone of all the organs and thus enable the observer to notice the registering of the toxins by release of convulsions and mental derangement. Does not treatment of the epileptic habit merely mean to afford the recently damaged cortex time to repair, thereby placing it upon an equal basis of resistance with the cortex of the idiopathic epileptic? Does not this point to some other force in the physiology of the epileptic, some other factor that possesses the power to record its presence upon the cortex by releasing epileptic attacks; a cause remaining and still controlling unabated after removal of the supposed cause? This, too, supports the contention that in the blood, perhaps in the brain (carried to it by the blood) of the epileptic, is contained a epileptogenic material, a toxin which poisons the cortical layer of cells and

results in epileptic attacks. These toxins do not cause continuous seizures because the necessary toxic material is being continuously produced and accumulated and only after reaching a certain ratio to the epileptogenic principle (call it ferment) present in the blood or brain is the charge sufficient to upset the centres. The specific affinity which epileptogenic toxins seem to display for the cerebral cortex, caused epilepsy to be termed a cordical lesion per se, thereby losing sight of the very probable existence of a specific substance, present in *every brain cortex*, which is a product of the cortical cells and which product unites with other substances, homogenous to it and present in the blood. The latter blood constituents are pathological and together with the normal brain secretion produce epilepsy. This peculiar affinity caused me to draw comparisons between epilepsy and rabies. While conclusions to which such comparison tempts may appear rather bold, the fact of a striking similarity remains. Laboratory work conducted with the mentioned similarity in mind, divest first formed conclusions of much of their apparent daring character and lend much ground to expect important developments.

In symptoms as well as in pathology of the two conditions, much similarity may be found. Rabies as well as epilepsy depend upon an unknown, respectively undemonstrated organism. It is only of later date that Noguchi is said to have isolated the organism of rabies. Both diseases have the cortex as a selective site or nidus for the responsible toxins. In epilepsy as well as in hydrophobia, one may observe perspiration, vomiting, pain, mental depression, restlessness, insomnia, joint pain, diarrhoea, constipation, dizziness, tinnitus aurium, dyspnea, muscular contraction and convulsions. In hydrophobia recovery is unknown, (I am aware of the one case cited in literature), and in epilepsy the tenacious recurrence has brought that malady under the head of incurable conditions. In both diseases the fundamental cause is a neurotoxic material (I think a ferment), in rabies the course of travel of the virus to the centres being along the nerves. In rabies, too, immunizing results were obtained long before a responsible organism could be demonstrated, so that treatment of epilepsy by serum injection is, as was the case with rabies, based upon empiricism. Whether anti-epileptic serum influences the germ-destroying phagocytic leucocytes, stimulating the same to increased activity, creating in them, by supplying epileptic nourishment, a habit to act preferably upon epileptogenic substance (either germ, virus or ferment), or whether the serum acts as a detoxicator after having reached the cortex, is not determined. Experiments and clinical results demonstrate that repeated inoculation with anti-epileptic serum establishes freedom from attacks, in a gradu-

ally increasing length of spell freedom. This is true of the animal as well as of the human being.

The protective, preventive, detoxicating and toxin-blighting properties may reasonably be assumed to be inherent in a serum developed from epileptic's blood, laden with epileptogenic substances. This view is materially strengthened by observations to the effect that epileptic toxins automatically produce an antitoxin under certain conditions, in the patient's body (Autogenous). We find that epilepsy at times ceases as if of its own accord, spontaneously. Antitoxins thus formed appear to protect the system for a period lasting until the original cause reasserts itself. This event is followed by the production of new toxins, in excess of the prophylactic dose of the autogenous antitoxin. We all know of cases where epilepsy, after having defied all medication for years, has suddenly ceased, leaving the patient free from attacks for a time, then to reappear. In such instances one is justified in accepting the theory that the epileptic principle of the blood was effectively blighted or counteracted, the pathological metabolism controlled by a sufficient dose of autogenous antitoxin.

This antiepileptic serum, no doubt, was gradually generated as a result of epileptic seizures and set free by some unknown mechanism of metabolism.

#### OVERCOMING DISADVANTAGES.

In overcoming the disadvantages which were part of the early serum injections, such as excessive local irritation and unpleasant toxic reaction, the fact was emphasized that slight changes in competition and mode of procedure are often followed by remarkable and decided alteration of the physiological effects of the so altered product. So, for instance, I have found that anti-rabific virus, used alone, has no anti-epileptic property; epileptic serum alone possesses often highly unpleasant and irritating features, at the same time lacking many of the characteristics pertinent to the attainment of the desired effect. Cerebrospinal fluid, unmixed, also proved ineffectual, while a combination of any of the mentioned substances left discouragingly much to be desired.

Considerable experimentation and long series of tests finally led to the production of an anti-epileptic serum which has its foundation in a method by which all three of the named substances are employed. The anti-epileptic serum gained by my process possesses a minimum of irritating power and has in actual practice proven effective to arrest epileptic attacks, entirely replacing bromide. The present method of preparing this serum is a tedious one, commercially not tempting, and allows of great improvement, which eventually will be obtained. The

results thus far achieved justify the expenditure of some time and patience, as is amply demonstrated by the fact that confirmed epileptics have been kept free from attacks for periods ranging from eight weeks to nine months by no other treatment but the injection of the serum plus administration of intestinal antiseptics. Attacks occurring during the serum treatment were characterized by an unusual mildness and the absence of postepileptic stupor. Physicians who have treated patients by injections of anti-epileptic serum report a decided improvement in the mental condition of their patients. Clinical observations have demonstrated that anti-epileptic serum so prepared is not only fully able to replace bromides as far as the arrest, respectively prevention of the seizures is concerned, but that it also lacks the well-known disastrous drawbacks which attach to prolonged bromide administration. Moreover, considering the mental state of the patient, anti-epileptic serum strongly tends to establish a very noticeable improvement with a tendency toward freedom from attacks, while bromide diminishes this chance in the ratio at which the patient's mental faculties deteriorate by the bromide medication. The state of brain fog and sluggishness so often seen in bromidized epileptics is never experienced with the serum treatment. A balance between the epileptic-attractive blood constituents and the newly introduced protective elements seems to be established, which finally should be maintained without further introduction of new serum.

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#### SOME OBSERVATIONS ON BLOOD PRESSURE.\*

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THE more one studies blood-pressure the more complex the subject becomes. Normal individuals have abnormal pressures. In some it is fairly even under all ordinary conditions; in others it varies much with very little change in exercise, rest, work, or manner of living; notwithstanding these variations much information may easily be acquired that is very helpful, and this will be increasingly so as knowledge of the subject becomes more fully developed by those who have the proper facilities for pursuing this line of research. It is only in the last decade that there has been a marked general interest in the subject, an interest not confined to medical men who study it for the purpose of knowing its bearing in physiological and pathological condi-

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tions and how best to deal with it, but applications for certain callings require a register of the blood pressure of the applicant, notably is this so in life insurance, where it is regarded as a very important element in the risk.

For a working knowledge there must be a concensus of opinion as to what we mean when we speak of *blood pressure*. There is the blood pressure in the various parts of the venous system, in that of the capillaries, in that of the different arteries, and in the various sub-systems of the general system. In an ordinary healthy man aged 20 the systolic pressure in the aorta is about 175 m.m., in the brachial 120 m.m., in the radial 115 m.m., and in the capillaries about 60 m.m.

In its common acceptation it is restricted to the arterial system and in that system to the tension in the radial or brachial artery, the pressure in the latter is slightly higher than that in the former. Blood pressure is the measure of the heart's power to force the blood through the arterial system. Four of the main factors in maintaining this pressure are, the energy of the heart, the resistance of the arterioles, the elasticity of the vessel walls, and the amount of the blood in the vessels.

There are some other terms we use that may be defined as they are commonly understood. There is the *systolic pressure*, which is the maximum pressure in a given vessel during a heart systole. The *diastolic pressure*, which is the lowest pressure in a given vessel during a heart diastole. The *pulse pressure*, which is the variation during diastolic pressures. The *mean pressure*, which is the average pressure at a given point. This, however, is not the half of the blood pressure because the pressure at the systolic level remains for a much shorter time than at the diastolic level, also the first part of the drop is more rapid than the latter part, and these will vary in different individuals, the mean pressure may approximately be taken as about one-third of the pulse pressure. There is the *lateral pressure*, which is that exerted *pressure*, which is that exerted against an obstruction in the lumen of the vessel, and is, of course, greater than the lateral pressure, the difference being the effective pressure that produces the blood flow at the point.

The easiest way to obtain the systolic and diastolic pressures is by the armlet method and the stethoscope. Place the armlet about an inch artery just below the armlet, as the armlet is inflated a pulse beat is faintly heard this becomes rapidly loud then slowly lessens until no sound is heard, now let a little air slowly escape and the pulse beat will return, the reading at which it is first heard on its return will be the *systolic pressure*, as more air is allowed to escape the loudness or amplitude of the beat will be heard increasing until it reaches its high-

est limit, then it quickly dies away. The reading when this fullest sound is heard will indicate the *diastolic* and corresponds with the time when the pressure of the armlet on the vessel is equal to the pressure inside the vessel. The fibrous coat with the encompassing tissues takes the place of the armlet when it is removed. This reading will also be noticed to correspond with the greatest oscillations of the indicator or the sphygmometer.

The normal pressure is best obtained if taken two or three hours after a meal, the person having rested during that time and being in the recumbent position while the reading is made, and having the arm on the same level with the heart. If the pressure is found abnormal it is wise to try the other arm.

*Pressure Readings.*—It is necessary that we know at least approximately the average pressure readings in normal healthy individuals. I have not been able to test this sufficiently to do more than make a fair working scale, and am aware it is likely to require correction. In making this scale I have used the nearest typical numbers for the purpose of easy remembrance:

For age 20, diastolic pressure 90 m.m.; systolic pressure 120 m.m.

For age 30, diastolic pressure 95 m.m.; systolic pressure 125 m.m.

For age 40, diastolic pressure 100 m.m.; systolic pressure 130 m.m.

For age 50, diastolic pressure 105 m.m.; systolic pressure 135 m.m.

For age 60, diastolic pressure 110 m.m.; systolic pressure 145 m.m.

The vanishing point of the pulse when we use the stethoscopes is from ten to fifteen millimeters below the diastolic pressure. The readings for females are said to be about ten millimeters lower than those in males for corresponding ages.

When the person is in the recumbent position the pressure in the arm and leg should be about the same. There is one disease in which there is always about twenty to forty millimeters higher pressure in the leg than in the arm, that is, in aorta regurgitation.

To test the reserve energy of the heart, take the pressure when the person is at rest, then let him exercise such as going upstairs. This should raise the pressure from ten to thirty millimeters higher. If it remains stationary it is because of lack of power in the heart to meet the demand.

While knowing the blood pressure is a very valuable aid in our work we must not place undue weight on a single reading; there should be a series, especially if the readings be abnormal; nor should an observation be too prolonged, because the interruption of the circulation in the extremity will in itself if continued cause changes in the arm pressure.

*Physiological Variations.*—In order to know the significance of blood pressure in pathological conditions we need to bear in mind the variations in healthy persons and the conditions that may change it from normal to a high or low tension. We know that blood tension depends on at least four things, the amount of blood in the vessels, the force of the heart, the elasticity of the arterial walls, and the resistance in the arterioles. These will vary in normal cases in wide limits, by exercise, rest, digestion, fasting, positions of body, altitude, excitement such as from anger, fright, fear, joy or grief. Take an example of muscular exertion—a man, age 26, by running up three flights of stairs, increased his systolic pressure by forty millimeters and his diastolic by ten millimeters. A brisk purgative or a profuse perspiration will lower the pressure. High altitude gives a venous engorgement and hence a lowering of arterial pressure and a quickening of the heart action. As an example of this it was noted in a case that the pulse was 80 and the blood tension 126 millimeters at the sea level, while at six thousand feet above the pulse was 90 and the blood pressure 118.

The kind of air breathed or the food eaten, or luxuries indulged in, will alter the pressure. Tobacco raises the tension, but its continued use or over use will cause a peculiar condition in that the pressure is raised immediately after the smoke and then later there will be a low pressure. A boy in the out-department of a hospital was found to have a systolic pressure of 200 m.m., on enquiring he had just smoked a cigarette; and a young woman with a pressure of 210 m.m. had just previously smoked a cigar. In neither case could any pathological condition be found to account for the high pressure. Thus how very far apart may be the physiological variations.

It might not be amiss to give a quotation from an article in the *British Medical Journal* by Dr. Price on the action of digitalis on blood pressure. It is as follows:

“In regard to the general subject of blood pressure one important point has been elicited. It is this, that in a considerable, indeed in almost a large percentage of cases I have found a considerable fluctuation in the blood pressure from day to day. I am not now referring to variations associated with meals, but to diurnal variations which appear to be quite independent of these. Let me just mention one case to illustrate this. I had under my care a middle-aged man with a systolic pressure of about 150 millimeters, in whom there was a slightly enlarged heart, but no evidence of kidney disease. He was under my observation in the hospital for about five months. For many weeks I kept him in bed and took the blood pressure myself with the same instrument at the same time of day and under precisely the same condi-

tions nearly every day. There were frequent variations up to 26 millimeters. Now if in by no means a small proportion of cases there may be considerable normal fluctuations from day to day we should be very careful in coming to conclusions in regard to the action of drugs on blood pressure in man. It should never be forgotten that any changes observed after the administration of a drug in disease may be due to the natural course of the malady."

To this I would add the question: How much of the variations may be physiological?

*Pathological Variations.*—Each disease has its own particular effect on the system, and the blood pressure so varies that it must be studied in connection with the disease. But if in an apparently healthy person it is found that the systolic pressure is constantly ten millimeters or more above normal, or the diastolic ten below, the diet, mode of living, etc., should be carefully investigated and if after proper regulation of these the hyper or hypotension continues we may be pretty safe in concluding even in the absence of other evidence that some pathological process is at work and it will be wisdom to examine the case from time to time to ascertain what it is, and in the meantime add some medicinal treatment which will be referred to later.

*The Relative Importance of Diastolic and Systolic Readings.*—The constant load the vascular system has to carry is of first importance, and hence no matter what other information is obtained as to the arterial pressure, this should if possible be found. The diastolic pressure is the measure of this load and therefore should be regarded as the measure of arterial tension. It is also the most constant and indicates the load the arteries have all the time to carry and the resistance the heart has to overcome as it begins its ventricular systole. Its variations also correspond more closely to the mean pressure.

The following illustrates the constancy of the one and the variability of the other. Three men run a race and their systolic pressures were increased 10, 18 and 37 millimeters, respectively, while the diastolic remained the same. In another race in which the ages were 30, 35 and 50, the diastolic remained the same for ages 30 and 50, while the man of 35 had his slightly lowered. Their systolic pressures were increased 25, 20 and 27, respectively. I saw a patient in consultation this spring with a systolic pressure of 190, a diastolic of 90, and the vanishing point of the pulse-beat under the stethoscope was 25. I saw him again in three weeks when his health had markedly improved, his systolic pressure was 224, the diastolic 95, and the vanishing point 20. Thus while the systolic increased 24 millimeters, the diastolic had increased only 5. These are not isolated examples of the constancy of the diastolic pressure, as may be verified by anyone.



A physician is called in consultation and take only the systolic pressure. The excitement caused the patient by his coming may have run the systolic 15 or 20 millimeters above that which the attending physician regularly found it, not so would this be found as to the diastolic.

Janeway cites two cases illustrating cardiac strength, which also very forcibly show the value of the diastolic pressure. A man aged 26, while at rest had a systolic pressure of 135, a diastolic of 100, and a pulse pressure of 35. After running up three flights of stairs his systolic was 175, his diastolic 120, and his pulse pressure 55, showing a good cardiac strength. Another man whose systolic pressure was 140, diastolic 100, and pulse pressure 40, after two minutes' exercise he had a systolic pressure of 155, a diastolic of 125, and therefore a pulse pressure of only 30, which shows a deficient musculature. If the systolic alone had been considered we might have thought the increase from 140 to 155 indicated a better heart than that of 135 to 175, but the diastolic had increased disproportionately in the latter, so giving us a lessened pulse pressure and indicating a lack of reserve vitality.

*The Gravity of High Tension.*—One very important effect of high tension is on the arteries themselves. The fibrous coat may be regarded as practically fixed in the matter of distention. Now if the tension in the blood be increased the inner coat of the vessel will be pressed outwards and as the fibrous coat is fixed, the vasa vasorum will be compressed between the two coats and hence the nutrition of the vessels will be interfered with and degenerative changes will ensue due to this lack of nutrition and the efforts of nature to overcome the abnormal tension. Also this increased tension will mean extra work for the heart. This in time will cause hypertrophy, then the normal action of the coronary vessels will be adversely affected and this will result in degenerative changes in the heart tissue with the usual sequence of results.

If we follow this inquiry in the various systems of the body we will note similar results. Take the digestive system in big eaters, and most people eat too much. More food is taken than is required and vessels that are by nature intended to supply blood for normal conditions have in these cases not only to do so to dispose of the food required to sustain the body, but also of the excess that is being continually taken, hence a high pressure in the digestive system and to a lesser extent hypertension generally with its accompanying ill results. Such also will be the results in the vessels of the stomach when that organ has to masticate for the teeth. Long continued strain either physically or mentally gives the same sequence of events. As a corollary it will

be very evident that one vessel or set of vessels will not give the story of all the vessels. One radial may be more sclerosed than the other. The vessels of the digestive system more sclerosed than those in the cerebral, or vice versa.

While high tension invariably leads to arterio sclerosis, it must not be forgotten that all cases of arterio sclerosis are not necessarily cases of high blood pressure. Rudolf, in a series of observations, states that in only about 50 per cent. of cases of well-marked thickening was the pressure above normal, and that there may even be fatal cases of arterio sclerosis, with the tension but little raised. Another writer states that in five hundred cases of healthy miners four hundred and sixty-nine had normal blood pressure, yet four hundred and fifty-six had palpable thickening of the arteries.

*Preventative Treatment.*—Preventative treatment is the most important and the most difficult to carry out because as a rule the physician is not consulted until the high tension has produced ill effects. If adults were examined as a matter of routine every two or three years, especially as to blood pressure, the average length of life would be increased. Insurance companies recognize this and there is an advocacy of offering a free examination once a year to their policy-holders, believing it would more than compensate the companies financially for the outlay by an average lengthening of the lives they have insured.

For example, it is noted in an individual after repeated examinations that the blood pressure is abnormally high, 10 to 15 millimeters or more above that which it should be. On investigation it may be found due to excessive use of tobacco, or that the person is eating too much, or not masticating properly, or that the excretory organs are at fault, there is constipation with its attending results, or the skin is neglected and not kept properly cleaned, or impure air is being breathed, or there is too long continued mental or physical strain, or the blood pressure is the result of some morbid process and nature may be overdoing her work. By a study of the underlying causes much may be done to lessen the pressure or prevent it increasing by giving counsel as to the manner of living, regulation of exercise, lessening of the amount of food taken, limiting the proteid diet, restricting tea, coffee and alcohol, and having attention given to the proper elimination of waste products.

Toxæmic sources should be removed, as decayed teeth, pyorrhœa, chronic appendicitis, cholecystitis, prostatitis, etc.

How often some one in the prime of life and in apparent good health dies suddenly. Probably in most of such cases there has been long-continued hyper tension, and had it been known the person could

have been given such advice and his life so regulated that it would have been prolonged.

In some cases nature comes to our aid. Through over-work on the heart the mitral valve gives a little and there is some regurgitation, sufficient to lower the tension somewhat and so prevent the heart going on to failure or the occurrence of cerebral hemorrhage. Thus in cases of high tension a leaky heart may act as a safety-valve and not be such as to call for digitalis or other heart drugs.

*Treating Blood Pressure Medicinally.*—This is by no means an easy thing to do. It requires both skill and good judgment, because in some part of the system there may be sclerosed vessels and the general pressure will have to be raised in order that sufficient blood be supplied to the diseased tissue to nourish it and enable it to do its work. A cirrhotic liver or a chronic nephritis will require much hypertension in order that these organs come at all near their proper and necessary functioning. Take a man of sixty with œdema of the lowe extremities, dyspnœa, or very little exertion and a systolic pressure of 160. He had been dieted, amount of fluids limited, has been allowed very little tea, coffee, tobacco or alcohol, and the bowels have been freely evacuated; yet there has been but little improvement. Very frequently in such a case if digitalis or strophanthus be given, the tension raised to say 180, there will be a marked improvement. Here with high tension, sclerosed vessels, a laboring and deficient circulation, digitalis, while it still further increases the tension, has really lessened the work of the heart because if we take the pulse pressure and multiply it by the pulse rate we will get a criterion for the amount of work the heart does; then take the increased pulse pressure after the drugs have shown their therapeutic effects and multiply this by the pulse rate and the product is less owing to the lower rate of pulse, therefore less work has been done, and in addition because of the lengthened diastole the heart itself has been rested, also better nourished, especially so if it is true that the circulation in coronary vessels is carried on mainly during diastole.

In addition to the digitalis and strophanthus, there should be extra elimination. Ten to thirty grains of blue mass two or three time a week, followed in six or eight hours by a saline, will give beneficial results.

When the patient is doing well he may be given ten grains of potassium nitrate, ten grains potassium bicarbonate, and from three to five grains sodium nitrate in hot water or an aperient water every morning. This will have a marked benefit in keeping down the tension. As an addition to this a dose of blue mass and saline every week or two.

In the use of depressor drugs it is well to bear in mind that they vary as to their length of action, the establishment of tolerance, and that it is not fully proven how beneficial they really are. Glonoin is grs. 1-100 acts for about an hour and a tolerance is soon established, so that the dose has to be increased. Sodium nitrite in two-grain doses lasts about six hours, and there is no establishment of tolerance. Manitol nitrate, a drug I have not used, is given in grain doses and its effects last about six hours, with no establishment of tolerance.

When the heart begins to fail, practically no matter how high the tension, we must have recourse to the digitalis group of drugs, and our sphygmometer will aid us in noting improvement.

#### SOME CONCLUSIONS.

1. Blood pressure may vary physiologically in the same individual with wide limits.
2. It varies comparatively among individuals where we would expect it to be the same.
3. Several readings should be taken before arriving at a conclusion, and all the factors considered.
4. The diastolic reading is more important than the systolic in indicating the work the heart has to accomplish.
5. There may be arterio sclerosis and a normay pressure.
6. Preventative treatment is of first importance.
7. Attention to diet, work, rest, elimination, etc., will accomplish more than drugs and is safe ground to work upon.
8. Blood pressure so far as findings and investigations go is still in its infancy, and no man's statements should be regarded as necessarily absolutely correct.

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#### ANTIPHLOGISTINE.

Antiphlogistine is a physiological antagonist of the inflammatory process—deep-seated or superficial. It produces marked osmotic action upon the swollen tissues, thus relieving congestion because of its hygroscopic, hydrophilic properties. It is antiseptic, soothing and promptly effective.

Antiphlogistine provides the best, most agreeable and convenient known means of supplying continuous moist heat, in all inflammations. This can be maintained for 24 hours or longer, at a uniform temperature. Ordinary poultices soon become cold, clammy and uncomfortable to the patient and lose any remedial effect they may have had, before becoming cold.

## PERSONAL AND NEWS ITEMS

Dr. R. A. Pyne, Minister of Education for Ontario, has been gazetted lieutenant-colonel of the Army Medical Service and honorary colonel of the Canadian militia.

Prof. Irving Cameron, of Toronto, now acting as consulting surgeon of a large military hospital, has been gazetted lieutenant-colonel of the Army Medical Service.

Mrs. Madden, wife of Dr. Madden, was drowned 15th July, near Forester's Island, off Deseronto. She was married to the doctor only one month.

Doctors at the front are doing very strenuous duty. Doctors are often compelled to perform operations without advice from a colleague that would otherwise demand a consultation.

Dr. Edward Sheffield, of Edmonton, has sailed for England to join the Royal Army Medical Corps.

Dr. S. J. N. Magwood, of Dovercourt Road, Toronto, who is going to the front as one of the reinforcements of the Army Medical Corps, was presented with a handsome wrist watch by the members of the staff of St. Michael's Hospital on his leaving for Montreal on his way to the Old Country.

Mrs. Palmer, who died recently, is survived by four sons, all doctors—Dr. George L. Palmer, Dr. Robert Palmer of Detroit, Dr. James Palmer of Toronto, and Dr. Laurel Palmer, captain at Niagara camp.

The Canadian Government, under the chairmanship of Senator Lougheed, Acting Minister of Militia, has organized a movement for the proper care of the wounded returning from the front. The commission will take up the administration of all hospitals and convalescent homes. It is intended to bring home all who can make the trip. The more serious cases will be treated in the immigration building, Quebec.

Captain Scrimger, M.D., Canadian Medical Service, belonging to Montreal, was received by the King at Windsor Castle and was decorated with the Victoria Cross.

Lieut. D. E. Staunton Wishart, M.D., son of Dr. D. J. Gibb Wishart, of Toronto, who has been acting in the Royal Army Medical Corps, has been ordered to the Mediterranean.

Dr. Pyne, while in England, inspected sites for Ontario's contribution to the British Medical Service. The contribution will take the form of a primary hospital, not a convalescent home as lately suggested.

The women doctors of Toronto, who have been working steadily for years to secure a hospital, have now opened one at 125 Rusholme Road. It has 21 beds.

Dr. Francis Delafield, of New York, a distinguished physician and pathologist, an author of many standard medical works, and consulting physician at the illness of President McKinley, following the latter's assassination, died 17th July.

A Winnipeg jury brought in a verdict of guilty against Dr. Russell Dumas, who was charged with using instruments unlawfully. Mr. Justice Metcalf sentenced him to five years in the penitentiary.

Dr. Montague, former Minister of Public Works for Manitoba, has received orders to report to the director-general of the Canadian medical department at London for service. He has been given the rank of major, with the honorary rank of colonel.

Toronto dentists have made the very generous offer of attending to the teeth of those enlisting, and, when necessary, supplying artificial teeth free of charge.

At a meeting of the Women's College Hospital and Dispensary, held in the new quarters, 125 Rusholme Road, Dr. Geraldine Oakley, of Northampton Hospital, Northampton, Mass., was appointed medical superintendent, and Miss Florence Martin, assistant superintendent. Dr. Oakley is a graduate of the University of Toronto of 1912. The new hospital will be opened shortly.

Lieut. J. W. S. McCullough, who is in charge of the sanitation at Niagara camp, has been promoted to the rank of major as a reward for his work. Major McCullough was Provincial Health Officer and qualified as a lieutenant in the Army Medical Corps after the war broke out.

Major G. H. Wilson, M.D., has been appointed to examine those who go to the training camp at Niagara, as soon as they arrive after being passed by the local examiners. This would avoid going on with training and later on be found unfit for service abroad.

Dr. Velyien Ewart Henderson, M.A., M.B., of the medical faculty of the University of Toronto, has received an appointment from the militia as head of the Alien prisoners' detention camp at Kapuskasing, Ontario.

Militia orders announce the promotion of Lieut.-Col. G. S. Ryerson, of Toronto, to be honorary surgeon-general.

Mr. Irving H. Cameron, professor of surgery in the University of Toronto, accepted the position tendered to him by the British Government. He has been appointed honorary visiting surgeon on the staff of the King George Hospital, Red Cross and the Order of St. John of

Jerusalem, the great institution with 1,600 beds recently founded in Waterloo Road, London, for the soldiers of the Empire who require treatment for their wounds.

Hon. Dr. T. S. Sproule, member for South Grey, will retire from the House of Commons and accept a seat in the Senate.

Thirty-two physicians and 75 nurses, comprising the Chicago unit for service with the British army, have gone to England. The physicians will receive commissions in the British Royal Army Medical Corps.

Major E. B. Hardy, M.D., who is in command of the No. 2 Field Ambulance, has been mentioned by Field-Marshal Sir John French, for gallant and distinguished service at the front. His home is in Toronto and he has been connected with the army for ten years.

Sir Charles Tupper, Bart., M.D., has passed his 94th birthday in the enjoyment of excellent health, and taking a keen interest in all that is going on. He is in England at present.

Dr. Howard A. Kelly, of Baltimore, was in Toronto for a short visit, and was the guest of Dr. N. A. Powell.

A compilation of all the British casualty lists issued to date shows that the proportion of killed to injured is 23.5 per cent. This is slightly in excess of the percentage in the Crimean and South African campaigns. In the Russo-Turkish war, however, the proportion was nearly 46 per cent. The proportion of killed officers is much higher than among men, reaching in the present war a percentage of 43.6.

Dr. W. Sutton, of Kansas City, connected with the American ambulance hospital in France, who has served with the American Ambulance Corps at Neuilly for five months, recently returned. Dr. Sutton says that there was no lack of hospital equipment or nurses at the time he left. He also asserted that the character of the wounds was changing. Several months ago it was mainly shrapnel wounds that were encountered. Wounds are now produced generally by high explosive shells, which are much more difficult to treat.

The death occurred at Pearl Beach, a river summer resort, on 11th July, of Dr. A. D. McEachren, a prominent Detroit physician, and formerly a resident of Glencoe, Ontario. He was 41 years old. For thirteen years he was superintendent of the Detroit Sanitarium. The body was taken to Glencoe for interment.

Miss Victoria C. Charbonneau, whose home is in Windsor, laid a charge against a doctor, to the effect that he had performed an illegal operation upon her. The doctor was arrested.

The Detroit General Hospital has become the Henry Ford Hospital, and is owned by Mr. Ford. Dr. J. N. E. Brown, formerly medical superintendent of the Toronto General Hospital, is the superintendent of the Ford Hospital.

The Inter-State Association of Anesthetists, comprising the States of Ohio, Michigan, Kentucky, Indiana, Illinois, Tennessee and West Virginia, at their meeting on May 4th, adopted the *American Journal of Surgery* as their official organ. On May 17th the New York Association of Anesthetists took the same action. These associations, with the American Association of Anesthetists, Scottish Association of Anesthetists, Providence Association of Anesthetists, who have previously adopted the *American Journal of Surgery*, makes this publication the official organ of all the representative bodies in the world devoted to this most important branch of the surgical and dental art.

Captain Harry Morell, of Regina, is now acting as pathologist to the Canadian Hospital at Cliveden. His mother was on the Lusitania, but was rescued.

The Saskatchewan Medical Council offered to equip a base hospital for war purposes.

The American Social Hygiene Association has been offered a prize of \$1,000 by the Metropolitan Life Insurance Company for the best essay on the hygiene of adolescents.

Through careful research work in Britain, salvarsan can now be made of excellent quality, and that will measure up to all tests. Another drug that came almost exclusively from Germany was salicylate of soda. Throughout Britain plants are being established for the manufacture of synthetic drugs.

The University of Dalhousie, Halifax, has received a donation of \$30,000 towards the endowment of a chair of anatomy.

Dr. A. H. N. Kennedy, of McLeod, Alberta, has been appointed medical referee under the Workman's Compensation Act of that Province.

Dr. Starkey, of McGill University, has organized a sanitary corps for the Canadian overseas service.

The following have passed the examinations of the Medical Board of Nova Scotia: A. E. Blackett, J. S. Bean, W. A. Cameron, F. T. Dinsmore, P. M. Gittlesen, H. M. Godfrey, J. V. Graham, E. Kirkpatrick, M. Krolik, J. E. LeBlanc, H. S. Moore, M. Shacknore, R. B. Speer, R. R. Withrow, V. D. Davidson, J. S. Chisholm and L. R. Much.

Dr. McIntosh, of Andover, N.B., has been appointed physician to the Indian reserve at Indian Point.

Dr. Darius A. Coon has been appointed medical superintendent of the Kingston General Hospital.

Dr. Alexander Fisher has been appointed medical superintendent of the Calgary Hospital, as successor to Rev. D. A. McKillop.

Dr. Eager has been appointed Medical Officer of Health of the village of Empress, near Medicine Hat, Alta.



The hospital at Plenty, Sask., was recently burned down.

Dr. J. G. R. Stone has been made Medical Health Officer of Anyox, B.C., and Dr. W. H. Wood has been made Health Officer for Ioco, B.C.

The following have passed the British Columbia Council: A. L. Crease, R. E. Coleman, D. F. Shaw, and H. H. McKenzie.

The physicians of Vancouver, B.C., have offered a military hospital of 1,040 beds.

Dr. W. J. Gibson, of Belleville, has now recovered from his recent severe attack of septic infection.

Dr. R. L. Hutton, of Rossthorn, Sask., has gone to Britain to volunteer his services to the War Office.

Dr. H. A. Bruce, of Toronto, has received his commission as lieutenant-colonel, and has sailed for a visit to the military hospitals in France and Britain. He is expected to be away for about three months.

The university medical graduates who enlisted as privates have been granted commissions in the R.A.M.C.. Their names are: G. Allison, S. S. Ball, A. M. Bell, Leming Carr, H. A. Cates, J. Cassels, F. W. Clement, R. C. Coatsworth, T. H. Cruise, D. F. Fraser, H. B. Hamilton, M. R. Helliwell, W. R. Hodge, H. C. Martin, A. A. Moon, P. M. O'Sullivan, H. R. Smith, T. D. H. Storms, S. Y. Wash and D. E. S. Wishart.

The gift of \$60,000 by Mrs. Fulford and Mrs. Hardl, of Brockville, will enable the management to increase the Duchess of Connaught Red Cross Hospital at Cliveden to 1,000 beds. Col. A. E. and Mrs. Gooderham gave \$2,500 to furnish the recreation room, and the Misses Janes, of Toronto, gave \$2,100 to equip the operating room.

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## OBITUARY

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### THOMAS WYLIE.

Dr. Thomas Wylie died at his home, 685 Spadina Ave., Toronto, on 25th June, after an illness of two months. He had not been in robust health for a period of about one year, but was only confined to his home for eight weeks. He died from a severe and progressive form of anæmia. He is survived by his widow, who is in poor health.

Dr. Wylie was born in Toronto on 4th June, 1841. His parents moved to Victoria county and young Wylie grew up in the township of Maraposa. After teaching school for four years, he graduated in medicine from the University of Victoria College in 1866. For some time he practised in Manilla and Duntroon; later on he removed to Stayner,

where he practised for seventeen years. During this time he was twice elected to the Ontario Legislature for West Simcoe. About 25 years ago he came to Toronto, where he followed his professional work till his death.

Dr. Wylie was very widely known and highly esteemed. He had a large practice among appreciative patients. He was a member of a number of societies. He will long be remembered for his unfailing kindness. He was ever ready to do a good turn to all who came to him for help.

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T. G. WILSON.

Dr. Wilson died in Montreal three weeks ago at the age of 66 years. He had practised at Saint Placide for 40 years. For many years he was a well-known figure in the county of Two Mountains. His wife predeceased him by many years, but he is survived by two sons.

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SAMUEL NASH.

Dr. Nash died at Bath, near Kingston, on 7th July, after a short illness. Dr. Nash was in his 82nd year. He was born at Milford, Ont.

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THOMAS CECIL WELDON.

Dr. T. C. Weldon, of Thorold, died recently at the Minnowaska Sanitarium, Gravenhurst, where he had been ill for some time. The flag was at half-mast in Thorold, and the council held a special meeting to attend the funeral, and passed a resolution of sympathy with the bereaved family.

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HARRY WILLIAMS.

Dr. Harry Williams, who was looking after the practice of Dr. Victor Ross, of Hamilton, was shot in the office of the latter by Hepworth Holmes. Dr. Williams was instantly killed. Holmes then shot himself and died soon afterwards. No explanation has been given for this action on the part of Holmes, unless it be that Dr. Williams had refused to treat Holmes, who was consumptive.

The late Dr. Williams was 45 years of age, and was a son of Dr. Williams, of Allenford, Ont., and a graduate of the University of Toronto, 1907. He later took the degrees of L.R.C.P. and M.R.C.S. While

at the Gravenhurst Sanitarium he attended his brother, who was ill of tuberculosis, and through this made a close study of lung diseases. It was there he met Holmes and treated him for lung trouble.

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CHARLES SHUPE.

Dr. Shupe died on the 6th May at his home in Attercliffe Station, Ontario. He graduated from the University of Toronto in 1884.

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GEORGE CLARENCE GLIDDON.

Dr. G. C. Gliddon died on 11th May, as the result of wounds received at the battle of St. Julien. He belonged to the A. M. C. and graduated from the University of Toronto in 1904.

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DANIEL E. BERRYMAN.

Dr. Berryman died, at the age of 70, in St. John, N.B., where he had lived and practised.

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WILLIAM CASE.

Dr. W. Case, of Hamilton, died there in the seventy-ninth year.

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WILLIAM P. DILLON.

Dr. Dillon was on active service in France as a member of the A. M. C. He was thrown from his horse at Le Tréport, where he was stationed with No. 2 Hospital, and killed. He graduated from McGill in 1904, and was in practice in Ottawa.

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J. G. LAYTON.

Dr. Layton, of Cleveland, Ontario, died last April. He had a good practice in Cleveland, but about six years ago his health failed.

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GEORGE A. BLACK.

Dr. Black at one time practised in St. John, N.B. Some time ago he settled at Winthrop Highlands, near Boston. He died in New York last April, at the age of 45.

## THOMAS OVENS.

Dr. T. Ovens died at Newbury, Ont., last April. He practised for some time at Arkona, but went from there to Parkhill. In 1899 he spent some time abroad in study and then located in London, Ont., as a specialist in diseases of the eye, ear, nose and throat. He is survived by two daughters and one son, Dr. Percy Ovens, of Newbury.

## DR. CAMERON.

Dr. Cameron, of Princetown, B.C., died there, in his 71st year.

## JAMES MacARTHUR.

Dr. MacArthur, of London, president of the Ontario Medical Council, died at his home in that city May last. He was born in Ailsa Craig and was in his 60th year. He graduated from Queen's University thirty-five years ago in arts and medicine. He was one of the founders of the London Medical Society.

## BOOK REVIEWS

## THE MAYO CLINIC, ROCHESTER, MINN.

1914 Collected Papers of the Mayo Clinic, Rochester, Minn. Octavo of 814 pages, 349 illustrations. Philadelphia and London: W. B. Saunders Company, 1915. Cloth, \$5.50 net; half morocco, \$7.00 net. The J. F. Hartz Company, Toronto, Canadian Agents.

This is Volume vi. of the Mayo Clinics. Those who are familiar with the volumes that have preceded this one will be in an expectant frame of mind. They will not be disappointed on reading this volume. There are thirty-one contributors to this volume. It is also splendidly illustrated. The various papers deal with the alimentary canal, the urogenital organs, the ductless glands, the head, trunk and extremities, technique and general topics. All that we need to say in reviewing this work is: "Excellent in every way."

## SQUINT.

Its Causes, Pathology and Treatment. By Claud Worth, F.R.C.S., Surgeon to the Royal London Ophthalmic Hospital (Moorfields), Consulting Ophthalmic Surgeon to the West Horn and East London Hospital. Fourth edition. London: John Mole, Sons and Danielsson, Oxford House, 83-91 Great Titchfield Street, Oxford Street W. Price, 6 shillings net.

This book of 250 pages has become the authority on squint. It has

now reached its fourth edition and has been made as perfect as careful revision can make it. The author is to be greatly congratulated upon the results of labor and devotion to this branch of ophthalmology. The publishers have produced a very attractive volume.

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### THE INTERVERTEBRAL FORAMINA IN MAN.

The Morphology of the Intervertebral Foramina in Man, including a description of their contents and adjacent parts, with special reference to the nervous structures. Supplement to "The Intervertebral Foramen." By Harold Swanberg, member of the American Association for the Advancement of Science. An introduction by Prof. Harris E. Santee. Illustrated by 11 original full-page plates. Chicago Scientific Publishing Co., 221 South Ashland Boulevard, Chicago, Ill., 1915. Price, \$1.75.

This is a valuable original contribution to the study of the intervertebral foramina, their morphology, the contents and their function. We can recommend this book to all who wish a clear account of this portion of the anatomy.

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### RELIGIO MEDICI MODERN.

Being the Beliefs and Opinions of an old Medicine Man. By Neo Kama, M.D., London: John Bale, Sons and Danielsson, 83-91 Great Titchfield Street, Oxford Street, W., 1915. Price, 2 shillings 6 pence net.

This is a delightful little book. It is full of fine thoughts and wise sayings. The author says: "If the Creed of Humanity substitutes Humanity alone for God, leaving all other manifestations of life outside, it is a one-sided affair and unworthy of the name of religion." This gives the key to the position taken in the book. This position is cleared up by much sound teaching and wide observation. The book is worthy of a careful reading.

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### INTERNATIONAL CLINICS.

A Quarterly of Illustrated Clinical Lectures and Especially Prepared Articles on Treatment, Medicine, Surgery, Neurology, Paediatrics, Obstetrics, Gynaecology, Orthopaedics, Pathology, Dermatology, Laryngology, Hygiene, and Other Topics of Interest to Students and Practitioners. Edited by Henry W. Cattell, A.M., M.D., and Chas. H. Mayo, M.D. Vol. II., twenty-fifth series, 1915. London and Philadelphia: J. B. Lippincott Company. Price, \$2.25 per volume, cloth.

This is a very fine volume and contains many excellent papers. The volume is well illustrated. The subjects discussed in this volume are: Diagnosis and Treatment, Paediatrics, Medicine, and Surgery. There are twenty-four contributors. This number maintains the high standard of the series.

### PROGRESSIVE MEDICINE.

A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., and L. F. Appleman, M.D. Vol. II., June, 1915. Philadelphia and New York: Lea and Febiger. In paper, \$6.00 a year.

The contributors to this volume are John C. Black, W. B. Coley, John C. Gerster, Edward Jackson and Alfred Stengel. The subjects are Hernia, Surgery of the Abdomen, Gynæcology, Diseases of the Blood, Diathetic and Metabolic Diseases, Diseases of Spleen, Thyroid Gland and Nutrition, Ophthalmology. The volume is a very fine one in a very fine series. It should meet with general favor.

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### MISCELLANEOUS

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#### MEDICAL OFFICERS GIVEN HIGHER RANK.

The following medical men attached to the Canadian A. M. C. are gazetted to temporary lieutenants in the Royal A. M. C.: Lieut. A. M. Fisher, S. S. King, C. D. Hamilton, W. J. Grant, C. A. Greaves, W. C. Gowdey, H. Lasnier, C. W. Morris, A. J. Lomas, T. J. Costello, W. W. Patton, J. J. Thompson, W. F. MacDonald, F. J. Brodie, W. P. Macksey, G. W. Whitman, H. S. Moore, B. E. Lang, A. R. Thomson, J. C. Chisholm, G. F. Hill, H. M. Godfrey, N. MacDonald, R. E. Johnston and Capt. Johnston.

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#### DOCTORS BURNED IN A BARRACKS.

An authenticated statement comes from Petrograd to the effect that the German soldiers in Galicia took a number of wounded Russian troops and the staff of doctors who were attending them and shut them all up in a wooden barracks and set fire to it, burning them to death. In order that the fire might be fierce, paraffin was poured over the building.

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#### COMMISSIONS TO CANADIANS.

The following N.C.I.'s and men of the Canadian Army Medical Corps have been promoted to be temporary lieutenants: Staff Sergeants W. J. Deadman, M.B.; D. A. Fletcher, M.B.; G. M. Shaw, M.B.; Arthur, M.D.; Corp. Williams, M.B.; Ptes. M. G. Murray, M.B.; C. H.

MacLean, M.D.; H. A. Sharmon, M.D.; W. L. Pedlow, M.D.; O. V. Luven, M.B.; Pte. Debeaupre, M.B.; Sergt.-Major Brisco, M.B.; Sergt.-Major Brown, M.B.; Sergt. Ryan, M.B.; Corp. Burwell, M.B.; Corp. Ward, M.B.; Ptes. Diamond, M.B.; MacFarlane, M.B.; McKenzie, M.B.; Millan, M.B.; Stewart, M.B.; Glace, M.B.; Cronk, M.B.; Fisher, M.B.; Box, M.B.; Howson, M.B.; MacKinnon, M.B.; Jarmag, M.B.; Clark, M.B.

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#### DR. F. A. C. SCRINGER'S BRAVERY.

*The Gazette* says: "Captain Francis Alexander Caron Scrimger, medical officer, 14th, on the afternoon of April 25, in the neighborhood of Ypres, during a charge, advanced to the dressing station in some farm buildings where were being heavily shelled by the enemy. He directed, under heavy fire, the removal of wounded, and he himself carried a severely wounded officer out of the stable in search of a place of greater safety. When he was unable alone to carry this officer farther he remained with him under fire till help could be obtained. During very heavy fighting between April 22 and 25 Captain Scrimger displayed continuously day and night the greatest devotion to duty among wounded at the front."

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#### PROFESSOR KEEN'S RESEARCH FELLOWSHIP.

Prof. W. W. Keen has established the Corinna Borden Keen Research Fellowship in the Jefferson Medical College, the income from which now amounts to 1,000. The gift provides that the recipient of the fellowship shall spend at least one year in Europe, America or elsewhere (wherever he can obtain the best facilities for research in the line of work he shall select, after consultation with the faculty), and that he shall publish at least one paper embodying the results of his work as the "Corinna Borden Keen Research Fellowship of the Jefferson Medical College." Applications, stating the line of investigation which the candidate desires to follow, shall be forwarded to Dr. Ross V. Patterson, sub-dean, Jefferson Medical College, Philadelphia, Pa.

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#### DR. AND MRS. AIKIN'S GARDEN PARTY.

On the afternoon of 24th June, Dr. W. H. B. Aikins and Mrs. Aikins gave a very delightful garden party at the Academy of Medicine to the Fellows and their wives. The function was very well pat-

ronized. Refreshments were served and pleasant conversations were the order of the day. This is only one of the many good things Dr. Aikins is doing to assist in building up the Academy.

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## MEDICAL PREPARATIONS

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### THE PALLID SCHOOL GIRL.

In view of the modern methods of education, which force the scholar at top speed, it is not to be wondered at that the strenuous courses of study prescribed for the adolescent girl more than frequently result in a general breakdown of both health and spirits. Each winter the physician is consulted in such cases and almost always finds the patient anemic, nervous and more or less devitalized. In most instances a rest of a week or two, together with an efficient tonic, enables the patient to take up her school work again with renewed energy. Pepto-Mangan (Gude) is just the hematinic needed, as it acts promptly to increase the red cells and hemoglobin, and to tone up the organism generally. It is particularly suitable for young girls because it never induces or increases constipation.

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### VIBURNUM IN CRAMPS OF CHOLERA MORBUS.

Hayden's Viburnum Compound presents Viburnum Opulus and Dioscorea Villosa in their most refined and active state, and when given in hot water it will be found as useful in the cramps of cholera morbus as it is in dysmenorrhea. This excellent antispasmodic well deserves a trial in all conditions of cramps anywhere in the body.—*Critic and Guide*, May, 1915.

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### THE HAY FEVER PROBLEM.

This is the time of year when the services of the physician are actively demanded by the victim of vasomotor rhinitis—a season dreaded not alone by the patient, but, not uncommonly, by his medical adviser as well. Particularly is this true of the latter if he has not kept abreast of modern ideas on the therapy of hay fever. In any event the disease is one that tries the patience and calls for the application of remedial agents that have been proved beyond peradventure. Happily there are a number of such agents from which the physician can choose—products that have passed the experimental stage and demonstrated



their serviceability. We refer in this connection to some members of the Adrenalin family—Adrenalin Chloride Solution, Adrenalin Inhalent, Anesthone Cream, Anesthone Inhalent. These products, in all of which the isolated active principle of the suprarenal gland (Adrenalin) is an active constituent, have rendered long, efficient service in the treatment of hay fever, and one feels no hesitancy in heartily commending them.

Adrenalin Chloride Solution, which is perhaps more widely used than any other preparation in the treatment of hay fever, is sprayed into the nasal chambers and pharynx by means of a hand atomizer adapted for aqueous liquids, or it may be applied on a pledget of cotton. For the former purpose it is advisable to dilute the solution as marketed (1:1000) by the addition of four or five times its volume of physiologic salt solution.

Adrenalin Inhalent, which is a solution, in an aromatized neutral oil base, of the suprarenal active principle, is well adapted for vaporization and inhalation from an oil atomizer. Used as an adjunct to Adrenalin Chloride Solution, or independently, it gives good results, parts not accessible to other medication being readily reached by the medicated vapor. It should be diluted by the addition of three to four times its volume of olive oil.

Anesthone Cream was devised by Dr. J. E. Alberts, of The Hague, Holland. It contains Adrenalin and a harmless local anesthetic (para-amido-thyl-benzoate), incorporated in a neutral ointment base, and is applied to the inside of the nostrils four or more times a day, the patient snuffing it well up after each application, the quantity required being in size about that of an ordinary pea. It affects a relief which continues for hours in many cases, a fact worth remembering when one considers the fleeting effect of most local anesthetics.

Anesthone Inhalent contains the same active ingredients as Anesthone Cream, but the proportion of Adrenalin is doubled (1:10,000). These ingredients are incorporated in an aromatized neutral oil base. It is sprayed into the nose, first being diluted with olive oil or liquid petrolatum.

Another agent which has been used with marked success in the treatment of hay fever is Mixed Infection Phylacogen. It is administered by hypodermic or intravenous injection. The initial dose should be small, a 2-Cc. dose subcutaneously, or a 1/2-Cc. dose intravenously, being suggested. Many physicians are of the opinion that the use of Mixed Infection Phylacogen marks a distinct advance in hay-fever therapy.

# The Canada Lancet

A Monthly Journal of Medical and  
Surgical Science, Criticism and News

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AND  
WM. EWART FERGUSON, M.B.  
*Editors*

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