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The BULLETIN
OF THE
VANCOUVER MEDICAL ASSOCIATION

Vol. XII. AUGUST, 1936 No. 11

In This Issue:

SOME NEOSALVARSAN REACTIONS
MEDICAL PIONEERING IN BRITISH COLUMBIA
B. C. MEDICAL ASSOCIATION BY-LAWS

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THE VANCOUVER MEDICAL ASSOCIATION

BULLETIN

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VOL. XII. — AUGUST, 1936 — No. 11

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STATISTICS—JUNE, 1936

Total Population (estimated)	247,558
Japanese Population (estimated)	8,055
Chinese Population (estimated)	7,895
Hindu Population (estimated)	320

	Number	Rate per 1,000 Population
Total deaths	223	11.0
Japanese deaths	9	13.6
Chinese deaths	5	7.7
Deaths—residents only	189	9.3
Birth Registrations—Male, 167; Female, 154	321	15.8

INFANTILE MORTALITY—	June, 1936	June, 1935
Deaths under one year of age	14	9
Death rate—per 1,000 births	43.6	26.9
Stillbirths (not included in above)	7	7

CASES OF COMMUNICABLE DISEASES REPORTED IN THE CITY

	May, 1936		June, 1936		July 1st to 15th, 1936	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Smallpox	0	0	0	0	0	0
Scarlet Fever	33	0	25	0	5	0
Diphtheria	0	0	0	0	0	0
Chicken Pox	57	0	46	0	4	0
Measles	17	0	10	0	3	0
Rubella	1580	0	257	0	0	0
Mumps	224	0	174	0	4	0
Whooping Cough	23	0	50	0	4	0
Typhoid Fever	0	0	1	1	0	0
Undulant Fever	0	0	1	0	0	0
Poliomyelitis	0	0	0	0	0	0
Tuberculosis	40	20	33	14	8	
Meningitis (Epidemic)	0	0	0	0	0	0
Erysipelas	4	0	5	1	4	0
Encephalitis Lethargica	0	0	0	0	0	0
Paratyphoid Fever	0	0	0	0	0	0

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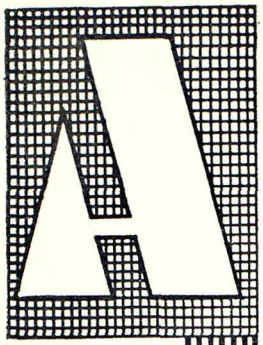

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EDITOR'S PAGE

The annual meeting of the Canadian Medical Association has come and gone, and were we inclined in the least toward flippancy we might epitomize its passing by the words of the uncanonical friar in "Ivanhoe," "*Poculatum est; conclamatum est.*"

The papers presented before the General Sessions and those on the programmes of the various special sections were without doubt of a high average order of merit. They enabled those who heard them read to see men who had, in come cases to some of them, been names only in the world of medicine, sometimes names to conjure with it is true, who now became real persons, whose voices and gestures carried something intangible to their audience which the printed page cannot convey. But a three-ringed circus with side-shows cannot be assimilated at one gulp, and those who felt they could not be everywhere at once took satisfaction in the thought that all the papers would come out in print sooner or later, to be selected and absorbed at leisure.

There has perhaps been a tendency to regard the features of the Convention classed as "entertainment" in rather a deprecatory manner, a catering to our lower natures as it were, since we cannot subsist upon bread alone but demand the circuses as well. It is questioned if this is right. Admitting that we make the scientific papers the *raison d'etre* of the Convention, is not the welfare of the profession in Canada equally served by its social features? If the battle of Waterloo was won on the playing fields of Eton, are not the battles of the theatre, the clinic, the laboratory and public health (and all which that implies) similarly won during our play and social gatherings?

Let us have our reviews, our annual ceremonial parades, appealing alike to eye and ear, losing no sight of their value to every one who attends, however he partitions his time-table. Our workaday world is with us soon enough and often enough.

Solid food which loses nothing by concentration is to be provided in abundance, not as an antidote, still less as an anticlimax to the foregoing. The programme arranged for the Vancouver Medical Association Summer School is exactly what its name implies. Its purpose is not edification or promotion of the fraternal spirit, but the very prosaic one of instruction. Nevertheless this cannot fail, by the very nature of its structure ,to provide inspiration as well.

It is something to hear a celebrity expound and elaborate upon a topic in the grand manner, impressing us it may be with his tabulated array of findings or therapeutic results. But it is another thing to have a man drag out in the open before us one of the bugbears that are worrying us, to witness his unravelling of the knotty problems that have baffled us, to study at first hand his personal demonstration of a technique in diagnosis or therapy, or an operative manœuvre. It is good to be lifted up at times to get a view of the stars and far horizons, but we also need men to show us the steps in the difficult road to the stars.

This is the purpose of the Summer School. It is not a conclave of specialists for specialists. The men who make up the bulk and the weight of our profession, the men whose highest ideals are expressed in their perpetual studenthood, who deal competently with all but a small percentage of human afflictions, these are they for whom the Summer School is designed.

They will find what they want in its varied programme. It strikes too apologetic a note to say that the Summer School should be supported. We are not pleading for patronage. The repeated success and increasing attendance, year after year, which have marked it, are sufficient evidence that the man who does not avail himself of the opportunities offered by it is doing himself and not the Summer School an injury.

LIEUT.-COL. A. M. WARNER

IT is with deep regret that we note the death on July 18th of Lieut.-Col. A. M. Warner, B.A., M.D.C.M., after an illness of nine months. Born at De Lewisville, Ontario, Dr. Warner was educated at Cayuga, and graduated from Queen's University, taking his degree in Arts in 1910 and in Medicine in 1912. He became an interne at the Vancouver General Hospital and entered private practice in Vancouver in 1913. He was a valued member of the Vancouver Medical Association and the B. C. Medical Association.

In 1916 Dr. Warner went overseas with the R.A.M.C. and was appointed O.C. of the Carrier Depot Hospital at Dar-es-Salaam, in German East Africa, which he had built and organized. During his command there 13,000 patients were admitted. He was then sent to Lindi to organize a hospital on similar lines, but became dangerously ill with malaria and was invalided to England. Because of recurrent attacks of malaria he was unfit for service abroad and was attached to Balloon Squadron, Outer Defences of London, as M.O. for a year.

On his return to Canada he rejoined the C.A.M.C. and became attached to the 18th Field Ambulance. He was Officer Commanding the Field Ambulance from 1926-1930, and was appointed Deputy District Medical Officer of Military District No. 11 for four years. He was also Officer Commanding of the Casualty Clearing Station.

Lieut.-Col. Warner was mentioned in despatches by General Van de Venter, and qualified for the Long Service Medal in the C.A.M.C.

We extend our deepest sympathy to his widow and son.

NEWS AND NOTES

The Librarian will be away from the library during the first week of August.

Tentative programmes of the Summer School, to be held on the 8th, 9th, 10th and 11th of September, have been printed in preceding numbers of the BULLETIN. As usual a golf tournament will be held, as well as an official luncheon, to provide an "escape" from the more serious business of the School. The course is intensive, and each session provides highly concentrated material of a kind which should not be missed. The School promises to maintain its customary high standard both in the quantity and quality of its lectures.

Programmes are being enclosed in this issue of the BULLETIN, and will be available in the Library. Following are short notes about the speakers, and the School generally.

Dr. John McF. Bergland, of Baltimore, was at one time Associate Professor of Obstetrics at the University of Maryland, and is now, in addition to being Lecturer in Clinical Obstetrics at Johns Hopkins University, Acting Obstetrician-in-chief at the Johns Hopkins Hospital, Visiting Obstetrician at Union Memorial and Sinai Hospitals, and Consulting Obstetrician at St. Joseph's Hospital, Baltimore. His lectures are planned to interest the General Practitioner.

Dr. C. E. Dolman, Associate Professor of Bacteriology and Preventive Medicine, needs little introduction to medical men in Vancouver. He has done research work with the Connaught Research Laboratories in Toronto, and is now Research Member of the Connaught Laboratories at the University of British Columbia. He is also director of the Provincial Health Laboratories, in Vancouver, B. C.

Dr. Clarence B. Farrar, of Toronto, will hold a clinic as well as deliver three lectures. Those who have heard his lecture on The Evolution of a Delusion are looking forward with interest to the remainder of his papers. He is Director of the Toronto Psychiatric Hospital.

Dr. Irvine McQuarrie comes with high praise from Dr. McKim Marriott, who is unable to keep his engagement with the School. Dr. McQuarrie is a brilliant speaker, and has been doing some outstanding research work in connection with metabolism in relation to specific diseases in children. His lectures will deal with this phase of Pædiatrics.

Those who heard a lecture by Dr. W. M. Paton last winter, in Vancouver, saw some slides which had been prepared by Dr. Gordon B. New, and lent for that occasion. Dr. New, who was at one time a member of the Faculty of Medicine, University of Toronto, is now Professor of Rhinology, Laryngology and Stomatology, Mayo Foundation, University of Minnesota.

Dr. Evarts A. Graham graduated from Rush Medical College, University of Chicago, in 1907. He is at present Surgeon-in-chief at Barnes and St. Louis Children's hospitals, St. Louis, and is the author of "Surgical Diseases of the Chest," published in 1935. He has also edited various books on surgery. He will give two lectures on Thoracic Surgery, as well as one on Surgery in certain phases of Gallbladder Disease, and one on Surgery of the Pancreas.

Dr. Rollin T. Woodyatt, who is a specialist in Internal Medicine, will give three lectures on Diabetes, on which he is an authority, discussing at the same time some of the newer preparations of Protamine Insuline and their uses. He is a graduate of Rush College, and is now Professor of Clinical Medicine at the same college.

All of these men, who are outstanding in their particular field, have planned their lectures so that they will be of special interest to the General Practitioner. Lectures will be held as usual in the Oval Room at the Hotel Vancouver, in the mornings and evenings, and clinics will be held in the afternoons at the various hospitals. Moving pictures will be run in the room adjoining the Oval Room, by the Victor Corporation.

A very cordial invitation is extended to all medical men in British Columbia, and to those in the States to the south. We suggest that they combine a visit to Vancouver's Golden Jubilee with the Summer School.

* * * *

We extend congratulations to Dr. J. S. Burris, of the Burris Clinic, Kamloops, whose marriage to Mrs. William Ketchum took place on the 22nd of June. Mrs. Ketchum is the daughter of the late Capt. and Mrs. H. H.

Worsnop. Dr. and Mrs. Burris attended the meeting of the Canadian Medical Association in Victoria, where Dr. Burris contributed a paper on Thorocoplasty in the treatment of Pulmonary Tuberculosis.

* * * *

Dr. H. W. Riggs has moved to the Medical-Dental Building, where his daughter, Dr. Eleanor Riggs, has joined him.

* * * *

Dr. Wallace Irving was the lucky owner of a winning horse at Lansdowne Park recently.

* * * *

Dr. Bilodeau, who is captain of the Medical Golf team, won the medal round in the Doctors and Dentists Special Cup Annual Tournament. The captain reports that the first sixteen in the medal round will go into match play, and the games will be played off each Thursday. It would appear that the Weather Man approves of this particular tournament.

* * * *

Congratulations to Dr. R. A. Hunter of Victoria, who has recently become the father of a son.

SPECIAL MEETING

About fifty members attended the Special Meeting of the Vancouver Medical Association, held in the Auditorium on Monday evening, July 20th, to hear Dr. D. McFadyen of the Rockefeller Institute for Medical Research, New York, discuss the experimental work that is being done at the Institute in connection with the causes of cancer, and the possibility of building up a resistance to the disease.

Dr. McFadyen spoke from an experimental research point of view entirely. Despite a bewildering mass of material he gave a very clear exposition of his subject. Most of those present were interested in the clinical aspect of cancer, and it was very refreshing to them to see the mental processes which the laboratory investigator brings into play in endeavouring to elucidate the problems of the genesis of cancer.

Dr. Keith moved a vote of thanks to the speaker.

Previous to Dr. McFadyen's address, a film was shown by Dr. C. W. Prowd demonstrating the new Low Voltage Contact Therapy technique in the treatment of concer. The film, which was shown for the first time in America at the meeting of the Canadian Medical Association in Victoria, was extremely interesting, showing as it did photographs of external carcinoma before and after treatment by the new technique. In commenting on the film, Dr. B. J. Harrison said that it opened up new possibilities, being a new use for an old remedy.

SOME NEOSALVARSAN REACTIONS

D. E. H. Cleveland, M.D.

Read before The Osler Club, April, 1936.

In considering the various untoward reactions which may result from the various specifics used in treating syphilis it has been found advisable to limit this paper to those resulting from the use of Neosalvarsan.

Among the reasons for this decision may be mentioned the fact that most of the reactions, and the more serious ones, are due to the trivalent arsenicals, outnumbering those due to the pentavalent arsenicals, heavy

metals and iodides. With two exceptions, the reaction due to insufficiently alkalinized salvarsan, and the so-called "tubing reaction" which occurs with the use of salvarsan only because of the necessary use of gravity apparatus, the reactions are common both to the "old" drug and the "neo." Moreover, in local general practice neosalvarsan, with a few special exceptions in favour of silver-salvarsan, sulparsphenamine and stovarsol, is the drug commonly used. It is to be understood of course that under the term neosalvarsan is included drugs sold under other trade-names, more or less closely approaching it in structure, physical and pharmacological qualities.

The classification of these reactions is that adopted by Moore of Johns Hopkins in his recently published book. By him they are divided first into local and general reactions.

Local Reactions

The chief local reaction with which all of us have had opportunity at some time or other to become familiar is that due to paravenous injection. This is almost always due to faulty technique. This is not the time to go into the details of intravenous technique, and to describe prevailing faults and their correction. There is a great deal of truth in the saying that "It is a poor workman who blames his tools," and while difficulties in the occasional case may appear to be insuperable, I venture to say that with careful selection of one's instruments and the exercise of patience, there is no subject of any age or constitution in whom there cannot be found veins which can be injected safely. Nevertheless there are rare cases in which trouble may be encountered which cannot fairly be blamed upon improper technique. These are cases in which one apparently has no difficulty in entering the vein, getting a free flow of blood back through the needle, and injecting a large proportion or possibly the entire dose without difficulty. Then, either resistance occurs after several cubic centimetres have been injected and any attempt to continue produces signs of local infiltration, or the patient receives the entire solution and may even leave the office in comfort, only to have the signs and symptoms of infiltration occur during the next hour.

I have had three or four cases of the first type, and one of the latter. In the first type I have noticed that the reaction has occurred only after several injections have been given, and in several instances there has been complaint of severe pain in the upper arm or shoulder. I believe this to be evidence of spasmodic contraction of the veins in the upper arm, due to a sensitization by the previous injections. This does occur with overalkalinized salvarsan, is said not to occur with neo, and is apt to be followed by thrombophlebitis. Only once have I been able to detect any thickening in the course of the vein in the upper arm.

In the case of the infiltration occurring after what has apparently been a completely successful injection it is hard to avoid the conclusion that there must have been some seepage through the vessel wall. The greater part or all of the infiltration in each instance was proximal to the puncture. This patient subsequently received injections without difficulty into a vein on the dorsum of the wrist.

General Reactions

Among the general reactions, every writer fifteen years ago included the smell of ether or garlic experienced by the patient during injection. It is difficult to regard this as an abnormal reaction. On the contrary, since it is due to the drug circulating through the vessels of the olfactory mechanism.

In some patients, it is true, the stimulus may be so intense as to overflow and produce nausea and retching. This can be controlled to some degree usually by the patient pinching his nostrils firmly, chewing orange peel or sucking a "Life-saver."

(a) *Gastro-intestinal Reactions.*—The commonest general reactions are those manifested by the gastro-intestinal tract. There may be immediate vomiting, as a sequel to the nausea just mentioned, and which is most likely to occur if the patient has a full stomach. The nausea and vomiting, accompanied by headache and diarrhœa, more often appear from four to twelve hours later, and ordinarily last but a few hours, but may be prolonged over two or three days. The most common cause is dietary indiscretion such as eating too soon after treatment, eating too much or of indigestible foods; or constipation. The patient should take light diet on the day of treatment, eat nothing for three hours before and three hours after the treatment, and if there is any tendency to constipation take a mild purgative on the preceding night. It is wise in view of the possibility of an almost immediate or very slightly delayed reaction, such as vomiting or a fainting spell, to keep the patient in the office for about ten minutes after injection, including three or four minutes on the table. If anything untoward is coming on it will give warning in this time. I know it is common practice to give intravenous injections to patients who are sitting in a chair. I have even seen it done to patients while they are standing up. It only needs one or two unpleasant experiences to make you decide never to put a needle in a vein for any purpose without first making the patient lie down.

Obstinate and prolonged vomiting and diarrhœa, especially if repeated after each injection in spite of ordinary precautions, may be due to an idiosyncrasy to the drug, according to Stokes, whose method of combatting it is to give a tenth of the intended dose, and then wait an hour before giving the remainder. This method is hardly practical with neosalvarsan, unless one uses two ampoules. Appel and Jankelson, believing that such cases, even in the absence of jaundice, are indicative of defective liver function, report success in control of this reaction by the addition of 5% sodium dehydrocholate to the arsenical solution.

(b) *"Nitritoid Crisis."*—Nausea and vomiting are sometimes a part of the symptom-complex commonly called the nitritoid crisis. This acute vascular reaction usually commences during the injection, in some cases immediately after. It may occur with the first injection but more frequently appears only after a later one. Its frequency is estimated at 0.1 to 0.5% of all injections. It has been generally regarded as an anaphylactic prenomenon, but this cannot account for all cases since it may follow the first injection. There appears to be no doubt that most frequently the term "speed-shock" is applicable. It has been shown that the rapid intravenous injection of a large number of different substances into animals can produce the symptoms of this reaction. The reaction does not occur in animals in which the liver has been removed or excluded from the circulation. It is thus evident that the primary disturbance is hepatic, and that some substance such as histamine is liberated or escapes destruction by the liver. This is not the whole story, however, since no matter how rapidly it is injected tryparsamide does not produce a nitritoid crisis. It has something to do with multiple minute emboli formed by intravascular agglutination of the red cells, which sometimes occurs in idiosyncratic individuals with quite slow injection of neosalvarsan. Changes in the suprarenal cortex have been shown post mortem in fatal cases but what etiological role this may play has not yet been estab-

lished. Summed up, it seems that the element of idiosyncrasy exists, that in a majority of cases undue speed of injection is immediately responsible, that the liver-cell is an indispensable factor, and capillary thrombosis or formation of emboli from intravascular agglutination is a frequent occurrence.

The symptoms first complained of by the patient are a sense of heat, palpitation and constriction of the chest. If the process continues, choking cough, flushing of the skin, vomiting and collapse may follow. The patient has a sense of impending death due to the rapid fall of blood-pressure. Death rarely occurs. Angioneurotic œdema of parts of the head and neck occasionally appears, and may be dangerous if tongue or glottis is involved. A generalized urticarial eruption sometimes appears, or occasionally a scarlatiniform rash. The first warning sign which should be observed by the operator before the patient has remarked anything is injection of the conjunctival vessels.

This brings up the questions of prevention and treatment. First, the injections must be given slowly, taking not less than ninety seconds for every 10 cc. To counteract a tendency to rush the injection the small gauge needle is salutary. For routine use a 20-gauge needle is quite large enough, and often a 22-gauge can be used with advantage. Giving the solution well diluted, by diminishing the concentration of drug in the vein, has a similar effect of slowing of the injection-rate, and it also lessens the tendency to irritate the lining of the vein. The amount of solution should be roughly 10 cc. for each three decigrams.

Watch the eye and side of the face and neck of the patient during the injection. The first reddening of the conjunctival vessels or flushing of the skin is a signal to stop. The needle may remain in the vein and if after a few minutes nothing further happens injection may be resumed. If redness persists or the eyes water or the patient begins to cough, withdraw the needle. At this point it may be added that a patient with a coryza due to other causes is not a good subject for treatment. He is more likely to exhibit angioneurotic phenomena, and their onset will be more difficult to detect.

If the reaction develops, with coughing and thoracic discomfort, intramuscular injection of 0.6 cc. of adrenalin will give prompt relief in most cases. If the reaction is very severe and syncope comes on, half of the above dose may be given *very slowly* into the vein. The patient should remain on the table recumbent for at least an hour after a mild reaction, and after severe reactions should be in bed for twenty-four hours.

The probability of a nitritoid crisis is greater in a patient who has had one before. In such a patient special precautions should be taken with subsequent injections. The precautions of slow injection, high dilution and fine-gauge needle should be increased. The probabilities of the reaction occurring during any given injection increase in proportion to the number previously experienced. In cases where it has happened two or three times, and no such contraindication as hypertension or cardiovascular syphilis exists, the injection should be preceded five minutes by 0.6 cc. of adrenalin intramuscularly. Where adrenalin is contraindicated it is advisable to change to silver salvarsan, which produces nitritoid reactions less frequently than the other members of the salvarsan group.

(c) *"Medical Shock."*—A less common vascular reaction is that described by Orr of Edmonton in recent years under the term "medical shock." This differs fundamentally from that just mentioned. It is due to capillary paralysis and adrenalin is useless. The drop in blood-pressure and disappearance of the radial pulse is the predominant symptom from the onset, due to

the sudden great increase of the vascular bed to dimensions greater than the blood-volume. At least a litre of normal saline should be given intravenously at once, and more given if the blood-pressure falls again. In Orr's clinic it is a rule that when a patient with apparent nitritoid crisis fails to respond to adrenalin within three minutes, medical shock is assumed and intravenous saline at once started.

(d) *Herxheimer Reaction.*—After the gastro-intestinal and vascular reactions the commonest encountered is the therapeutic shock or Jarisch-Herxheimer reaction. This consists of a focal and a general reaction. It is generally assumed to be due to the sudden destruction of large numbers of spirochætes and the liberation and absorption of their endotoxins or proteins. Although there is a difference in their biologic nature and there is no local reaction with neosalvarsan, there is a close analogy in their focal and general reactions between the Jarisch-Herxheimer and tuberculin reactions.

In early primary syphilis the reaction is of little importance. Fever of 100–103°, often preceded by chills, usually occurs a few hours after the first injection, together with general malaise. Swelling of the chancre together with the regional lymph-nodes occurs, and any other cutaneous lesions present are temporarily intensified. If no rash has yet appeared it is apt to make a sudden and widespread appearance within the next 36 hours.

Focal reactions such as have just been described in connection with surface lesions, exhibiting œdema and packing of the tissues with plasma cells and lymphocytes, may occur in syphilitic lesions anywhere in the body and in any stage of the disease. They are serious or not depending upon the location of the lesion. For instance, a subperiosteal gumma may be productive of intense pain as a result of a Herxheimer reaction, but may not be dangerous. But a gumma of the larynx may react with fatal results. In cardiovascular syphilis an undetectable involvement of the coronary orifices may react to produce a coronary occlusion. An aortic aneurysm may react with fatal consequences. Again, a marked cerebral vascular involvement, often unpredictable, may react to produce cerebral hæmorrhage. The cerebrovascular reaction occurs less frequently and is more apt to be delayed for days owing to the relatively small amounts of neosalvarsan reaching lesions in these vessels. A reaction in a hepatic lesion may result in sudden portal obstruction and ascites.

The Herxheimer reaction rarely occurs with the second injection. If it does it suggests underdosage, an inefficient drug or a resistant strain of organism. It is of interest to record that I have seen it occur in three different early cases with the use of neosalvarsan after the patient had received, without reaction, two or more doses of the preparation which is so popular in the government dispensaries.

Since involvement of vital structures may already have occurred in moderately advanced and late syphilis, sometimes the lesions being undetectable, it follows that no previously untreated or inadequately treated case should receive any treatment without a thorough preliminary examination, including a careful case-history. No such case should receive neosalvarsan at the outset, unless possibly with a very small dose such as one decigram under conditions permitting careful observation. The slower therapeutic approach, as Stokes terms it, with mercury, is the best precaution to take in all moderately advanced and late cases, even when examination has shown no contraindication to salvarsan. The course of mercury will be dictated by the type of involvement found or suspected, but should not be less than a week of five mercury succinimides or its equivalent.

(e) *Skin Reactions.*—The dermatoses which may occur during neosalvarsan treatment are of very considerable importance on account of the frequency of their occurrence, their great variety, and the necessity of realization of their significance. One eruption while quite striking may be of very little significance, while another less conspicuous may be a grave warning against continuing the treatment.

In morphology every type may be exhibited: macular, papular, vesicular; scarlatiniform, morbilliform, urticarial; œdematous, exudative and desquamative; herpes simplex, herpes zoster and purpura. It must be recalled that the syphilitic exanthem may appear as the expression of a Herxheimer; that iodide, bromide, phenolphthalein, quinine, aspirin and other drugs, either taken at the direction or without the knowledge of the medical attendant, may produce eruptions. Neither syphilis nor neosalvarsan confer any immunity towards the numerous cutaneous diseases which occur in other people, including the eruptive fevers and bacterial, mycotic or parasitic diseases of the skin.

It cannot be expected that everyone who treats syphilis has the necessary experience to interpret these eruptions, but there is a certain minimum—the ability to recognize skin-lesions of serious significance with regard to further treatment—which is essential.

Although much remains to be learned about the classification of the eruptions due to neosalvarsan they can be divided fairly accurately into those not due to sensitization and those which are due to it.

Roughly speaking, those of an erythematous, urticarial or scarlatiniform type, those which develop first on the trunk, and which are not itchy or itch but slightly, are usually not evidence of sensitization, and subside with continuation of treatment. The erythematous forms usually occur after the first or second injection, more often in women, may be accompanied by considerable fever as well as malaise and enlargement of lymph-nodes, and are thought to be due to lighting-up of bacterial infection following the transient general lowering of resistance due to the drug. The symptoms clear up usually in two or three days.

Herpes simplex and herpes zoster are relatively rare and there is no evidence that they are due to sensitization.

Eruptions commencing more often on the extremities, especially involving the flexures, accompanied by much itching, and often showing early scaliness, are danger signs. They are usually morbilliform or erythematosquamous and demand immediate suspension of treatment and a general survey of the situation.

Such an eruption may suddenly explode into an exfoliative dermatitis without warning. Or it may occur in very mild form and of brief duration after each of several injections before the more serious and dangerous stage supervenes. Other early warnings may be generalized itching without a rash, fever or malaise for several days after each injection. Never fail to ask the patient before each dose how he felt during the two days following the last injection, and especially ask if there was any breaking-out on the skin or itching.

When such warnings as have been mentioned occur treatment must be halted until the eruption subsides. Then wait two or three months and give 0.025 (twenty-five milligrams) of silver salvarsan or properly alkalinized salvarsan. Increase the dose by 0.025 each week until 0.15 (150 milligrams) are reached, after which the weekly increment up to the normal dose may be 0.05 (fifty milligrams). If any itching, dermatitis, undue

malaise or fever or alterations in the leucocyte count occur, the question of sensitization may be regarded as settled, and the patient should never receive any salvarsan preparation in future.

Where there is intense itching with the original eruption, or if it is vesicular or desquamative, tolerance testing as described above is not safe, and sensitization should be assumed to exist definitely.

Dermatitis generally occurs early, most cases occurring within the first twelve or fifteen injections. Certain types of skin, especially the seborrhœal, seem more prone to exhibit sensitization. Focal infections are thought by Moore to have little to do with the sensitization dermatitis, but interference with such foci during the reaction is dangerous.

As shown above, sensitization can be detected by intravenous testing, but although many attempts have been made, it has not yet been found possible to show it definitely by any form of skin test.

The major sensitization dermatoses may be regarded under the head of exfoliative dermatitis into which they develop unless forestalled by early recognition of the warning signals already mentioned. The general erythrodermia, accompanied by areas of exudation, occasional vesiculation, generalized œdema of the skin and abundant exfoliation often extending to complete loss of hair and nails, the intense irritation, chilliness and profound prostration, present a picture readily recognized and unforgettable.

The treatment requires complete bed-rest and hospitalization. Itching is best relieved by inunctions with sterile oil or lavish dredging with sterile starch and talcum, and the free use of the colloidal bath. The latter is also of much use for removing debris and scales from the skin, thereby contributing to the patient's comfort. The bed-linen should be sterile and frequently changed, and trauma and further risk of skin infection minimized by sterile bandages on the hands. Fluids should be forced and saline cathartics used.

Sodium thiosulphate has for too long been regarded as a specific of antidotal properties in this condition. The most contradictory theories have been adduced to account for its action, and what small amount of experimental work as has been done has failed completely to support any of them. The observations of Moore of Johns Hopkins are considered of great value here, and his statement published in 1933 is: "In spite of seven years' experience with it, I have seen no evidence that the drug is of any value whatever, either in arsphenamine dermatitis or in any other type of arsenical or heavy metal intoxication. . . . In the last year we abandoned it as worthless."

With regard to calcium salts Moore states that they may have some value presumably because of their probable value in hepatic damage commonly associated with post-salvarsan dermatitis, and because of their supposed effect on decreasing capillary permeability. He knows of no definite experimental evidence of the favourable action, if any, of calcium, but he has the impression that it is of some value, certainly more than sodium thiosulphate.

My own experience is comparatively very limited, but I have not used sodium thiosulphate in salvarsan dermatitis in the past ten years and have used calcium gluconate in a number of cases which have all cleared up satisfactorily, including one case which had been previously treated with thiosulphate without improvement.

With regard to purpuric rashes, it may be remarked briefly that they are evidence of sensitivity in the hæmatopoietic system and further salvarsan medication is contraindicated.

In concluding the remarks about salvarsan dermatoses it would be well to add that there is no evidence in support of the theory sometimes put forward that the occurrence of a skin reaction is of good prognostic import regarding the syphilitic infection.

B. C. MEDICAL ASSOCIATION

NOTES FROM THE OFFICE OF THE EXECUTIVE SECRETARY

An Act respecting *Master* and *Servant*—Chapter 154

Copies of this Act should be in the hands of all Doctors working under Industrial contracts and they should be conversant with its content.

Remit twenty-five cents to Charles F. Banfield, King's Printer, Victoria, and secure one.

It provides that thirty or more workmen may request deductions from wages for medical service after selecting a medical practitioner.

The contract is between the workers and the doctors and any change can only be made in a proper way between these two parties.

The "Master" includes a body of persons corporate or unincorporate and his duty is defined clearly in Section 13, subsection 3, with responsibilities set forth in Sections 15 and 16 and penalties provided in Sections 14 and 17. All of this should prove interesting and of value to doctors involved. We have heard of contracts where adjustments could be effected through this instrument. This information is published with a hope that it may be helpful.

* * * *

The questionnaire circulated to the members of the College of Physicians and Surgeons by the Committee on Economics is returning completed in large numbers. We hope that every doctor will make his return even though it be "nil."

The information is already proving valuable. Some contracts pay poorly and in some cases doctors work under conditions which make it imperative that they be well remunerated, otherwise it may prove to be a "short life and a weary one."

Salaried positions are not covered specifically but we should have all such information. There could surely be a revision upwards in many cases. A doctor's training and experience must produce an increasing revenue during his most active years. This office aims to help the medical man to increase his income and receive some adequate return on his investment.

We would urge your co-operation in replying to this questionnaire, giving all the data you can. It will help your Committee to help you.

* * * *

The Canadian Medical Protective Association was founded at a meeting of the Canadian Medical Association held in Winnipeg, 1901 (35 years ago).

It has functioned fully and developed great strength during its thirty-five years of service to its membership, who are very satisfied and full of appreciation and cognizance of its value.

The objects of the Association are set forth in the Constitution:

(a) To support, maintain and protect the honour, character and interest of its members.

(b) To encourage honourable practice of the Medical profession.

(c) To give advice and assistance to and defend and assist in the defence of members of the Association in cases where proceedings of any kind are unjustly brought or threatened against them.

(d) To promote and support all measures likely to improve the practice of medicine.

The Canadian Medical Protective Association is protective and every member of the profession in this Province should avail himself of this privilege of membership. Inquiries addressed to the office of the B. C. Medical Association will place you in contact with one of the finest service institutions in Canadian Medicine.

* * * *

Committee Chairmen of the B. C. Medical Association met at luncheon on Monday, July 20th, at the Hotel Georgia. Dr. G. F. Strong presided and outlined briefly the type of work expected of each Committee. The response was enthusiastic and each committee head proved by his comprehensive discussion of his particular field that the Association has an active year ahead of it which can only result in a successful culmination.

The Committee on Constitution and By-Laws is under the chairmanship of Dr. H. H. Milburn; Programme and Budget, Dr. Colin Graham; Cancer, Dr. A. Y. McNair; Study of Economics, Dr. A. W. Hunter; Public Health, Dr. J. R. Naden; Medical Education, Dr. D. M. Meekison; Maternal Welfare, Dr. W. S. Turnbull; Credentials and Ethics, Dr. W. Lyall Hodgins; Pharmacy, Dr. E. Murray Blair; Osler Memorial, Dr. G. E. Gillies; Medical History, Dr. J. H. MacDermot; Editorials, Dr. D. E. H. Cleveland; Membership, Dr. W. L. Pedlow; Nominating Committee, Dr. A. B. Schinbein.

This year's Executive Committee is rapidly taking form and the additions expected include the representatives of all the Medical Societies throughout the Province. District Societies should notify the Hon. Secretary, Dr. J. R. Naden, 203 Medical-Dental Building, Vancouver, when the local representative is appointed, and also send in the names of new officers, especially the President and Secretary, when any change is made.

* * * *

We have had letters of inquiry relative to Relief Medical Services.

Provincial Medical Relief. Accounts are paid when authorized and approved by the Government Agent or Disbursing Officer and must be rendered in triplicate at the first of the month.

Destitute, Poor and Sick Fund is separate from Provincial Relief, and these accounts should be forwarded, properly approved, to Mr. J. H. Creighton, Parliament Buildings, Victoria. These people are difficult to define, but are being supported largely by public funds. One class which is included is the older person mostly unemployable who is not eligible for Old Age pension through being under age or lacking residential or other qualifications. These persons are known to the Government Agents.

Municipal Relief. Inquiries regarding remuneration for work done for cities, municipalities, etc., or what might be classed as organized communities, reveal a condition which should be remedied.

The Municipal Act—R.S.B.C. 1924, Chaper 179, Part XXII, Section 464—reads:

> Duty of Municipalities to provide for poor and destitute.
>
> "It shall be the duty of every city and district municipality whether created under any general Act for the time being in force or any special Act, to make suitable provision for its poor and destitute."

This clearly places this responsibility for Medical Relief on the shoul-

ders of the City Fathers, even if they do shrug them in an effort to shift it to those of a traditionally willing profession.

* * * *

Facts and Figures on Health Insurance

1. I. S. Falk in "The Fundamental Facts on the Costs of Medical Care," tells use that the United States spends about $30 per person per year on health costs, of which about $24 is spent through private channels. Of this he says 39.8% or $9.55 goes to remunerate physicians for the private work which they do.
2. The volume entitled "Medical Care for the American People" of the Committee on the Costs of Medical Care gives the following costs per person per year for certain medical service plans operated by industrial and other concerns in the United States—$36.00, $30.00, $21.02, $17.46, $14.59, $12.48 and $10.48. (It is impossible that the government can duplicate the conditions under which these figures are adequate.)
3. Based on present actual expenditures on medical care, the Michigan State Medical Society gives the following figures as its estimate of the cost of full medical care for everyone, per person per year:

(a) General practitioner of medicine	$ 5.00	
1. Report of annual physical exam	.50	31%
2. Report of immunization	.25	
(b) Medical specialists' services	3.00	
(c) Dental services	5.00	18%
(d) Nursing services	2.50	9%
(e) Hospital services	5.00	18%
(f) Drugs, medical, surgical, optical appliances	2.00	7%
(g) Laboratory service	1.00	3.5%
Total	$24.25	
(h) Administration	2.42	9%
(i) Surplus	1.21	4.5%
Grand total	$27.88	100%

4. The Winnipeg Relief Medical Plan pays: house visit, $1.50; office visit, $1.00; hospital visit (every second day only), $.50; maternity case in the hospital, $10.00; maternity case in the home, $20.00; minor anæsthetics, $3.00; major anæsthetics, $5.00; specialists' fees at slightly higher rates with fees for major surgery running at $25.00 and $35.00 per case. In spite of these very low fees, the gross cost of medical care for this plan for the year ending February 28, 1935, was $3.07 per person on relief, and was $3.63 per person on relief for the period ending February 29, 1936. The net cost (the actual amounts paid out because of the restriction of each doctor's accounts to $100.00 a month) to the city was $2.76 for the first year and $3.22 for the second year.
5. The Medical Relief Division of the Ontario Medical Association had, for the year ending February 29, 1936, approximately the sum of $2.18 per person on relief for the payment of doctors' accounts. The service offered was only home and office calls and confinements at home by general practitioners, but even then, the percentage paid on doctors' accounts was only 45.2%. This netted doctors throughout the province an average of $.89 per office call, $1.32 per home visit, and $11.18 per confinement, in spite of the fact that accounts are checked and double-checked before being paid. In Old Ontario, where over 80% of the

work is done, the doctors received on an average only $.75 per office visit, $1.11 per home visit and $9.38 per confinement.

6. In the opinion of the persons operating the very efficient medical service plan for the employees of the Consolidated Mining and Smelting Co. at Trail, B. C., it would cost the government of B. C. $20.12 per person per year to supply the benefits originally planned. The plan at present being operated at Trail costs $16.46 per person per year.
7. The Health Insurance Commission of British Columbia apparently considers that approximately $12.00 per year will purchase the medical care they have promised the people. $5.00 per person per year is the tentative allowance they have made for full care by physicians, including all specialists' care. From the above figures it is easily seen that the effect upon physicians' incomes would be very bad. If professional standards are to be maintained at present levels, only a limited medical service could be supplied for $5.00 per capita per year. No such remuneration as is at present being paid by the relief administration in Winnipeg and Ontario can be considered suitable for a permanent medical scheme for the bulk of our workers.

MEDICAL PIONEERING IN BRITISH COLUMBIA

M. W. THOMAS, M.D., Vancouver, B. C.

[This article from the able pen of Dr. Thomas, Executive Secretary of the B. C. Medical Association, is evidence of his deep interest in the medical history of British Columbia, which should be shared by all members of the profession in the Province. It was read at the Canadian Medical Association meeting in 1931, when the Historical Section held its first annual meeting.—EDITOR.]

It has been suggested that I should present some part of the medical story of early days on this Pacific Slope.

I have served in the past in a small way on the Committee on History. The necessity of such a committee, collecting facts and compiling history, is emphasized by the difficulty experienced. However, let us profit by such and no longer neglect the opportunity to persistently pursue and preserve all such material.

The story of medicine and its development in this province might be for definition divided into the periods of Exploration and Discovery, with a chapter devoted to the Indian Medicine-Man. The next period, almost coupled with that of Exploration, would deal with Fur Trading and the organization of the Colony. We would rapidly pass to the Mining years and then to the Construction of Railroads and other developments. A chapter devoted to the Naval medical history and that of the Military would be full of interest but this phase is now growing increasingly difficult to develop.

The first medical men of whom we have knowledge were WILLIAM ANDERSON, surgeon to the *Resolution,* and JOHN LAW, of the *Discovery,* accompanying Captain James Cook in 1778 on his third and last voyage.

In passing it may be of interest to note that much was done to offset scurvy by the introduction of fresh fruits into the diet when possible.

JOHN MACKAY, a Scotch surgeon, arrived at Nootka in 1786 as surgeon on the *Experiment* under James Strange, a fur-trader.

Strange secured a number of skins from the natives, and after a five weeks' stay he continued his voyage but decided to leave his surgeon, John MacKay, at Nootka for one year. MacKay had a good home of sorts with

Chief Maquilla, a brother of Chief Maquinna, with whom he was in great favour, having successfully treated many children for a scabby condition of the arms and legs, and notably the child of Chief Maquinna.

It appears that Strange wished to ingratiate himself and at the same time have a useful man in that area for the collection of furs during the year. Strange's diary reports that MacKay remained willingly. Strange provided MacKay with medicines, seeds, tools of husbandry and two goats. MacKay established himself as the first white gardener, farmer, stock-breeder and medical man on those shores.

In 1787, when Capt. Barkley and his 17-year-old bride visited Nootka, they carried MacKay off home and to quote Mrs. Barkley's diary he left willingly, although it has been suggested (possibly by Strange) that they did not wish to leave his representative there.

The Spaniards commenced farming at Alberni in 1789. In 1792 Louis Galvez, surgeon on the Spanish transport *Aranzuza,* accompanied Galiano and Valdez on their visit to these shores.

Archibald Menzies, surgeon, Scottish botanist, explorer and traveller, was appointed in 1790 to accompany Captain George Vancouver on the *Discovery* as naturalist. Owing to the ill-health of Mr. Cranstoun, surgeon to the *Discovery,* Menzies was appointed to the post of surgeon and his services in this connection were commended by Captain Vancouver, not one man having died through illness between the date of departure from the Cape on the way out and the return in October, 1795.

Menzies supervised the manufacture of spruce beer, which proved to effectually protect the men from scurvy. In one case there was no spruce at hand and the beer was made from pine, which seemed satisfactory and satisfying.

Much has been written of his differences with Captain Vancouver, but these may be explained, I feel, by the knowledge that the latter was a forceful disciplinarian and accomplished much before his untimely passing at the early age of 40. He was constantly under treatment by Menzies, and while the latter was taken home under arrest, nothing came of it as the chief difficulty centred about the care of plants Menzies had placed on the quarterdeck, which were carefully nurtured to be taken for for transplanting to the Royal Gardens. It appears that Menzies' man who tended the plants was pressed into service as a sailor to the neglect of his gardening, and this simply could not be done.

Menzies was much impressed by the continual migrations of the eborigines and on visiting their temporary lodges he was of the opinion that the presence of vermin and the filthy condition of the sites, due to a total abstinence of sanitation, made it necessary for them to move on very frequently.

George Gladman Hewett was appointed surgeon to the Vancouver expedition in 1790. He appears to have been one of the juniors of the party —possibly one of two whom Menzies mentions in his diary. He, too, comments on Capt. Vancouver's reports, correcting portions and criticizing others.

Dr. John MacLoughlin, a Canadian, was born in 1784 at Riviere du Loup in the Province of Quebec. He received his meducal education in Canada and Scotland. Later he joined the Northwest Company, and in 1821 he was placed in charge at Fort William. In that year the Northwest Company and the Hudson's Bay Company united.

Dr. MacLoughlin was a partner of the Northwest Company and it is

reported that he would not sign the final agreement. The Hudson's Bay Company employed him as Chief Factor to manage and build up the company's business in the Oregon territory. He came overland to the Pacific Coast, arriving in 1824. Although but 40 years of age his hair was silvery white and he wore it long. The Indians called him "White-headed Eagle."

Dr. MacLoughlin was noted for his fair treatment of the Indians, and is is recorded that while he was in charge there were no Indian wars and he stopped the selling of liquor to the Indians. He was severely criticized by some higher officials for his help to the immigrants of 1843-44-45.

This he resented and he resigned from the Hudson's Bay Company in 1846. After leaving the company he resided in Oregon City, where he died in 1857.

Dr. John Scouler, a native of Scotland, was the ship's surgeon on the Hudson's Bay Company vessel *William and Anne,* the voyage occupying the latter part of 1826. He visited Fort Vancouver and Nootka. Scouler treated all manner of diseases among the Indians. He states that apoplexy was far from being a rare disease among the native; in fact, two months seldom elapsed without an Indian being carried off by it. He attributed its occurrence to the fact that they ate such enormous quantities of fish, owing to their inordinate appetite for oil. As to the Queen Charlotte Islanders, Scouler reports that their teeth were remarkably poor, supposedly due to the quantity of sand and filth which they ate with their food. Scouler visited the Cowichan Indians and notes having seen one Indian deeply marked with smallpox scars. Apparently sometime before there had been a very serious outbreak of this disease and he understood that many hundreds of these Indians had died. He stated that the Indians at Cowichan spoke with dread of this disease. He suggested that nothing would enable medical missionaries to gain the goodwill of the Indians so readily as the introduction of vaccination.

At Fort Vancouver, just previous to Scouler's leaving for England, an Indian chief of great influence come to him for medical aid. The chief was markedly emaciated and vomiting everything he swallowed. The cæcum was obviously much distended and gave rise to the opinion that there was a great accumulation in the large bowel. As the case appeared hopeless, a laxative dose was withheld. Before he died he vomited an entire bulb of the Phalangum Esculentum. Dr. Scouler was a botanist as well as a surgeon.

Dr. William Fraser Tolmie came to the Pacific Coast in 1833 when but 21 years of age. He was born and educated at Inverness, Scotland. Graduated from Glasgow University in 1831 and joined the service of the Hudson's Bay Company as medical officer and clerk in 1832.

The sailing vessel, coursed via Cape Horn and the Sandwich Islands, arrived at Fort Vancouver on the Columbia River. He was stationed at Fort Vancouver, Fort Nisqually and Fort MacLoughlin and attended all and sundry medically but accepted no fees.

In August, 1833, while stationed at Fort Nisqually, he obtained ten days' leave and with six Indians attempted to reach the top of Mount Rainier, but found that there was still another and higher peak and not sufficient time to reach it. On this trip he collected many flowers, which he sent to Kew Gardens, and a dozen or more were named after him. Tolmie Peak and Tolmie Creek on the north side of Mount Rainier mark the objectives reached in the first attempt of a white man to climb this mountain.

While at Fort MacLoughlin it was necessary that he visit an Indian camp unaccompanied. Two Indians were kept at the Fort as hostages for his safe

return. In 1841, after doing post-graduate work in London and Paris, he returned overland via York Factory and Fort Garry to Edmonton, and through the Yellowhead Pass to the Columbia River.

After the establishment of Fort Victoria the trips from Fort Nisqually were made by canoe. When necessary, the party would camp en route at Dungeness. Reference to a map will show just how hazardous such canoe trips must have been.

Dr. Tolmie came to reside in Victoria in 1859 and moved into the home "Cloverdale," which large estate is the site of the home of the Honourable S. F. Tolmie, former Premier of the Province of British Columbia. He retired from the service of the Hudson's Bay Company in 1870. During the sixteen years following his retirement he was still very active as a citizen of the new community, and remained a friend and adviser to the Indians in and about Victoria and Saanich. He died at "Cloverdale," the old family home near Victoria, in 1886.

Dr. Meredith Gairdner was a surgeon but more interested in botany. He lived at Fort Vancouver and it is recorded that he treated the Indians thereabout.

(To Be Continued)

N.B.—The next installment will deal with the story of the late Hon. J. S. Helmcken, the first practitioner in British Columbia.

NEW CONSTITUTION AND BY-LAWS OF THE

B. C. MEDICAL ASSOCIATION

incorporation of which was authorized by the Annual Meeting in Victoria,

[*Ed. Note:*—The B. C. Medical Association is applying for incorporation under the Societies Act. Membership is open to any registered member of the College of Physicians and Surgeons of B. C. upon completing and signing a membership application form. These forms will shortly be sent to every practitioner in the province, and it is urged that they be completed, signed and sent in with the least possible delay. This matter is of such importance to every member of the profession in the province that the By-laws are published herewith in full.]

(1) The name of the Society is "B. C. Medical Association."

(2) The objects of the Society are:—

(a) To advance the scientific, educational and professional welfare of the Medical Profession in British Columbia, and whether members or non-members of the Association, and in such manner and to such extent as may be deemed advisable.

(b) To co-operate with the Canadian Medical Association and, if deemed advisable by the directors, to become a branch of the Canadian Medical Association, or if recommended by the directors and approved by an extraordinary resolution of the members, to become a division of the Canadian Medical Association.

(c) To collect fees and receive donations; to expend monies to defray the expenses of the Association or to promote or further any of the objects of the Association, and without limiting the generality or operation of the foregoing, to pay the fees of the Association or the members of the Association, or any member of the College of Physicians and Surgeons of British Columbia, for membership in any other Medical Association; and to subscribe for or otherwise acquire Medical Journals, Reports and Literature for the members of the Association, or any member of the College of Physicians and Surgeons of British Columbia.

(3) The operations of the Society are to be chiefly carried on in the Province of British Columbia.

BY-LAWS

1. The office of the Association will be at 203 Medical-Dental Building, 925 Georgia Street West, Vancouver, British Columbia, until changed by resolution of the directors.

Membership

2. Any member of the College of Physicians and Surgeons of British Columbia in good standing may become a member of the Association by signing a membership application form and delivering it to the Secretary of the Association.

Honorary Members

3. Distinguished members of the medical profession may be appointed honorary members of the Association.

Fees

4. No fees shall be charged until approved of by resolution of the members.

Resignations

5. Any member of the Association may resign by notice in writing signed by such member and delivered to the Secretary of the Association.

Suspension or Expulsion of Members

6. Membership in the Association shall terminate if the member ceases to be a member in good standing of the College of Physicians and Surgeons of British Columbia.

General Meetings of the Association

7. An Annual General Meeting of the Association shall be held once in each year, and a special meeting of the members of the Association may be held at any time if called by the directors, and the directors shall call a special general meeting of the members if required so to do by a requisition in writing signed by twenty members, setting forth the special matters to be considered at such meeting. Notice calling a General Meeting of the Association shall set forth all special business proposed to be transacted thereat. Notice calling a General Meeting of members shall be sufficient if mailed to the address of each member on the Register of Members 14 clear days prior to the time fixed for holding the meeting, setting out the time and place of such meeting, and the business to be transacted thereat. Twenty-five members shall constitute a quorum. Each member shall have one vote. The Annual General Meeting of the Association shall be held in each year at such time and place as the directors shall decide.

Appointment and Removal of Directors

8. Any member of the Association shall be eligible as a director.

9. The number of directors may be increased or decreased by resolution of the members at an Annual General Meeting of the Association .

10. The number of the first directors shall be 15 and shall be appointed pursuant to Section 6 (2) of the "Societies Act" and they shall hold office until the next Annual General Meeting of the Association.

11. The Board of Directors may appoint directors to fill vacancies and may appoint additional directors from time to time, and directors so appointed shall hold office until the next Annual General Meeting of the Association.

12. After the first Board of Directors, the ensuing Boards of Directors shall consist of:—

(1) The President, First Vice-President, Second Vice-President and Honorary Secretary-Treasurer elected at the Annual General Meeting of the Association.
(2) The immediate past President of the Association, who shall be a director ex officio.
(3) Two members appointed by the Council of the College of Physicians and Surgeons of British Columbia, and said appointments shall be made at least one week prior to the date for holding the Annual General Meeting of the Association in each year.
(4) One director appointed by each of the local Medical Associations in the Province of British Columbia, and said appointments shall be made at least one week prior to the date fixed for holding the Annual General Meeting of the Association in each year.
(5) Five directors to be elected at the Annual General Meeting of the Association.
(6) The Chairman of each standing Committee shall be a director ex officio.

13. The Board of Directors and Committees may each fix their own quorum, and until so fixed a quorum shall be a majority of the directors or a majority of the members of the Committee.

14. In the event of a tie vote, the Chairman of the Board of Directors or the Chairman of a Committee shall have a second or casting vote.

15. The Board of Directors and the Committees may meet together for the dispatch of business, adjourn or otherwise regulate their meetings as they see fit, and until otherwise provided by the Board of Directors and the Committee concerned, notice of a meeting setting out the time and place of a meeting may be given in either or any of the following ways:—

(a) By notice in writing mailed one week prior to the meeting date.
(b) By telegram dispatched three days prior to the meeting date.
(c) By telephone notice two days prior to the meeting date.

All notices in writing may be addressed to the member at his address on the Register of Members of the Association.

16. The office of director shall be vacated if:—

(a) A director dies.
(b) A director is found to be a lunatic or of unsound mind.
(c) A director resigns by notice in writing to the Secretary.
(d) A director ceases to be a member of the Association.
(e) A director is removed by ordinary resolution of the members of the Association.

Powers of the Directors

17. All the powers of the Association may be exercised by the directors unless other provision has been made by the "Societies Act" or by the By-Laws of the Association.

18. The Board of Directors may delegate any of its powers and duties to committees or to individual members of the Association.

Officers

19. The duties of the officers shall be as follows:—

(a) The President shall preside at all meetings of the Association and and of the Board of Directors, and of the Executive Committee, and shall perform such other duties as custom or corporation practice shall require, and he shall be an ex officio member of all committees.

(b) The First Vice-President shall assist the President in the discharge of his duties, and in the absence of the President shall act in his stead.

(c) The Second Vice-President shall assist the President and the First Vice-President in the discharge of their duties and in the absence of both of these officers shall act in their stead.

(d) The Honorary Secretary-Treasurer shall keep the records of the Association, shall receive, and, upon the order of the directors or the Executive Committee, disburse all monies belonging to the Association, and perform such other duties as may be required of him by the Board of Directors or the Executive Committee.

The Honorary Secretary-Treasurer and either the President, First Vice-President, or any other director designated by the Board of Directors, or the Executive Committee, shall be the signing officers of the Association.

Standing Committees

20. The following Standing Committees shall be appointed by the Board of Directors:—

(a) An Executive Committee, which shall include the officers of the Association and any additional directors appointed to it by the Board of Directors. The Executive Committee shall exercise all the powers and functions of the Board of Directors during the periods between meetings of the Board of Directors, and subject only to any restrictions of said powers or functions which may be imposed by a resolution of the Board of Directors.

(b) A Nominating Committee of 5 members.

(c) A Constitution and By-laws Committee.

(d) A credential and Professional Ethics Committee.

(e) A Committee for the study of economics.

(f) A Maternal Welfare Committee.

(g) A Medical Education Committee.

(h) An Osler Memorial Committee.

(i) A Pharmacy Committee.

(j) A Public Health Committee.

(k) A Committee on Cancer.

(l) A Programme and Finance Committee.

And any additional committees deemed advisable. The first named member of a Committee shall be the Chairman of the Committee and shall convene the meetings of the Committee.

21. Any Committee other than the Executive Committee may be composed of director-members or non-director-members, or partly of one class of member and partly of the other.

Borrowing Powers

22. The Association may borrow monies on the security of any assets of the Association or otherwise.

Audit

23. The directors shall appoint the first Auditor and thereafter the Auditor shall be appointed at the Annual General Meeting of the Association. The financial statement and the report of the Auditor shall be mailed to each member of the Association at the time of mailing the notice calling the Annual General Meeting of the Association.

Custody and Use of the Seal of the Association

24. The Association shall have a Corporate Seal and the Seal of the Association shall be in the custody of the Honorary Secretary-Treasurer and shall be attached to all documents duly authorized to be executed under Seal by the Board of Directors or the Executive Committee, and any director or officer authorized to sign a document and signing same, may attach the Corporate Seal.

Amendment to By-Laws

25. The By-Laws of the Association may be amended by extraordinary resolution after 14 clear days notice of the proposed amendment has been given to the members of the Association, provided, however, that any proposed amendment may be further amended, varied or altered at the meeting of the Association.

Minutes of Proceedings

26. Minutes of all proceedings of the members of the Association and of the Board of Directors and of Committees shall be kept. The Committees shall

promptly report their decisions and recommendations to the Board of Directors and the Board of Directors shall make a full report to the members of the Association at the Annual General Meeting of the Association. PROVIDED that the Nominating Committee shall at the Annual General Meeting of the Association by resolution agree upon the nomination of the officers and 5 directors, and make its report direct to the meeting at the time nominations for directors are called for, and such report shall constitute the nomination of the members so reported as candidates for the office of director. Additional nominations may be made by members.

27. The Honorary Secretary-Treasurer of the Association shall keep a Register of the names and addresses of all members of the Association, and shall also keep full records and books of account of all financial transactions of the Association, and all records shall be in the custody of the Honorary Secretary-Treasurer, subject, however, to any order of the Board of Directors or the Executive Committee.

ADDRESS DELIVERED AT ANNUAL MEETING OF B. C. MEDICAL ASSOCIATION

Empress Hotel, Victoria, June 23rd, 1936.

HAROLD BROWN

[It is with a good deal of pleasure that we reproduce this address of Major Harold Brown's. It is, to say the least, an unusual address to be delivered before an audience of medical men, but it is, none the less, an address that every medical man, as every thoughtful man, would do well to read at his leisure and digest carefully.—ED.]

MR. PRESIDENT AND GENTLEMEN:

There are odd occasions, I think, when one is reasonably entitled to confess a feeling of diffidence. Ever since I accepted a very warm-hearted invitation to be present at this dinner I have had a growing sense of misgiving about the efficacy of a mere layman venturing upon an expression of his ideas in this intensive professional atmosphere.

This misgiving is certainly not any less by reason of the fact that I have always placed your truly great profession on a very lofty pinnacle and the annals of its achievements in peace and war have always claimed my deepest interest.

I can speak for the business community in wishing your convention a very successful and happy time in Victoria.

But I wonder why a delightful dinner of this kind should be chastened by an after-dinner speech?

In my junior days on the other side of the Atlantic a genial dinner was got up on the slightest provocation and was usually a very cheerful affair of song and story with a brief toast or so. The prospect of a set after-dinner speech, was regarded with much the same dismal concern as that of a glad-hearted school boy watching the stealthy approach of a fond mother with a substantial dose of castor oil.

However, we are confronted with the adventure and the occasion is certainly not one to be trifled with even if we can only be briefly suggestive. So I conceived a theme under the title of "The Romance of Two Worlds," and while perhaps "Romance" is an ill-chosen word, I wanted in these genial after-dinner moments to touch but lightly on theories of infinite significance. For we know, do we not, that outside of the four corners of this delightful serenity, the world is crammed with perplexing problems and mental confusion and conflict infinitely more perilous and destructive than the clash of arms. Shattered idols are strewn around us in all directions and there seems to be a universal entanglement in which we are all more or less ensnared.

In fact, the whole sorry mess is laying upon us a burden which is much too great for our small assize. There is no lack of courage or ability, but if

we are to be honest with ourselves we have to own up that we are spiritually incompetent and inadequate to wrestle successfully with the great forces now flinging themselves upon the world of men.

And I do want to make it transparently clear that I am not using the word spiritual in any restricted theological sense, but rather I am conceiving it in its greatest amplitude, boundlessly free and boundlessly powerful—the irresistible force of inner conviction finding its expression in dispassionate judgment, the impetus of will and the unquenchable flame of heroism.

In this world of clamour we are inclined to arraign public leadership and charge it with weakness, but as a matter of fact public men of today in all countries are showing great working courage and character and they are certainly not wanting in desire.

But if they fail, they fail in this very inner resource because of the indifference to or perhaps ignorance of the deeper spiritual issues and the vital regulative processes of life from which are derived enduring strength, power and influence.

There is, you know, a proper craftsmanship of public and private life just as there is in art or science, and most of us are lamentably indifferent to it.

I am not mystic nor have I much patience with purposeless ideals which are not allied or synchronised with incisive and fearless action, but, particularly since the war, I have wandered, not entirely aimlessly, down psychological and philosophical pathways, and I have tried to keep my mind wide open to rapidly succeeding impressions.

One family of my acquaintance has at its head a high officer of a great observatory and he necessarily deals with staggering magnitudes and deserts of space. His son is engaged in bacteriological research and devotes himself to intensive study of the antics of a colony which, as you know, could be accommodated on the head of a pin with lots of recreation space to spare.

I suggest that our thought should not be any less than this impressive range, and if I had to fling a passionate prayer to the stars, it would not be to be spared from battle, murder or sudden death, but to be saved from the unspeakable bondage of a small mind in which lurked shallow prejudice and blinded vision.

I realize that in this colourful world with all its tangible fascinations there is a natural timidity about hidden and incomprehensive things and I certainly love this brave old world with all its tumult and tragedy and challenge.

I revel in its warm-blooded friendships and I want to feel my feet on this substantial earth where we blunder and triumph and laugh and cry.

I want to continue to enjoy this vital life in which we have loved and lost and which has given to us countless days of cloudless happiness and starlit nights of peace and satisfaction.

But those of us who try to understand know well that we work out our destiny and play out our brief game on the fringe and borderland of a veiled and mysterious world which through subconscious channels projects itself into our emotions, thoughts and actions.

Keyserling said that the individual at every moment of his existence reflects the cosmic situation. I hope that does not make you feel uncomfortable!

Maeterlinck expands this significantly by saying, "Though we may believe and say to the contrary, we are essentially infinite beings and on all

sides we touch with our bodies and with our souls that which never had a beginning and that which will never have an end."

I believe that both these revealing statements are deadly true.

St. Paul, in his world-shaking declaration that "There is a natural body and there is a spiritual body," has never been invalidated and his message was not merely an evangel but was actually the reassertion of an ageless fact.

If we admit even an approach to the larger implications of this the prospects are dazzling and I think even in a delightfully friendly atmosphere like this we can adventure quite far into these great matters and return safely and, I hope, nourished and refreshed.

We are all reasonably educated men and we must not abandon these high things to charlatans and freak-theorists whose primary interest is mercenary.

The most profoundly interesting of all subjective phenomena is the mystery of human consciousness, which in its infinite function in the whole scheme of life seems to me to be the expression and revelation of the Divine.

A remarkable Russian scientist, Ouspensky, in his striking and daringly powerful book "Tertium Organum," thus deals with this great potency:

"Concerning the latent energy contained in the phenomena of consciousness—in thoughts, feelings, desires—we discover that its potentiality is immeasurable and boundless. From personal experience, from observation, from history, we know that ideas, feelings, desires, manifesting themselves, can liberate enormous quantities of energy and create infinite series of phenomena. An idea can act for centuries and milleniums and only grow and deepen, evoking ever new series of phenomena, liberating ever fresh energy.

"We know that thoughts continue to live and act even when the very name of the man who created them has been converted into a myth like the names of founders of ancient religions, the leaders and the prophets. Their words are repeated by innumerable lips, works are translated, printed, read, studied, staged, illustrated. And this is done not only with the masterpieces of men of genius, but some little verse may live milleniums, making hundreds of men work for it and serve it in order to transmit it further. This energy acts not only upon the feelings of man, but by reason of its very existence it acts upon their will.

"The liberating force of life and thought is infinitely greater than the liberating force of mechanical power and chemical reaction."

And so in your great operative work, for instance, when your trained fingers are finding their way among the delicate organs and tissues of the human body, they are guided and governed by this developed consciousness. Indeed, in every phase of responsible life and action, and certainly not least in the medical profession, the spiritual issues of life are of compelling significance and particularly in these perplexing days.

We are all immersed in a world psychosis of neurotic fret and fear which, under our very noses, so to speak, is eating and rotting away, irredeemably, all the superstructure of human triumph and achievement. At the crest of a long-sustained wave of material splendour in which we have been enjoying unparalleled luxury of living, we have nothing to look at but a world of disillusionment, psychically sick and spiritually destitute.

It is not too much to say that mental science is sadly lagging behind the penetrating need of the hour. When we refer to the world psychosis

do you realize the stark nudity of world relations? Instant communication has reduced this globe of ours to the gossipy curiosity and the commonplace intimacy of a parish, and if anyone of consequence (as the world now seems to regard consequence) were to leave his bathroom blind up, his form and anatomy could very easily be the topic of pointed discussion in Bolivia or the Federated Malay States a few minutes later.

In point of fact, never in the age-old story of the world was the struggling mass of humanity so sensitive to mass influence—never was the power of suggestion, either for good or evil, so penetrating and so universally influential.

It is interesting to examine quite briefly some of the phenomena underlying this rather frightening world sensitivity.

The Latins are, I think, more adventurous than we are in their speculations in psychology and biology, due, no doubt, to their more volatile and receptive temperament, and one French scientific writer, dealing with a case of sudden revelation of genius late in life, raises this very suggestive and significant query:

"Is there a delicate, sensitive, nervous centre within us through which the threads of the universe are drawn?—a spiritual atom which mirrors the spiritual infinitudes—a hidden melodic note which awaits the vibrant touch of unseen power to awaken it and to blend it with the harmonic rhythm of life?"

And if this was slightly imaginative, a French scientist, Georges Lakhovsky, propounds a more scientific fundamental theory and says:

"Every cell of every living thing vibrates with and emits radiations, as it essentially consists of a microscopic oscillating circuit or electra-magnet resounder which is actuated by the energy supplied by cosmic waves."

And as a reflection of this, these oscillating circuits have been supplied in a series of interesting experiments at Bologna University in the germination and growth of seeds and plants of every description.

Further than this, the circuits have been applied, in the Hospital of the Holy Spirit in Rome, to the treatment of cancer and diabetes with quite notable success.

There is also a significant record of the actual photographing of human life radiations by a Professor of Crimonese.

Another professor at Milan deduces from his intensive experiments that the human brain and nervous system are the most sensitive and delicate receivers or percipients of waves and the most powerful transmitters of radiation.

Not content with this, he proceeds to this very significant implication:

"With regard to metaphysical phenomena to which no immediate cause can be assigned, there is no doubt that the presence may be presumed of special mechanisms of perception which in certain cases transcend the ordinary ways of knowledge."

From all this it is reasonable, almost logical, to say that underneath the surface chaos there is a faultless universal rhythm and harmony and there are special avenues of perception.

It may well be that professional pride and assurance may resist close approach to the theory that these phenomena are anything else than purely physical and chemical implications and that human brain structure and glandular development are controlling conditions.

There is no finality here, however, and still with my mind wide open, if you were inclined to rise *en masse* in support of this mechanical theory I could not accept it. To attempt the negation of the underlying spiritual affinities in this life of ours and to explain away the deep mystery of consciousness and of that indefinable quality of apprehension which, as Hamlet says, is "so like a God," is to live and breathe in a stagnant atmosphere and to limit the dominion of mind.

I should not think of derogating for a moment from the highly trained deductive reasoning of medical and surgical practice, but nevertheless new canons of thought and conception are thrusting themselves upon us, and even you must contemplate fearlessly and dispassionately those things psychological and metaphysical in character which may hold at arms' length preventive, curative and remedial efforts.

It sounds rather exacting, but it is all very simple really, and what we should at least accept into our reasoning is that beyond the ordinary plane of objective life lie limitless potentialities of which later generations will know much more than we do.

The great wave of vulgarization now sweeping round the world synchronises naturally with the general atmosphere of suspicion, savage intolerance and social insecurity. You and I have to realize, I think, that up to the present we have been preserved from the worst consequences of this advancing menace by the quiet spiritual force of a select few in every land and in every language—a few selective men and women who in either world of high or low have acquired either by experience or regeneration the deeper mysteries of the soul.

We have spoken of the primacy of consciousness, and out of this force comes all true religion and art and philosophy and science.

What, then, is our job?

We must not regard any constructive thought or action as being relatively obscure or futile and we can all help powerfully to recreate a stable and harmonic society, and in the diversified contacts of your own great profession the opportunities are infinite.

We have arrived at the stage where intellectual leadership must be regarded in an entirely new light.

Would it be disparaging to say that in a highly responsible gathering such as this there are perhaps twenty or twenty-five men spiritually conscious of a responsibility for leadership in thought and action in whatever phase of life they are called upon to play and work?

The present drift will unquestionably develop danger points and nerve-racking problems and crises, and they will call both in this generation and the next for endurance, for insight and for foresight, which are not born of opportunism or of a crafty simulation of genius.

The rising man of affairs in business, politics or society, whose whole reliance is placed upon these artificialities, would be luckier if he had never been born.

No, Mr. President and Gentlemen, the holding ground for calm, steady nerve force—the nourishment for vital and absolutely fearless judgment and action—the flame of resistless accuracy of perception, all lie deep down in spiritual faith and spiritual discipline and in minds open to the Godward side.

Regardless of any theological distinctions and distractions this is pure

religion, and it is this spiritual impetus which alone brings life to its highest potential.

We seem to eat and drink and breathe in an atmosphere of careless mediocrity in which, up to now, the loud overtones of material satisfaction are howling more or less dismally the chant of disillusionment.

Thank Heaven, however, there emerge from the mess bright pinnacles of perfected genius and achievement which gleam far above this stifling shadowed atmosphere of uninteresting mediocrity.

It may be, for instance, a revelation of special skill and prescience in your own noble profession which stirs, as it often has stirred, the world. It may be merely a passing tone of voice from which comes some deeply challenging vibration of appeal. It may be a chance friendly human contact from which survives an imperishable memory and influence.

We wade through book after book, throwing them aside with, at most, a passing satisfaction and sometimes with contempt, but suddenly our attention is rivetted by a flash of genius which comes from the deeps and enters torch-like into our own thought.

These surges of magnetic power and impulse do not reveal themselves with a fanfare of trumpets, but in the still, small voice, infinitely more dominating than all the raucous yelling and tumult.

My final thought must be this:

I firmly believe that we can add to the sovereign gift of life its fullest and highest expression and equip ourselves for a sportsmanlike endurance and conquest of its worst enigmas and enjoy with keenest appreciation and satisfaction all its pleasures and privileges: but we can only do it by steadily developing with cumulative experience what I may call an integrated consciousness in which body, mind and soul play their part.

Have we been romancing, do you think?

Or have we, by the very tribute of our thought in this genial hour, touched the hem of the garment and perhaps invoked the Presence just as though we were in some vast cathedral?

We need not worry in the least, but, while we enjoy the full living splendour of life as I have tried to suggest it, we can valiantly wait, as Rupert Brooke said,

"To learn all we lacked before! Hear, know and say
What this tumultuous body now denies,
And feel—who have laid our groping hands away:
And see—no longer blinded by our eyes."

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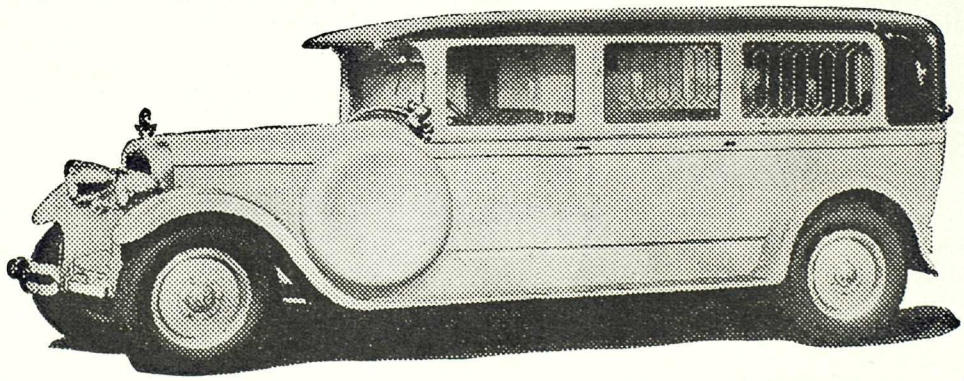

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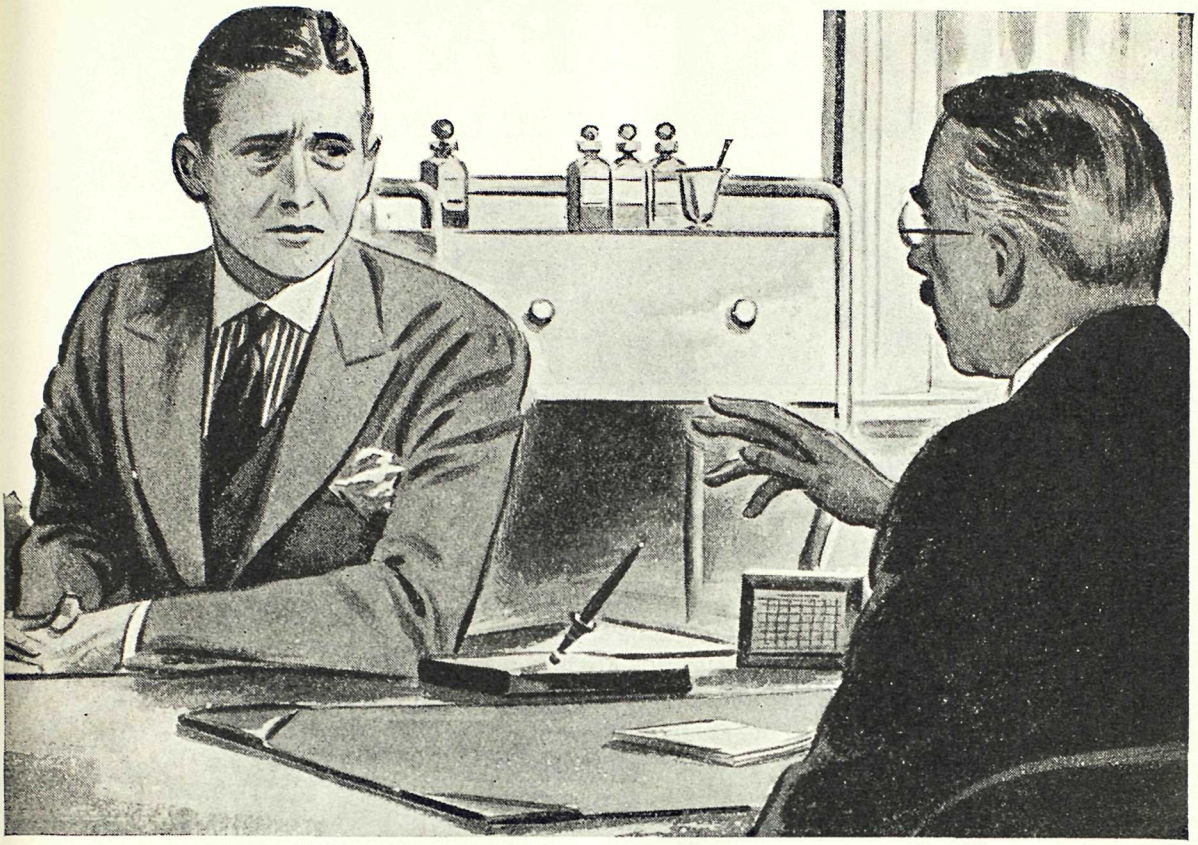

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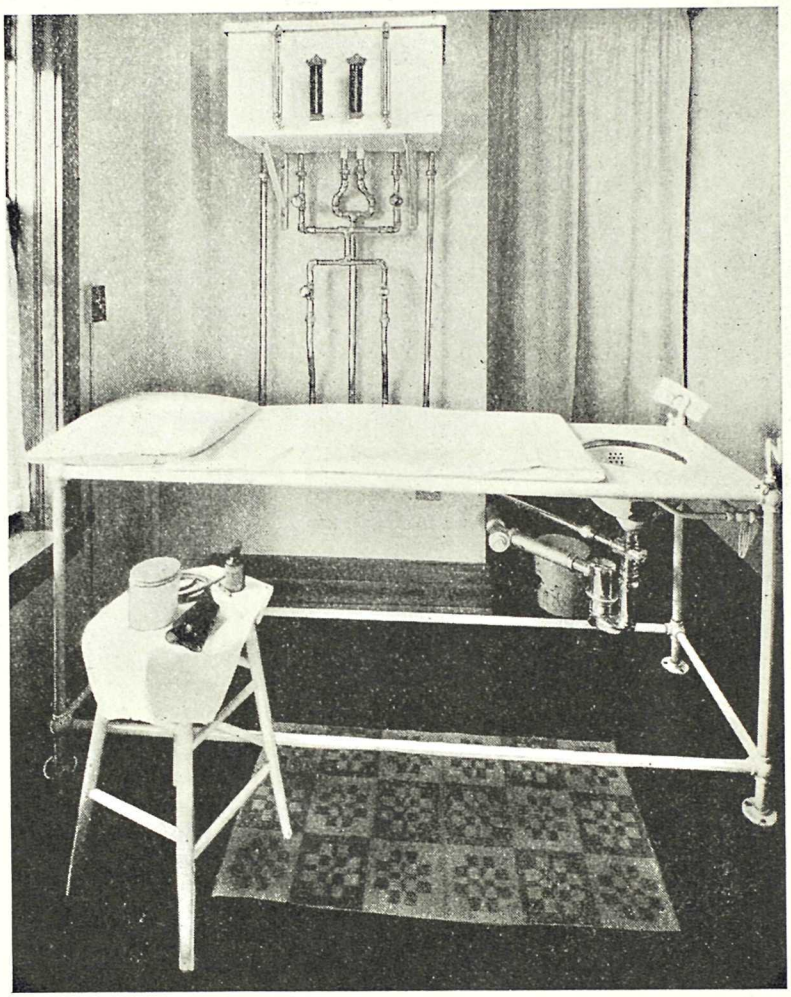

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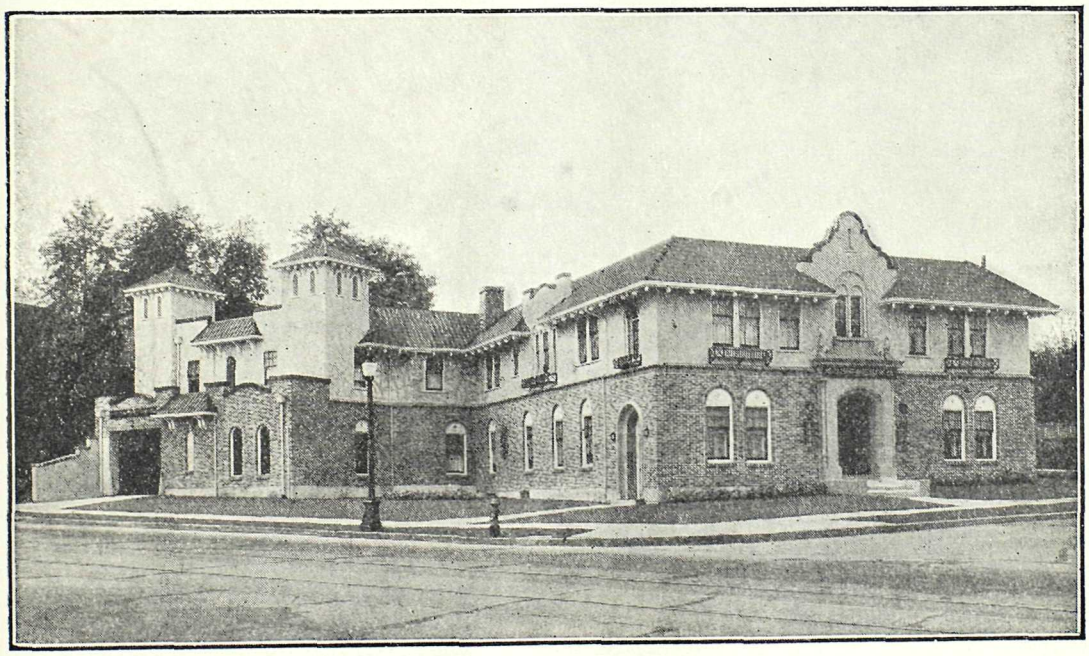

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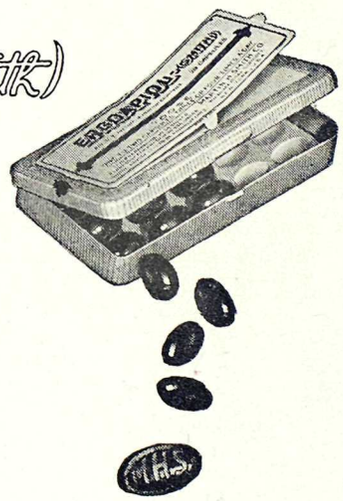

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(HOLT AND McINTOSH: HOLT'S DISEASES OF INFANCY AND CHILDHOOD, 1933)

One of the outstanding features of DEXTRI-MALTOSE is that it is almost unanimously preferred as the carbohydrate in the management of infantile diarrhea.

SERIOUSNESS OF DIARRHEA

There is a widespread opinion that, thanks to improved sanitation, infantile diarrhea is no longer of serious aspect. But Holt and McIntosh declare that diarrhea "is still a problem of the foremost importance, producing a number of deaths each year. . . ." Because dehydration is so often an insidious development even in mild cases, prompt and effective treatment is vital. Little states (Canad. Med. A. J. 13:803, 1923), "There are cases on record where death has taken place within 24 hours of the time of onset of the first symptoms."

In cases of malnutrition, and indigestion in infancy, . . . improves rapidly, and the stools soon become normal in appearance, the sugars are intelligently prescribed. By this I refer to proper proportions of dextrin and maltose. When there is a tendency to looseness, I have used the preparation known as dextri-maltose, for . . . carbohydrates; . . ."—*M. Ladd: Further experience with . . . Pediat. 33:501-512, July, 1916.*

"Dextri-maltose is a very excellent carbohydrate. It is made up of maltose, a disaccharide which in turn is broken up into two molecules of glucose—a sugar that is not as readily fermentable as levulose and galactose—and dextrin, a partially hydrolyzed starch. Because of the dextrin, there is less fermentation and we can therefore give larger amounts of this carbohydrate without fear of any tendency of fermentative diarrhea."—*A. Capper: Facts and fads in infant feeding. Weekly . . .*

In cases of diarrhea, "For the first day or so no sugar should be added to the milk. If the bowel movements improve carbohydrates may be added. This should be the one that is most easily assimilated, so dextri-maltose is the carbohydrate of choice."—*W. H. McCaslan: Summer diarrheas in infants and young children . . . Alabama, 1:278-282 . . .*

"If there is an improvement in . . . ments carbohydrate may be added . . . ing the teaching of the originator . . . the carbohydrate added should be . . . most easily assimilated. Dextri-maltose is therefore the carbohydrate of choice."—*Summer diarrheas in the young, International . . . 9:111-118 . . .*

"The condition in which dextri-maltose is partic . . . in acute attacks of vomiting, diarrhea and fever. It seems that . . . covery is more rapid and recurrence less likely to take place if dextri-maltose is substituted for milk sugar or cane sugar when these have been used, and the subsequent gain in weight is more rapid.

"In brief, I think it safe to say that pediatricians are relying less implicitly on milk sugar, but are inclined to split the sugar element . . . giving cane sugar a place of value, and dextri-maltose a decidedly prominent place, particularly in acute and difficult cases."—*W. D . . . Hoskins: Present tendencies in infant feeding, Indianapolis M. J . . . July, 1914.*

. . . gradual transition to a whole milk or . . . evaporated milk formula, which will supply about one and one-half to two ounces of whole milk to every pound of body weight, is reached. This also should finally have the addition of dextri-maltose amounting to five to seven per cent."—*R. A. Strong: Summer diarrheas in infancy and early childhood. Arch. Pediat. . . .*

In diarrhea, "Carbohydrates, in the form of dextri-maltose, well cooked cereals or rice, usually can be handled without trouble."—*B. B. Jones: A discussion of some of the commoner . . . infantile diarrhea, and the . . . the diets used in . . .*

"Maltose is more easily absorbed than cane or milk sugar, . . . by changing the carbohydrate . . . one may prevent a deficient supply of sugar."

"When sugar causes diarrhoea . . . one can change the form of it. Mead's Dextrimaltose in small . . . doses is more quickly absorbed and so superior to castor [cane] sugar. Lactose is expensive and seems not to be better than castor sugar."—*H. B. Gladstone: Infant Feeding and Nutrition . . . William Heinemann, Ltd., London, 1928, pp. 11, 79.*

. . . fermentation . . . bowel and have a definite laxative tendency, which may when carried to excess, cause severe intestinal irritation.

"The more complex carbohydrates, of which dextrin is the type, ferment more gradually and do not have this laxative effect."

Regarding the treatment of diarrhea, "In our experience, the most satisfactory carbohydrate for routine use is Mead's dextri-maltose No. 1."—*F. R. Taylor: "Summer Complaints," Southern . . . Med. & Surg., pp. 555-559, Aug.*

. . . treatment of diarrhea, "The sugar is added gradually as conditions admit, some sugar other than milk sugar or cane sugar being used, preferably dextrin and maltose."—*H. E. Small: Diarrhoea in bottle-fed infants, J. Maine M. A. 12:164-168, Jan. 1922.*

"It should be . . . of lactose may cause diarrhoea. If a higher . . . centage of sugar be required it is better to replace it by dextri-maltose, such as Mead's Nos. 1 and 2, where the maltose is only slightly in excess of the dextrins, thus diminishing the possibility of excessive fermentation."—*W. J. Pearson: Common practices in infant feeding, Post-Graduate Med. J. 6:38, 1930; abst. Brit. J. Child. Dis. 28:162-163, April-June, 1931.*

. . . that group of organisms thrive on) and high in protein. Calcium caseinate milk accomplishes this purpose. In our series of cases, we found it was necessary to use the casein calcium for from 5-8 days; we then stopped it and added dextri-maltose to the formula."—*A. G. DeSanctis and L. V. Paider: The value of calcium caseinate milk in fermentative diarrhea, Arch. Pediat. 38:233-236, April, 1921.*

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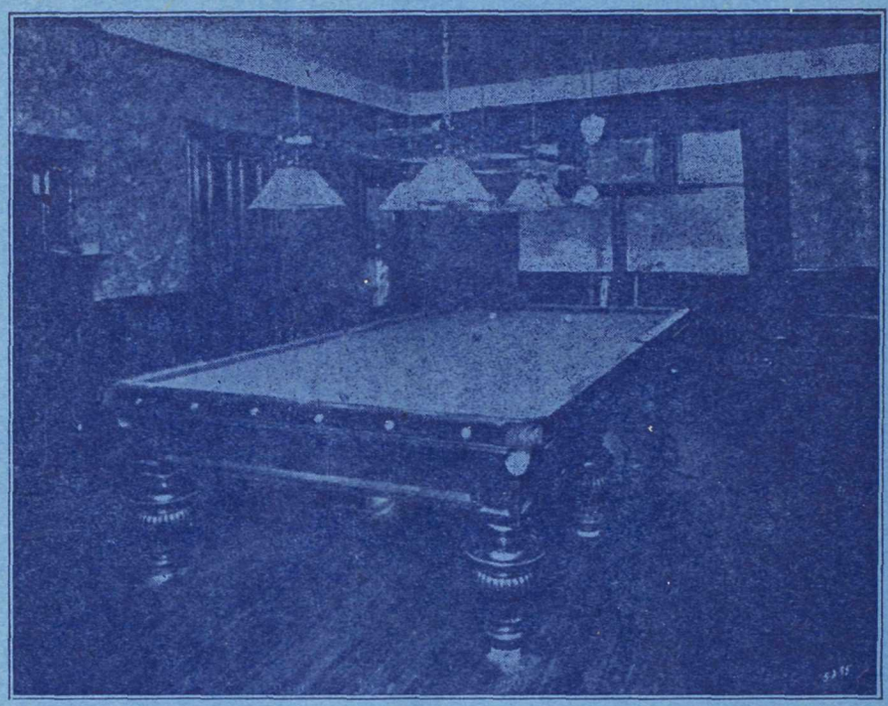

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