UNIVERSITY OF
BRITISH COLUMBIA
OCT 14 1947
THE LIBRARY

The . . . BULLETIN of the . . . VANCOUVER MEDICAL ASSOCIATION

With Which Is Incorporated
Transactions of the

VICTORIA MEDICAL SOCIETY
the
VANCOUVER GENERAL HOSPITAL
and
ST. PAUL'S HOSPITAL

In This Issue:

Page

HISTORY OF THE V.M.A. 290

CHIROPODY—AN AUXILIARY TO MEDICAL PRACTICE
—B. J. H. MacDermot, M.D. 296

SYMPOSIUM—By Clement A. Smith, M.D.

The Cause of Abdominal Pain in Infants and Children 302
Physiological Peculiarities of Newborn Infants 307

Diseases of the Newborn:
Asphyxia, Atelectasis, Erythroblastosis 311
Diarrhea, Prematurity 316

NEWS AND NOTES 223

VOL. XXIII. NO. 11 — AUGUST, 1947

A NEW APPROACH TO THE TREATMENT OF

TINEA PEDIS

(Athlete's Foot)

FUNGOL

E. L. Keeney* has shown the marked lethal effects of sodium propionate on dermatophytic fungi.

Fungol E.B.S. provides sodium propionate in convenient ointment and powder form for combating many types of dermatomycosis. Epidermophyton interdigitale hlete's foot), trichophyton barbae (tinea sycosis), trichophyton capitis (ringworm of the scalp), and numerous other mycotic infections all respond to treatment with Fungol.

The ointment base is water-soluble.

* Bull: Johns Hopkins Hosp. 73:379

AVAILABLE IN
3 CONVENIENT FORMS:

Fungol Ointment in 1 oz. tubes and 4 oz. and 1 lb. jars.

Fungol Powder in 1 oz. shaker-top tins.

Fungol Solution in 16 oz. and 80 oz. bottles.

FOR MYCOTIC INFECTIONS OF BODY CAVIT
AS IN OTOMYCOSIS, WE RECOMMEND FUN
SOLUTION.

THE E.B.SHUTTLEWORTH CHEMICAL CO., LTD. TORONTO, CANADA

THE VANCOUVER MEDICAL ASSOCIATION

BULLETIN

Published Monthly under the Auspices of the Vancouver Medical Association in the interests of the Medical Profession.

Offices: 203 Medical-Dental Building, Georgia Street, Vancouver, B.C.

EDITORIAL BOARD:

DR. J. H. MACDERMOT

DR. G. A. DAVIDSON DR. D. E. H. CLEVELAND

All communications to be addressed to the Editor at the above address.

Vol. XXIII AUGUST, 1947 No. 11

OFFICERS, 1947-48

DR. G. A. DAVIDSON, *President*
DR. GORDON C. JOHNSTON, *Vice-President*
DR. H. A. DESBRISAY, *Past President*
DR. GORDON BURKE, *Hon. Treasurer*
DR. W. J. DORRANCE, *Hon. Secretary*

Additional Members of Exceutive: DR. ROY HUGGARD, DR. HENRY SCOTT

TRUSTEES

DR. A. M. AGNEW DR. G. H. CLEMENT DR. A. C. FROST

Auditors: MESSRS. PLOMMER, WHITING & CO.

SECTIONS

Clinical Section

DR. REG. WILSON.....Chairman DR. E. B. TOWBRIDGE.....Secretary

Eye, Ear, Nose and Throat Section

DR. GORDON LARGE.....Chairman DR. G. H. FRANCIS.....Secretary

Paediatric Section

DR. J. H. B. GRANT.....Chairman DR. E. S. JAMES.....Secretary

Orthopaedic and Traumatic Surgery Section

DR. J. R. NADEN.....Chairman DR. CLARENCE RYAN.....Secretary

Neurology and Psychiatry

DR. J. C. THOMAS.....Chairman DR. A. E. DAVIDSON.....Secretary

STANDING COMMITTEES

Library:

DR. J. E. WALKER, Chairman; DR. W. J. DORRANCE, DR. D. E. H. CLEVELAND, DR. F. S HOBBS, DR. R .P. KINMAN, DR. S. E. C. TURVEY.

Publications:

DR. J. H. MACDERMOT—Chairman; DR. D. E. H. CLEVELAND, DR. H. A. DESBRISAY, DR. J. H. B. GRANT, DR. D. A. STEELE.

V. O. N. Advisory Board:

DR. ISABEL DAY, DR. H. H. CAPLE, DR. E. J. CURTIS.

Summer School:

DR. L. H. LEESON, Chairman; DR. E. A. CAMPBELL, DR. J. A. GANSHORN, DR. D. S. MUNRO, DR. D. A. STEELE, DR. L. G. WOOD.

Credentials:

DR. H. A. DESBRISAY, DR. H. H. PITTS, DR. FRANK TURNBULL.

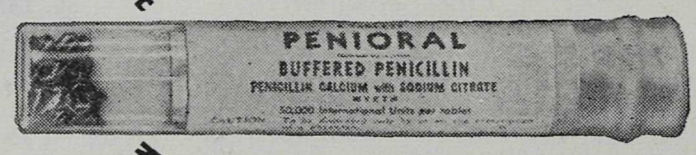
Representative to B. C. Medical Association: DR. H. A. DESBRISAY.

Sickness and Benevolent Fund: THE PRESIDFNT—THE TRUSTEES.

Penioral

Penioral (Buffered Penicillin Wyeth) reaches the patient Laboratory-Fresh. It is protected three ways against moisture, arch enemy of penicillin.

PENIORAL BLUE MEANS POTENCY PROTECTION



- **Vial is sealed air-tight until opening.**
- **Desiccant absorbs moisture after vial is opened.**
- **Blue indicator turns pink when excessive moisture threatens full potency of the penicillin.**
- **Added protection—expiration date on every vial.**

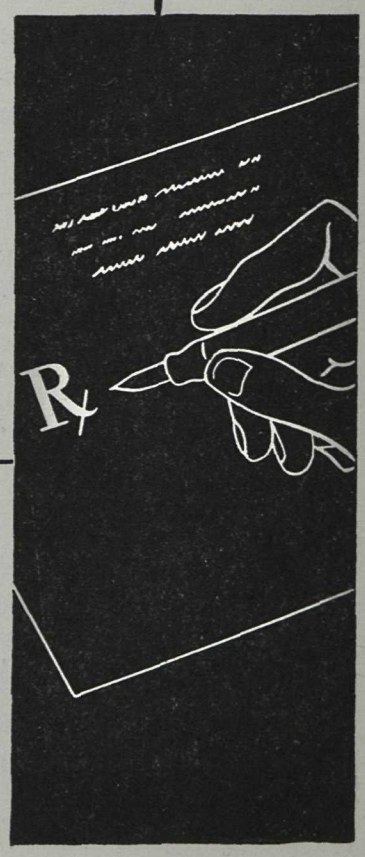
Each vial contains an average day's prescription

25,000 International Unit tablets—Vials of 12

50,000 International Unit tablets — Vials of 8

100,000 International Unit tablets — Vials of 8

For assured Potency — Write PENIORAL on your Penicillin ℞



Wyeth

Registered Trade Mark

JOHN WYETH & BROTHER (CANADA) LIMITED
WALKERVILLE - ONTARIO

VANCOUVER MEDICAL ASSOCIATION

Founded 1898; Incorporated 1906.

* * *

PROGRAMME FOR THE FIFTIETH ANNUAL SESSION

October 7 GENERAL MEETING—"The Treatment of Peptic Ulcer."
Dr. A. H. Gordon, Montreal.

October 21 CLINICAL MEETING—Vancouver General Hospital.

November 4 GENERAL MEETING—"Sympocium on Peripheral Vascular Disease."
Dr. Rocke Robertson and associates.

November 18 CLINICAL MEETING—St. Paul's Hospital.

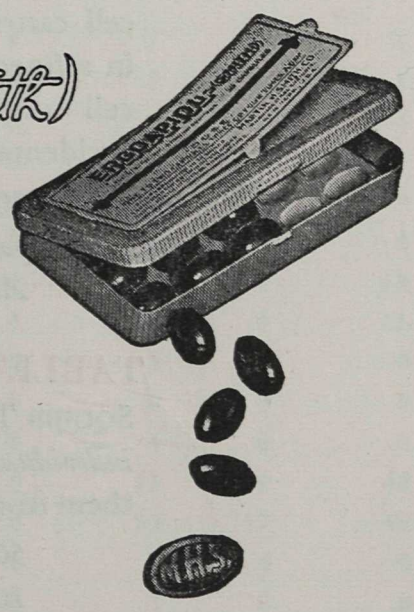
December 2 GENERAL MEETING—"Symposium on Pre-frontal Leucotomy."
Dr. Frank Turnbull
Dr. Allan Davidson
Dr. R. Whitman.

December 16 CLINICAL MEETING—Shaughnessy Hospital.

Ergoapiol-(Smith)

Breaks the vicious circle of perverted menstrual function in cases of amenorrhea, tardy periods (non-physiological) and dysmenorrhea. Affords remarkable symptomatic relief by stimulating the innervation of the uterus and stabilizing the tone of its musculature. Controls the utero-ovarian circulation and thereby encourages a normal menstrual cycle.

MARTIN H. SMITH COMPANY
150 LAFAYETTE STREET, NEW YORK, N. Y.



Dosage: 1 to 2 capsules 3 or 4 times daily. Supplied in packages of 20.

Ethical protective mark MHS embossed on inside of each capsule, *visible only* when capsule is cut in half at seam.

Full formula and descriptive literature on request

SQUIBB

Crystalline Penicillin G

SODIUM

VIALS (*for aqueous solution*)

The presence of a buffer (4 to 5% sodium citrate) makes SQUIBB Crystalline Penicillin G Sodium *considerably more stable in solution* than unbuffered solutions of crystalline penicillin G sodium.

In diaphragm-capped vials of 100,000 and 200,000 units.

OIL AND WAX

SQUIBB Crystalline Penicillin G Sodium in Oil and Wax has improved physical characteristics permitting easier administration . . . and provides prolonged-action penicillin in double-cell cartridges. One cell contains 300,000 units of penicillin in refined peanut oil with 4.8% bleached beeswax. The other cell contains sterile aspirating test solution to guard against accidental intravenous injection.

300,000 units in 1 cc. double-cell cartridges in B-D disposable syringes, or for use with B-D* permanent syringe. Also in 10 cc. vials, 300,000 units per cc.*

TABLETS

SQUIBB Tablets Crystalline Penicillin G Sodium (Buffered) are *individually* and *hermetically* sealed in aluminum foil to protect them from penicillin-destroying moisture. For high oral dosage.

50,000 units per tablet, boxes of 12 and 100.
100,000 units per tablet, boxes of 12 and 100.

All these dosage forms of SQUIBB Crystalline Penicillin G Sodium may be stored at room temperature. Refrigeration of aqueous solution is necessary.

*T. M. Reg. Becton, Dickinson & Co.

℞

Specify . . . **SQUIBB** CRYSTALLINE PENICILLIN G SODIUM

For Literature write

E. R. SQUIBB & SONS OF CANADA LIMITED

36-48 CALEDONIA ROAD TORONTO

VANCOUVER HEALTH DEPARTMENT

Statistics—June, 1947

Total deaths	271	9.7
Chinese deaths	13	26.4
Deaths, residents only	237	8.5

BIRTH REGISTRATIONS:

Male	389	
Female	392	
	781	28.0

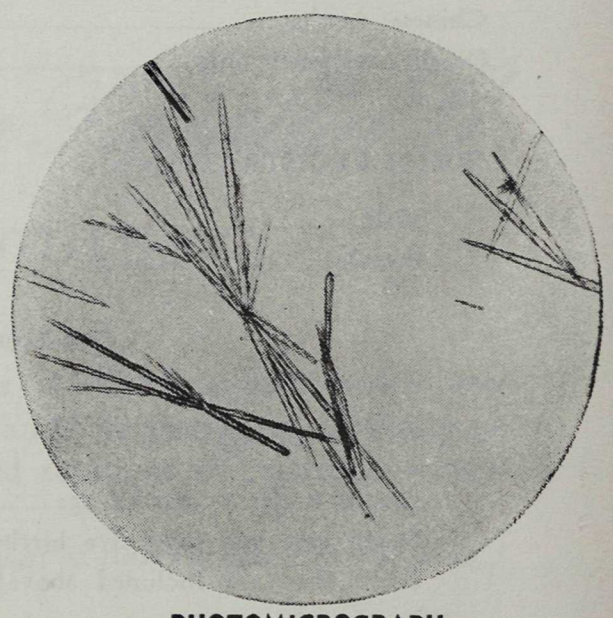
INFANT MORTALITY:	June, 1947	June, 1946
Deaths under 1 year of age	20	27
Death rate per 1000 live births	25.6	38.7
Stillbirths (not included above)	14	4

CASES OF COMMUNICABLE DISEASE REPORTED IN THE CITY

	May, 1947		June, 1947		July, 1947	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Scarlet Fever	11	0	7	0	1	0
Diphtheria	3	0	0	0	3	0
Diphtheria Carrier	0	0	0	0	4	0
Chicken Pox	64	0	64	0	27	0
Measles	87	0	29	0	9	0
Rubella	2	0	2	0	2	0
Mumps	175	0	80	0	18	0
Whooping Cough	107	0	70	0	13	0
Typhoid Fever	0	0	0	0	0	0
Typhoid Fever Carrier	0	0	0	0	0	0
Undulant Fever	0	0	1	0	0	0
Poliomyelitis	2	0	13	0	40	0
Tuberculosis	47	0	52	17	49	0
Erysipelas	2	0	0	0	0	0
Meningococcus (Meningitis)	0	0	1	0	0	0
Infectious Jaundice	1	0	0	0	0	0
Salmonellosis	4	0	18	0	3	0
Salmonellosis (Carrier)	0	0	1	0	0	0
Dysentery	0	0	0	0	0	0
Dysentery (Carriers)	0	0	0	0	0	0
Tetanus	0	0	0	0	0	0
Syphilis	93	0	78	1	0	0
Gonorrhoea	238	0	218	0	0	0
Cancer (Reportable):						
Resident	98	0	82	0	42	0
Non-Resident	32	0	28	0	10	0

CRYSTALLINE PENICILLIN G

It has been widely established that Penicilln *G* is a highly effective therapeutic agent. The crystalline form of Penicillin *G* prepared and supplied by the Connaught Medical Research Laboratories is highly purified. Because of this high degree of purity, pain on injection is seldom reported and local reactions are reduced to a minimum. Crystalline Penicillin *G* is heat-stable, and in the dried form can be safely stored at room temperature for at least three years.



PHOTOMICROGRAPH OF PENICILLIN CRYSTALS

HOW SUPPLIED

CRYSTALLINE PENICILLIN *G* IN VIALS

Highly purified Crystalline Potassium Penicillin *G* is supplied by the Laboratories in sealed rubber-stoppered vials of 100,000, 200,000, 300,000 and 500,000 International Units. No refrigeration is required.

CRYSTALLINE PENICILLIN IN OIL AND WAX (ROMANSKY FORMULA)

A heat-stable and conveniently administered form of Crystalline Sodium Penicillin *G* in peanut oil and beeswax is available in 1-cc. cartridges for use with B-D* disposable plastic syringes, or as replacements with B-D* metal cartridge syringes. Each 1-cc. cartridge contains 300,000 International Units of Crystalline Sodium Penicillin *G*.

* T.M. Reg. Becton, Dickinson & Co.

CRYSTALLINE PENICILLIN *G* IN TABLETS FOR ORAL USE

Buffered tablets of Crystalline Sodium Penicillin *G* are distributed by the Laboratories in tubes of 12. Two strengths are supplied, 50,000 and 100,000 International Units per tablet. No refrigeration is required.

CONNAUGHT MEDICAL RESEARCH LABORATORIES
University of Toronto — Toronto 4, Canada

DEPOT FOR BRITISH COLUMBIA

MACDONALD'S PRESCRIPTIONS LIMITED

MEDICAL-DENTAL BUILDING, VANCOUVER, B.C.

The Editor's Page

It is very gratifying to read in the papers of the recent action of the Alberta Medical Association at their Annual Meeting, which has just been held, with reference to a scheme of prepaid medical care, to apply to all residents of the Province of Alberta. Of course, newspaper accounts are necessarily very sketchy, and it is too early to make any very extensive comment on the matter, but it would appear that the scheme is intended to apply to any individual that wishes to take advantage of its provisions, and not to be limited to groups. If this is so, and our colleagues in Alberta can put a good scheme into effect, soundly financed, on terms that are equitable to the medical man, and not merely generous to the beneficiary, as most government-proposed schemes seem to be, a very great step will have been taken in the direction of a practical system of health insurance that will have a chance to become permanent, and that will satisfy the desiderata that our profession has always insisted, in Canada at any rate, must be met adequately, if we are to feel free to accept it.

It is unfortunate that the financial problems of health insurance have always presented differing aspects, according to whether the person who examines them is on the medical side or on the side of the patient, or shall we say the public, who ultimately have to pay the bills. This is, we think, because the premises are not clear or at least, the two sides seem to be working from different angles. We are accused of being ungenerous, greedy, even grasping—it is popularly supposed, and many people, even on the floor of the Legislature, have said so categorically, that we are disingenious in our opposition to the schemes of Health Insurance that have hitherto been brought forward, and notably to the B. C. Health Insurance Act, and that we object merely because we do not get enough money. Our good faith, our sense of public responsibility, even our standing as good citizens, are impugned.

This is, as we have said before in these columns, at least partly our own fault—in that we have never presented our side of tht case at all adequately to those who are entitled to know the whole truth about this controversy—viz., the public. We have sat supinely by and allowed all these things to be said, and have allowed the other side to give their views unchallenged and unchecked. But, apart from this, we should let the public know more clearly why we have always resisted the suggestions that have so far been made by governmental bodies seeking to inaugurate Health Insurance. It is true that we should be scandalously underpaid, by any standards—but this is not the only, not even the main evil, though it is naturally very important, too. The real objection to all the schemes proposed and this applies too, to the schemes now in force in Great Britain and elsewhere, is that it would mean an instant and a dangerous lowering of all the standards of medical work that we feel must be maintained and even raised higher. It would mean a denying to the so-called beneficiary—victim might be a better word—of certain drugs and treatments that we think are necessary, simply on the ground that they would be too costly—it would mean cheap work, cheaply done—it would remove from medical practice what, under our so-called democracy, every other citizen can claim, the right of free enterprise—the initiative that leads to good work.

No provision is made for prevention of disease, for research, in fact, any politically inspired scheme of Health Insurance as we see it at least, is doomed to split on the two rocks of penury and political expediency. So it is good to see Alberta medical men taking things into their own hands, and working out a scheme that will conform with the laws of supply and demand, and with ordinary economic considerations. We, in B. C., of course, have the M.S.A., and as far as it goes, and this applies for the other

approved plans in the province, it is a model of what a Health Insurance plan can and should be—but unfortunately, so far, it has not been possible to open it to all classes of the community. We believe that steps in this direction are to be taken as soon as it can be done, and we hope that day will come quickly.

We shall all watch the developments in Alberta with the greatest interest, and we wish them the success that their courage and public spirit deserve.

LIBRARY NOTES

HOURS—

Evening hours in the Library will be resumed on October 1st, when the Library will remain open until 9:30 o'clock three nights a week (Mondays, Wednesdays and Fridays). On alternate days (Tuesdays and Thursdays) hours will be 9:00 to 5:00 daily, and 9:00 to 1:00 on Saturdays.

RECENT ACCESSIONS TO LIBRARY—

Medical Clinics of North America, Symposium on Blood Transfusion and Rh Factor, Mayo Clinic Number, July, 1947.

Acta Medica Scandinavica, Symposia—

No. 175 Hypertension. Hæmodynamic factors and retinal changes in hypertensive diseases.

No. 176 Plasma Protein. The normal plasma protein values and their relative variations.

No. 177—Peroral and Intravenous Galactose Tests. A comparative study of their significance in different conditions.

No. 178 Diabetes Mellitus in Bergen, 1925-1941. A study of morbidity, mortality, causes of death and complications.

No. 179 On the distribution of the morbidity of epidemic diseases with regard to age.

No. 180 A new method for staining tubercle bacilli, applicable also to the micro-organisms of leprosy and other acid-fast germs.

No. 181 Tuberculosis Incipiens. Further studies of the initial stage of chronic pulmonary tuberculosis.

No. 182 Methanol Poisoning, its clinical course, pathogenesis and treatment.

No. 183 Acidosis—Clinical aspects and treatment with isotonic sodium bicarbonate solution.

No. 184 Hypometabolism. A clinical study of 308 consecutive cases.

No. 185 The quantitative nature of renal research and other concluding remarks.

LECTURES IN MEDICINE AND SURGERY
SHAUGHNESSY HOSPITAL

With reference to a programme of lectures in Medicine and Surgery, repeated this year by the Staff and others of Shaughnessy Hospital, it has now been decided to admit any members of the profession resident in Vancouver, who are in good standing.

Lectures will be given in the Auditorium, Old Building, on Mondays and Wednesdays, from September 29 at 7:30 p.m., unless otherwise notified.

F. C. BELL, M.D.,
Superintendent.

Vancouver Medical Association

President ..... Dr. H. A. DesBrisay
Vice-President ..... Dr. G. A. Davidson
Honorary Treasurer ..... Dr. Gordon Burke
Honorary Secretary ..... Dr. Gordon C. Johnston
Editor ..... Dr. J. H. MacDermot

HISTORY OF THE VANCOUVER MEDICAL ASSOCIATION
(Continued)

THE CITY HOSPITALS

NOTE: I wish to acknowledge my indebtedness to Mr. F. J. Fish, in charge of the Office of Records at the Vancouver General Hospital, for his assistance in compiling the following material relating to the City Hospitals. He unreservedly made available all his comprehensive records pertaining to these Institutions throughout the earlier years. Without his assistance the following story could not have been told. G. E. KIDD.

It was in 1886 that Vancouver first had a hospital of its own. During that year the city took over the small building on Powell Street, which had served the C.P.R. as a dressing station during the years of the construction of the Coastal section of the Road. After steel had been laid into Vancouver the Company's local hospital was given over to the city. The railroad had used the building for treatment of minor cases only, and as a clearing station for the more serious ones before transfer to Yale where a central hospital was located.

While still under the control of the C.P.R., the Powell Street building had given emergency treatment to Vancouver's citizens as needed, but all cases requiring hospitalization went to New Westminster. As late as February of 1887 we find a record of a bill of charges from the Royal City Hospital to Vancouver's City Council.

The small hospital was located on Powell Street near where the sugar refinery now stands. The late Dr. A. M. Robertson described it as: "A little one and one-half story building with two rooms upstairs and two down. The front room on the ground floor was the dining room, on the table of which necessary operations were performed. In a corner were several shelves on which the doctors kept their kits and medicines. The staff consisted of one man, a Welshman named Hughes. He acted as nurse, cook and general handyman. He slept in a bunk in the kitchen and was none too clean. The second room on the ground floor contained four beds, and ine one of the rooms upstairs there were two more. The hospital had a wide verandah, in front of which passed the dirt road from Hastings to Gastown. There were usually two or three patients, but sometimes all the beds were occupied. The main C.P.R. hospital was in Yale, to which all more serious cases were transferred."

The building having, through the efforts of the above-mentioned Hughes, escaped the great fire of 1886, was taken over by Vancouver, and became known as the City Hospital. There are on record a few references to it under its new name. In September, 1886, Owen Hughes was appointed Steward of the hospital, with a salary of $25.00 a month. Under the date of January, 1887, we have reference to the payment of $6.00 to W. Ashford for delivery of milk, and on the same date tenders were asked for to supply five cords of wood, stovewood length. In March of 1888 we have an item asking

Dr. Lefevre to pay over to the City treasury all monies he had collected from the hospital. Finally on November 23, 1888, it was agreed at a meeting of the Board of Health that: "The old City Hospital is now no longer needed, and that the C.P.R. Commissioner be notified to this effect."

Meanwhile it had been generally recognized that the city urgently required a new and larger hospital. The population of Vancouver in 1886 was only 1000, but during 1887 it reached the 5000 mark. Arranging for such an institution was the duty of the Board of Health. Accordingly this body, in September, 1886, asked the Provincial Government to apportion a sum of money towards the erection of a hospital building, while the city itself was requtsted to supply beds and general furnishings for the same. The Government apparently took no action, so the Council was asked to shoulder the entire cost. In August of 1887 invitations went out for the submission of plans and specifications for a hospital which would eventually cost $20,000, the estimates for the first unit, to be erected at once, being $4,000. Property owners were invited to provide a suitable site, but failed to respond, so a special committee selected a location on Beatty Street, Lots 1 to 10, Block 38. This property, which faces on Pender Street, was purchased fro mthe C.P.R.

Here in 1888 was erected the two-storey frame building which is still standing, but farther south on Beatty Street, which it now faces. It has had a colourful history. It served first as a general hospital, then an isolation hospital. The first seeds of the University of British Columbia were planted here. Still later it served as an old people's home. For the past two decades it has been used as headquarters for the city's labour organizations—address 529 Beatty Street.

Extracts from the pages of the Vancouver *News Advertiser*, published during the summer of 1888, give us a picture of the progress of the erection and equipping of the building.

June 22, 1888.

"Last summer, Dr. Edmunds, a celebrated English physician, who has been for many years connected with London hospitals, while on a visit to Vancouver was asked to give to the City Council his opinion on the kind of a hospital best adapted to the wants of the city. Acting on his suggestions, the architect, Mr. A. E. McCartney, designed a building which stands before the citizens of Vancouver as a hospital of which they may well be proud. The building is two stories with a basement, in height, and stands on the side of a hill, the main entrance facing Pender Street, which is approached by a broad flight of steps. To the left, on entering, is an emergency room for the treatment of accidents requiring immediate attention, and to the right are the dispensary and nurses' room. The main ward is a fine spacious room, which will accommodate sixteen beds. It will be heated by stoves, and lighted by electricity.

"The second floor comprises two private wards, a nurses' room, and a large ward similar to that on the first floor. The windows here open onto a balcony, from which a magnificent view of the city and inlet may be obtained. The recreation grounds are also visible, and it will be a great source of amusement to the convalescent patients to watch the different games carried on there.

"The basement contains the kitchen, store rooms, laundry and necessary offices. The kitchen is connected with the wards by speaking tubes. There is apparently no dumb waiter nor elevator to convey the food from the kitchen to upstairs. The extension to the building contains the water closets and bathrooms, which are entirely distinct and apart from the main building.

"The building as it at present stands is only one-third of what it ultimately will be, two other wings of similar size being provided for in the plans, connected by means of enclosed galleries. The present building, however, is expected to be sufficient for some time to come. Its total cost alone will be in the neighborhood of $7,000 or $8,000."

That everyone was not completely satisfied with the new building is indicated by the following letter to the *News Advertiser* from a Vancouver practitioner, Dr. G. F. Bod-

ington. His letter is dated September 7, 1888, and reads as follows: "Sirs,—I have not yet been inside the new City Hospital, but the outside is a sufficient illustration of the mischief of doing without the aid of experts. Anyone can now see that a great mistake has been made in the mode of access to the building. The front entrance is reached by a steep staircase of 17 steps. Added to this there is a jump of more than three feet from the lowest step to the level of the sidewalk. To abolish this jump three or four more steps will be needed, so that there must ultimately be 20 steps or more between the sidewalk and the front door of the hospital. Fancy a patient with fractured ribs or a broken thigh, or any other agonizing injury, jerked and jolted up these twenty steps in a sort of tortuous Jacob's ladder which he must mount painfully before entering the haven of rest and recovery above. I cannot conceive that such a mistake as this would have been perpetrated had there been a Medical Board in office during construction who would have brought the fierce blaze of combined criticism to bear upon the work as it proceeded."

The new hospital was opened on September 22, 1888, and the *News Advertiser* reported on the event as follows: "A visit to the hospital yesterday afternoon showed that the work of moving the patients from their old quarters had been successfully carried out and the poor sufferers already looked better for the change. The lower ward is the only one in use at present, and it presented a cheerful and homelike appearance. Bright fires were burning in the stoves, the beds with their snowy coverlets looked the embodiment of rest; the Matron, Mrs. Roberts, and her assistant, Miss Crickmay, in high, white linen caps and the regulation nurses' costumes looked the personification of Sir Walter Scott's ideal, while bunches of autumnal blooms scattered here and there added beauty and charm to the scene.

"There is accommodation for 16 beds in each ward, the upstairs ward to be for women and downstairs for men, and three in private wards. The operating room is fitted with portable electric lights for use in surgical operations.

"The matron, Mrs. Roberts, is an acquisition to any hospital, having had a thorough training in leading London hospitals, and subsequently a large and extensive experience as Matron and Nurse in Egypt and Australia. The Medical Board, which will have charge of the hospital, was elected by the City Council, and consists of Doctors Bell-Irving, Langis, Lefevre, McGuigan and Robertson.

"In connection with the hospital it might be mentioned that contributions of flowers and old linen will be thankfully received by the matron."

Hereafter all affairs pertaining to the institution were administered by the Board of Health acting in conjunction with two members of the Hospital Medical Staff. This body was known as the Health Committee of the City Council, and continued to function until the incorporation of the Vancouver General Hospital in 1902, at which time it gave place to a Board of Directors appointed by the Provincial Government.

The selection of the Medical Staff gave rise to some difficulties. In 1887 there were nine registered physicians practising in Vancouver. These were Doctors Bell-Irving, Lefevre, Robertson, McGuigan, Langis, Bodington, Beckingsale, Stevenson and McAlpine. About the time that the building of a new hospital was first mooted, a Vancouver Medical Society was organized; probably, but without certainty, for the sole purpose of dealing with the selection of a staff for the institution. Dr. Bodington was President. This latter was evidently a man of very decided opinions which he did not hesitate to express most forcibly. Major Matthews, the City Archivist, states that he was an Englishman whose father, also a Physician, had won some recognition in the Old Country as being among the first to advocate the treatment of pulmonary tuberculosis by the fresh air and rest method. The younger man later moved to New Westminster, and was for some years before his death, Superintendent of the Provincial Mental Hospital. Since we have no means of deciding between the rights and wrongs of this remote dispute, quotations bearing on it from contemporary newspapers, will be given.

From the *Daily World*, October 12, 1888.

"A move was made in 1887 to replace the old hospital east of Hastings sawmill. This summer, Dr. Bodington, President of the Vancouver Medical Society, made suggestions regarding the future management of the hospital. They were thrown out by the City Council. On July 31, a delegation from the Medical Society came before the Council. Their suggestions were held over for future consideration.

"Meanwhile, Dr. Robertson, through the Chairman of the Board of Health, had been virtually appointed by the City Council to act as Medical Officer in sole control of the hospital, at a salary of $1000 a year. It is evident that a great deal of wire pulling of one kind or another had brought this about, and the other registered Medical Men found themselves out in the cold. The Council reconsidered the matter, and the Medical Society was asked to draw up a scheme for the future management of the hospital. It proposed that a staff of nine doctors, eventually reduced to five, should be in control; each to be on duty, in rotation, for one week. The Medical Staff was to constitute the Medical Board, this Board to depute two members to act with the Board of Health for deliberating and explanatory purposes.

"The plan for placing Dr. Robertson in charge was dropped and that of the Medical Society adopted. The Council then appointed five members to the Hospital Staff, viz., Doctors Bell-Irving, Lefevre, McGuigan, Robertson and Langis. Just why, has not come out. There were wheels within wheels in the arrangement. An indignation meeting has been arranged."

Reporting on this meeting the *Daily World* continues: "Capt. Mellon was in the chair. It was resolved that: 'This meeting is of the opinion that the recent election of the Medical Staff for the new hospital was informal, irregular and void, and calls upon the City Council to proceed with a new election forthwith. A great injustice has been done.' Dr. Bodington was asked to address the meeting. He reviewed the formation of the Medical Society of Vancouver. A letter from it to the Board of Health regarding the Medical Staff had been ignored, as was a deputation of its members. Said Dr. Bodington: 'Five names came before the City Council, and that body should be ashamed of the way in which these appointments were passed by them. The whole thing had been pre-arranged. The City Council was pulled by the nose in a way I have never seen in any city elsewhere. Why should the Chairman of the Board of Health act like this? Was it professional jealousy, or national jealousy? Was it national hatred? The election was cooked beforehand, and sprung on the Council. No cliques should be allowed. The Council should be sheared of certain members not fit to hold office.'

"The resolution was passed unanimously. Dr. Beckingsale spoke, as also did Dr. Stevenson, who suggested that perhaps the Council had chosen for the staff those doctors who had most time on their hands."

As time went on other members were added to the hospital staff. In 1890 we find the names of Doctors Johnson, Wilson and Beckingsale on the list. In 1891 Doctors Thomas and Herbert were added. Members took turns on duty, each for a period of one week. There are sugestions of neglect of these duties, since in 1892 we find a record of one, George Gagen, complaining to the Council that patients were being neglected by the staff. The matron was instructed to notify staff members two days before they were due to come on their weekly term of duty. At the same time the Chairman of the Board of Health was empowered to examine into the condition of all patients, and to take any steps which he considered necessary for their disposal.

The first suggestion that a house-surgeon be appointed to duty in the hospital, precipitated a small riot among the members of the staff. In the minutes of a staff meeting held in April, 1896 we find the following startling resolution: "We the undersigned, the Medical Board of the City Hospital, have been informed by the Chairman of the Board of Health that the services of the Medical Board be dispensed with and that a house-surgeon be employed. We who have given service for seven years should have been consulted before such radical step was taken. We hereby tender our resignations." The resolution was signed by Doctors Bell-Irving, Wilson, McCuigan, Robertson, Langis,

Poole, Weld, Tunstall and Thomas. It was forwarded to the Mayor and to the morning paper for publication.

The story of the episode is confused, but it would seem that an advertisement had appeared in a city newspaper asking that appliations be made for the position of house-surgeon to the city hospital. In reply to the Board's letter of resignation the city clerk sent a hasty denial that the Board of Health had in any way been responsible for the placing of the notice in the paper; at the same time stating that such an appointment of a house-man would in no way affect the status of the hospital staff or of existing arrangements, and asking that the staff continue as heretofore. In view of this explanation the resignation of the Board was withdrawn.

It does not appear just who was responsible for the advertising for a house-man, nor does it seem that any immediate replies were forthcoming. It is not until two years later, in 1898, that we have a reference to application for the position having been received from Doctors Bentley and McEwen. Dr. Bentley, at least, was attached to the hospital staff in 1898, and in records covering the following year we find Dr. McEwen referred to as House-surgeon and Hospital Superintendent. He held this position until July, 1904, when he resigned and was succeeded by Dr. A. M. Robertson. The latter is variously referred to as Resident Medical Officer and as Medical Superintendent. In February of 1906 Dr. Robertson asked for an assistant resident house-surgeon. Pending appointment of a permanent man, a part-time local practitioner was given the position at a stated salary. It was not until 1909 that the Medical Superintendent was made a permanent, full-time official of the institution, who was also chief executive of the hospital. He was henceforth known as General Superintendent.

The first nursing staff of the new hospital on Beatty Street was constituted as follows: Matron, Mrs. Roberts; Assistant Matron, Miss Bessie Crickmay; Nurses: Miss Agnes Crickmay, Mrs. Birks; Night Nurse, Mr. G. D. Day; Porter; Cook. The matron held a responsible position and her duties were many. She acted as hospital superintendent. Besides managing her nursing staff, she supervised the hospital grounds, collected fees from the paying patients, and purchased all supplies; although such purchases had first to have the approval of either the Chairman of the Board of Health, or of the Mayor. Once when a dead Chinaman was inadvertently left in the morgue for five days, it became the duty of the matron to see that it did not occur again. At first each druggist was given an equal share in the supplying of drugs to the hospital. Beginning with F. E. McCartney, they took turns, each covering a period of one month. In 1889 the matron was instructed to purchase drugs from the best druggists, giving each a fair share of patronage. The next year, 1890, we find a six months' contract for the supply of drugs being given to H. HcDowell & Co. For the sake of economy, all drugs, insofar as possible, were to be purchased in concentrated form, and it was a duty of members of the medical staff to assist in making up stock solutions. In 1890 we find a letter from the City Clerk complaining that the staff members were writing prescriptions instead of making use of the stocks on hand. We note too, a purchase of three gallons of whiskey from the Hudson's Bay Company, at a cost of $8.50.

From the first there appears to have been minor troubles with the nursing staff. Within a month of the opening of the hospital we have a recorded meeting of the Staff: "To consider charges against the Matron." Her resignation was asked for. Miss Bessie Crickmay succeeded her and held the position for one year. In August of 1899 the entire nursing staff, including the matron, was dismissed for unstated reasons, and newspaper advertisements inserted calling for applicants to fill their places. These specified that: "The Matron must be a person of middle age." The new Matron was Miss Swan and she had as a staff Nurses Alcock and Woodward. This staff was soon afterwards augmented by a housekeeper, a night porter, a woman cook, and two assistants, the latter at a salary of ten dollars a month. The night porter was appointed Steward, with a five dollar increase in his twenty dollar salary. His additional duties consisted of collecting

fees from private patients. We note that about this time the day porter asked that he might have every fourth Sunday off. This was granted.

Matron Swan resigned in January, 1892, but reconsidered and remained in office until May of 1893. As an appreciation of her services she was given an embossed address. She was succeeded by Miss Jean Macfie. The latter was in turn followed by Miss Margaret Clendenning, who held the position until 1904. At this time we have an item in the Board minutes felicitating her on her recent marriage to J. B. Hart. In 1902 there had been another flareup of trouble with the nursing staff. It appears that Matron Clendenning had been severely rebuked by the Mayor for some unstated action of hers in connection with one, Mrs. Topley, probably a patient in the hospital. The nursing staff was greatly incensed and threatened to resign in a body. On the persuasion of the Assistant Matron they reconsidered, but let it be clearly understood that if anything more was said to their Matron, they would leave the wards at once.

The Beatty Street hospital began modestly with a men's ward of ten beds. Besides the main building there were on the grounds a morgue and a small isolation hospital. In 1890 the City Solicitor advised that to avoid legal action the morgue must be moved. It was placed nearer to Pender Street. A year later it was resolved: "In future the morgue will be connected with the City water works and sewers."

Miss Agnes Crickmay has left a statement describing conditions during those early years: "In 1888 my sister Bessie succeeded Mrs. Roberts as Matron, and I was a nurse under her. There was another day nurse and a male night nurse. There were ten or twelve beds in the only furnished ward, which was on the main floor. Another ward upstairs, intended for women, was never finished, although an occasional woman was nursed there. We had water and electric light in abundance. There were three bedrooms upstairs, for the staff, and a small sitting room. The kitchen and store-room were in the basement. We had a Chinaman for cook. There was much typhoid and much surgery. Many cases were beyond description, and much of the C.P.R. work was left to the nurses to do, as the doctors had little time at their disposal."

From another source we learn: "There was a queer little operating room, primitive in the extreme. Water was boiled in a wash boiler, and a fish kettle was used for sterilizing the instruments." In October of 1888 we find a resolution by the Medical Staff to the effect that whenever an operation was slated to be performed, all members should be notified so that they might attend.

Financing the institution through those early years was a problem. Rates for private cases were $10.00 a week. C.P.R. patients got a special rate of $5.00. Marine cases were charged 90 cents a day, but the Health Committee insisted that a doctor to attend them should be supplied by the shipping companies. A city man was appointed to the post at a salary of $400.00 a year. The most severe economy was practised by all concerned. In 1889, the Matron, Miss Crickmay, offered to reduce her meagre staff to lessen expenses. This was approved by the Board. We find her asking for 60 feet of hose and being given 50. Dr. Lefevre ordered chicken diet for one of his patients. The request, coming before the Board, was laid over. Presented again, it was again refused. As noted before, the Matron was responsible for the collection of fees. As late as 1892 we find her being urged to make more strenuous efforts to collect from paying patients. Later on, the male night nurse was appointed Steward and given the task of collecting these fees. In 1893 the City Council was asked to place a bookkeeper in the hospital to look after accounts.

The city was growing rapidly. By 1890 it had reached the 12,000 mark, and a ten-bed hospital, for men only, was quite inadequate to serve such a population. Plans for augmenting the ward accommodation included dividing the upper floors into a women's and a fever ward. Tenders were called for this, and in June of 1889 a contract was let to J. G. Garvin, the cost to be $190.00. It seems never to have been carried out.

Pressure was brought to bear on the City Council from various sources. In January, 1890, we find on record a letter from Mrs. E. Salsbury, President of the Ladies' Aid to the hospital asking for increased accommodation, including space for children. The sum

of $1000 was placed in the estimates for that purpose. In August of the same year the letter from the Ladies' Aid was repeated, and careful consideration promised by the Board. The following month a request came from the Secretary-treasurer of the Hospital Committee, signed by Mrs. Annie E. Webster, asking that the Council found a separate institution to be known as a "Women's and Children's Hospital." This was referred to the incoming Council.

The new Council placed in its estimates two items of considerable size. One for $6000 for a new hospital wing, and a second for $2000 for the erection of a Women's and Children's hospital. In consideration of the last appropriation it was resolved: "That the chairman of this Board be at all times one of the Board of the said hospital." Construction of the new wing got under way at once. While it is spoken of as a wing, it was in reality a detached building, joined to the other by a closed-in passageway. By the spring of 1892 it was completed and beds installed in the wards, ready for occupation. Plans for a Women's and Children's hospital seem to have fallen through, since nothing more is heard of such a separate institution being built.

CHIROPODY—AN AUXILIARY TO MEDICAL PRACTICE

By Dr. J. H. McDermot

The healing art, as we know it today under the name of the Practice of Medicine, is a very complex structure, more or less homogeneous in the main, with all its parts interlocking to a very high degree of efficiency. Medicine and surgery, the two main divisions, are almost completely interlocked; and the specialties, gynæcology, obstetrics, eye, ear, nose and throat, and so on, are all firmly knit with them and with each other, through a uniform underlying aggregation of principles and laws, based upon a uniformity of teaching in the basic sciences of chemistry, anatomy, physiology, pathology and bacteriology, therapeutics, and all the rest of it. True, at times, and from time to time, we are challenged by other schools of thought, which seek to interpret the causes of disease, and to build on their interpretations methods of treatment which are wholly, or in the major part, unacceptable to our theories and understanding, and which often seem bizarre or even harmful to us. The only test of these, in reality, is the old test suggested by Gamaliel, in the Acts of the Apostles, the test of time and experience. If they have in them any truth, this truth will in time justify itself—and since in the main we (that is, the medical profession) are honest seekers after truth, in time we adopt them and turn them to our own use, and profit by them. As we read the history of medicine, we find that this is the case in such matters as vaccination, the circulation of the blood, Pasteur's theory of disease, based on his discovery of germs, and so on. As we go further back in history and view the struggles between the Galenists and those who sought a scientific basis for medicine, we see that this struggle between the "orthodox" medical profession, and those who challenged it, was not always decided in favour of the orthodoxists. But, to the honour and credit, and profit too, of the medical profession, we find that each of these, at the time, revolutionary ideas, was studied and weighed, and ultimately accepted and digested, to become part of the framework of the medical structure. Where there has been no element of truth in the pretender's thesis, no scientific basis for his claims, sooner or later these have failed of acceptance, not only by the medical profession, whose opposition was often misinterpreted by laymen as a purely interested refusal to accept the new methods and theories, but by the public itself, which came gradually to see that there was no virtue in the claims put forward by those who made them. Countless false doctrines have come and gone—each generation sees a new one—some of them have done us a lot of good, by forcing us to face the issues involved, and clarify our own position. Others, like homeopathy and osteopathy, have gradually

enlarged their outlook and expanded their courses of instruction along orthodox medical lines, and have more or less merged with the regular medical profession.

And, too, we tend to forget perhaps that medicine, surgery, and obstetrics were not always united. Surgery, as we all know, was once part of the barber's trade, and no self-respecting medical man would have anything to do with it. Indeed, in the eyes of some internists of note, it is still to some degree on probation and an object of a more or less veiled suspicion. Obstetrics was once the property of the midwife, and she did not do too badly at that.

It may be thought that medicine as a profession adopted these orphans, for its own gain and advantage. But this was not entirely so. It was only when the medical profession remodelled them, insisting on a general medical training, and a preliminary scientific training, that these now marvellously developed branches of medicine became capable of growth. Surgery, obstetrics, dentistry, and so on, joined the "orthodox" school of medicine, by a process of assimilation. Their practitioners had to be willing to put in the time and engage in the studies which were necessary for a general knowledge of the basic sciences; first, those of anatomy, physiology, pathology, etc., and secondly of general medicine, and of the body as a whole and the laws of health and disease. Only then could they grow and develop as the rest of medicine could grow and develop; and the basic truth and correctness of the principles of medicine, as we know it today, have been proved to the satisfaction of any reasonable person, by the results which have been attained.

So with any specialty in healing which may wish to justify its claims to a definite place in the organization of medicine, the healing art. The experience of many generations has shown that only when it measures up, in its standards of training and teaching, both scientific and technical, to the standards of general medicine, can it hope, not only to succeed temporally and materially, but to grow and develop continually, as medicine has done.

This is true, for instance, of such a specialty as dentistry, which, in its modern form, has come a long way from the tooth-drawer of the Middle Ages. Its progress has been *pari passu* with that of medicine, of which it has long been recognized as a full brother, an ancillary science and art, of a status equal to that of any other specialist in the list. But to attain this recognition, and to place itself in position to grow and advance, the dental curriculum had to be widened and deepened, so that the student of dentistry undergoes, *mutatis mutandis,* the same gruelling course of study, both of the basic sciences and of the therapeutic and diagnostic courses of the later years, that his medically-inclinesd brother must follow. They must both spring from the same trunk, though they branch out in different directions; the trunk being a thorough training in general medicine for all who would stem from it.

In later years, a new candidate has sought to be grafted on this trunk, and to be recognized as a definite branch of the Tree of Healing. This is chiropody, the branch that deals exclusively with the treatment of diseases of the feet. Till comparatively recently, this art was a very limited one, its limitations being due to a lack of adequate training on the part of its practitioners. The chiropodist of fifty years ago was not a highly-trained man. The Encyclopædia Britannica defines him as "one who treats the ailments of the hands and feet, or is consulted as to keeping them in good condition; the use of the word is now restricted, however, to the care of the feet. . . . The word was first introduced in 1785, by a 'corncutter' in Davies Street, London." The medical practitioner tended to look down upon this individual as a "corn-doctor." He regarded him with some suspicion, and objected to his use of the title of doctor. He certainly never would dream of advising his patients to consult a chiropodist.

This feeling of derogation still unfortunately exists to some degree in the minds of too many medical men. It is only when one sees the high degree of scientific attainment of the present-day practice of chiropody that one sees how completely unfair and unjustified it is. One sees now a highly trained man, ethical and professional in his outlook, to whom specialists in orthopædics, who surely should know what they are

doing, refer their patients constantly for consultation and treatment, in the care of those of our patients who suffer from diseases of the foot. We see him doing work that we cannot do, and have not been trained to do—we see that he has a knowledge of footwear, of supportive and therapeutic treatment, that we have never acquired, and we find that our patients obtain relief and cures, along the most highly scientific lines, lines which we ourselves have been trained to follow; a relief that we could never have given them.

The practitioners of chiropody, to their credit be it said, recognized the handwriting on the wall. They were honest and sincere men, and they wanted to progress and grow, as the dentists had wished to do. They felt that they had a definite contribution to make to medicine, and they felt that medicine as a profession was not fully cognizant of the importance of diseases of the foot. Further, they saw, and we cannot deny this, that the treatment given by practitioners of medicine, to diseases of the foot, was not adequate—that insufficient study was given to the foot in the medical curriculum, to the importance of footwear, to the necessity for care of the foot, in the case of the worker, the housewife, the soldier, the child, the nurse and so on.

They saw clearly that before they could hope to make their voice heard, they must be qualified to talk the language of those in authority in the medical world. So they organized, and began to put their house in order. They established Colleges and Schools of Chiropody, which rank very highly as first-class educational institutions. They raised the standard of preliminary academic education along general cultural lines, to ensure an adequate standard of literacy and general education. They raised their standards of basic scientific education, to correspond with their extension of their other courses. They raised their standards of technical education and training. From a two-year course, with 2600 hours of instruction, they went to a three-year course, with 3200 hours, and now they demand a four-year course of eight months each of training and instruction, with 4200 hours. This on top of the preliminary academic training, which in British Columbia must be the equivalent of the first year in Arts of the University of British Columbia; the regulations in other provinces and in the United States are similar in all respects.

As one reads the calendars of their schools, one sees that the students in Chiropody receive their teaching and training not only, or even mainly, from chiropodists; from these they receive only their technical training. But their scientific medical work they receive from the same medical teachers that teach in the medical school to which the Chiropody School is invariably attached. Such schools are the Illinois College of Chiropody and Foot Surgery, Chicago; the School of Chiropody, Temple University, Philadelphia; the California College of Chiropody, San Francisco; the First Institute of Podiatry, Long Island University, New York; the Chicago College of Chiropody and the Ohio College of Chiropody.

The Candidate for examination by the B. C. Board of Examiners in Chiropody, on which there are at present two medical men, must have graduated from a recognized school of chiropody, and must have the preliminary academic education referred to. His examinations include anatomy, physiology, chemistry, bacteriology, histology, pathology, diagnosis and treatment, materia medica and therapeutics, minor surgery, and clinical chiropody. He is also required to take courses in hygiene and sanitation and to have a reasonable knowledge of rœntgenology and physio-therapy, and must make a general average of seventy-five per cent in all subjects, and not less than sixty per cent in any one subject.

So, we cannot deny the chiropodist of today an equal status with the dentist as a recognized part of the medical structure, and, within his specialty, with ourselves. He is really a trained specialist, a trained medical specialist, in disease of the foot.

Two quotations will serve to emphasize this point.

Excerpt from a Statement by The American Medical Association:

"Chiropody is a practice ancillary—a hand maiden—to medical practice in a limited field. . . . General opinion seems to be that chiropody fairly well satisfies a gap that the (medical) profession has failed to fill."

—A.M.A. Judicial Council.

Excerpt from a Statement by The San Francisco County Medical Society:

"The profession of chiropody . . . is that branch of medicine which cares for the needs of the human foot in health and disease. This includes the diagnosis, prevention and treament of the ailments of the foot. Treatment constitutes mtdical, mechanical and minor surgical procedures.

"As with medicine and dentistry the educational requirements of chiropody have advanced with the years. . . . Today he scholastic requirements embrace three years[1] of intensive . . . classroom, laboratory and clinical instruction. . . ."

"Following successful graduation . . . the student is invested with the degree—D.S.C.—Doctor of Surgical Chiropody."

—Publications Committee.

Granted the truth of all that has been written as to the educational qualifications of the chiropodist, and the justice of his claim to a place in the structure of the healing art, one may ask "What has this to do with us?"

A great deal.

As it was said above, the medical practitioner is not qualified, either by training or the exigencies of his practice, to treat diseases of the foot as they should be treated. An interesting confirmation of this fact is seen in the experience of the armed forces of the country, which enlisted the services of the chiropodist, and provided for their members regular and systematic chiropodial service. It is true that the best service, such as could only be given by fully trained chiropodists was not always available—but the need was recognized nevertheless.

Excerpt from a Statement by A. S. Moscarella, M.D., Orthopædic Surgeon, Spring Valley, New York:

"I believe that the present-day chiropodist is well trained in the work required of him . . . in the national defense set-up of the country."

Excerpt from a Statement by Edward Schaffer, Lt. Col., Medical Corps, Oklahoma City, Oklahoma:

"I have had occasion in the past several years to refer patients of mine with . . . ailments of the feet . . . to chiropodists."

"This type of professional service is not to be confused with chiropractors but is actually recognized by physicians and surgeons as an important branch of medicine."

Excerpt from a Statement by Edward T. Fischer, M.D., Capt. Medical Dept. Detachment, 192nd Field Artillery, Danbury, Conn.:

"Chiropody as a definite part of the medical care administered to the members of the Army and Navy is necessarv."

There are a great many opportunities in civilian medical practice for the chiropodist, and we need only mention a few. Many of the great hospitals of the United States and Canada have, attached to their outpatient departments, a chiropody service. The chiropodist's work is especially important in diabetic clinics, in metabolic clinics, in orthopædic cases and so on.

We quote from Eliot P. Joslin, M.D., of Harvard University, whose words are deserving of our close attention.

"I think the work done by chiropodists, particularly for diabetic patients in hospitals, is invaluable. . . . I heartily favour the association of chiropodists with doctors and surgeons in the hospitals of the country."

Again—

Excerpt from a Statement by H. Gray, M.D., and W. E. Close, D.S.C., San Francisco, California.

". . . as a result of chiropodial vigilance . . . at the Cedars of Lebanon Hospital in Los Angeles . . . the incidence rate was wonderfully reduced: for hospitalization from diabetic gangrene to eighteen per cent . . . and from amputations to twenty-seven per cent of the (prior) rate. . . ."

—Medical Record, Oecember 17, 1941.

Excerpt from a Statement by K. Hammond Mish, M.D., Garfield Hospital, Washington, D.C.

"I have witnessed the tremendous help that the chiropody service has been to our patients and I do not believe that a diabetic clinic can be satisfactorily conducted without similar connections."

Textbook: Foot and Ankle (1940; Lea and Febiger).

Author: Phillip Lewin, M.D., F.A.C.S., Northewestern University Medical School.

Statement:

"A diabetic person should have his . . . foot defects treated by an orthopædic surgeon or a competent chiropodist." (Page 493.)

Nor is this all. Every industrial surgeon knows the importance, in his hospital practice, of prophylaxis as regards the feet, in the case of men who have been bedridden for many days or even weeks. The postpartum patient suffers, far too often, from foot disabilies following pregnancy, and antepartum patients very frequently need the care and advice that only a trained chiropodist can give. The nurse in training would benefit greatly by sympathetic and intelligent care of her feet. We all remember lectures given by medical officers of the Navy and Army, during one Summer School, showing the tremendous amount of trouble that was caused in soldiers, sailors, nursing sisters, and so on, by disabilities arising from foot deformities and improper shoes.

All these things lead one to feel that every general hospital should possess, as one of its most important services, a department of chiropody, as it does a department of dentistry. This department's services should be available to its staff, to its patients both in and out, and to the public at large.

Author: Dudley J. Morton, M.D., Columbia University.

Textbook: The Human Foot (1935: Columbia University Press).

Statement:

"Since chiropodists are so extensively involved in the treatment of these (foot) disorders their relation toward the broader problem as an agency for public benefit is obvious. . . . " (Page 229.)

Excerpt from a Joint Statement by Physicians of Cooper Hospital, Camden, New Jersey.

"Chiropody is a necessity, and an important branch of the medical profession."
Robert Cooper, M.D.; E. E. Manser, M.D.; Arthur D. Sewall, M.D.; Geo. H. Garrison, M.D.; K. N. E. Haines, M.D.; Henrik W. Lorke, M.D.; W. D. Kunliz, M.D.

And, too, the practitioner of medicine would do well to realize the importance of, and necessity for, the chiropodist's service, both to his patients and himself. The evil effects of diseases of the foot have only recently come to be realized by orthopædic surgeons and by the general practitioner—but there is a vast total of suffering and disability, a great loss of working efficiency and of time, a long list of evil consequences, backaches, postural defects, arthritis and so on, directly due to diseases and disabilities of the feet. These can only be treated by painstaking, meticulous, detailed care, by proper shoes, by adequate supportive measures, by local therapy—and of all these things

we, as a profession, know little or nothing. The medical profession as a whole has completely failed to realize the importance of healthy, painless feet to the human animal, in his work and play, and the crippling and disability that accompany painful and unhealthy feet; the mental and nervous distress, the limitation of capacity to lead a useful life and do a full day's work—to take part in sports—to be, in short, physically fit. There is practically no teaching in medical schools devoted to the foot—no teaching as regards the matter of shoes, and the evils that arise from improperly-fitted footwear. The study of geriatrics would benefit greatly from this knowledge—the old suffer greatly from their feet, and get little or no recognition of the fact from medical men. Even more important is the care of the feet in children, in adolescents, in women, in industrial life, and so on.

The physician treating a diabetic or tabetic, or the neurologist treating cases with sensory disturbances and lessened sensory reception; the orthopædist treating injured feet, arthritides, and so on; the medical men who has an elderly patient suffering from painful and deformed feet, corns, callouses, and the like—all these would benefit greatly, as would too their patients, by a free interplay of consultation and co-operation in treatment.

Yet it has been left for the chiropodist to bring this to our attention. We might well add to our summer school and other similar programmes, a talk from a qualified chiropodist on the care of the feet.

As one looks through the literature, one is struck by the entire absence of any reference to the work of chiropodists. Even leading books dealing exclusively with diseases of the foot, make no mention of this, and deal chiefly with the work of the orthopædic surgeon. Books on pædiatrics, obstetrics, say little or nothing about prophylaxis and preventive care of the feet. Steiglitz, in his work on Geriatrics, says nothing whatever about the disabilities of the feet that especially bese old age.

There is no conflict here between the work of the orthopædist and that of the chiropodist.

Excerpt from a Statement by R. R. Goldenberg, M.D., Orthopedic Surgeon, New York, New York.

> ". . . the profession of chiropody does not in any way encroach or interfere with my practice of orthopædic surgery."

Excerpt from a Statement by H. V. Krutz, M.D., Orthopedic Surgeon, Nyak, New York.

> "The scope of the chiropodist . . . (does not) . . . overlap with the activities of the orthopedic surgeon."

Neither can or does do the work that the other is qualified to undertake—no chiropodist would undertake any form of major surgery, treat fractures or wounds of the feet—his work lies along the line of detailed, continuous, day by day care, the fitting of proper footwear, the study of which occupies a large part of his training, supportive and corrective measures, physiotherapy, the care of the nails, of calluses, and so on. This is work that the orthopædist cannot undertake; and yet it is as important as the major procedures, if full efficiency of the foot is to be recovered.

We might well formally recognize, as the British Medical Association has done, the profession of chiropody as a special branch of the organized profession of medicine, of which it is quite fully qualified to be a branch in good standing.

THE CAUSES OF ABDOMINAL PAIN IN INFANTS AND CHILDREN

CLEMENT A. SMITH, M.D.

(Summer School, Vancouver Medical Association, June 1947)

FOREWORD

We think that all our readers will be well repaid for a careful study of the following papers delivered at the recent Summer School of the Vancouver Medical Association by Dr. Clement A. Smith of the Department of Pediatrics, Harvard University, Boston, Mass.

Dr. Smith described himself as a sort of liaison officer between the Pediatric Department and the Obstetrical Department of Harvard, thus including all the work done at the famous Boston Lying-In Hospital and the next door Children's Hospital.

He has made, and is here reporting, a very careful survey of the new-born child and the various troubles met with in these very young children in sickness and in health.

The papers dealing with the presently popular Erythoblastosis, with prematurity and especially with the treatment of diarrhoeal diseases in the young infant should help many in the care of these conditions.

Dr. Smith was a real favourite with those attending the Summer School and we are glad indeed to publish his papers for the benefit of the much larger number of our readers who were unable to attend our summer meetings.

The Paediatric Section of the Association feels that we were very fortunate in having Dr. Smith make the long journey from Boston to present his views to the medical profession in British Columbia.

Let me begin by saying that abdominal pain is an exceedingly common admission ticket to the doctor or clinic, and that even under concentrated diagnostic effort about half the cases will not be explained to the absolute satisfaction of the critically-minded pediatrician.

It will be best to discuss this undiagnosable group first. These are the children whose discomfort is always more frequent than prolonged, whose pain is almost always described by them as right at the umbilicus, who seldom or never cry or double up with the pain, are seldom nauseated and almost never vomit, rarely lie down for more than a few minutes, and to see whom one is seldom called to the home at night. And they go on complaining of pains which, I think, are really quite honest complaints. Physical examination usually reveals little, yet the thoughtful doctor is often troubled by questions in his own mind concerning the state of the appendix or some other abdominal organ, and the intelligent parent is understandably still more often plagued by the same worry. Certainly the parent wants the pain stopped.

Many of us acquire a theory for explaining these children's troubles. Some lay the condition to the door of allergy, some to constipation, some to improper diet or habits of eating. None of these explanations has seemed entirely satisfactory to me. Abdominal pain demonstrably due to allergy has been very rare in our experience. Constipation as a logical cause of pain bothers me because I have seen so many constipated children who were quite happy and untroubled by it. About dietary habits, I am not quite so sure. My own theory, and I have no real proof for it, is that children and adults both suffer their occasional digestive gripes and pangs, but that children, being less reticent and more concerned with matters of the moment than adults, tend to talk more about these discomforts. If such remarks prove successful as "attention-getting mechanisms" they will usually be repeated. Again, I have no means of establishing the truth of this conception. If, however, one can avoid the big mistake of mis-diagnosing pain from

a serious organic cause, he can bear to make a little mistake in theorizing about the numerous complaints upon an inconsequential basis.

Our first job, then, is usually to rule out those cases—roughly, perhaps, half—in which more exhaustive investigation is, to say the least, an inefficient waste of time and money, and discuss the residue which suggest to us in some way that something is really wrong, and in whom our job is to find out what that something is. We might as well get *appendicitis* out of the way first. The slides, which I have borrowed from Dr. Gross, are based on a series of 506 patients treated in five and a half years and studied by Scott and Ware. Obviously acute appendicitis is, in our region, common in children. You will note from Table 1 that 23 patients were between 1 and 2 years old, so that it is obviously not rare in infants. Perforation, which occurs earlier the younger the patient, had occurred in all but one of these infants.

The younger the patient, the more difficult will be the diagnosis. Pain, which is impressive more by its persistence than its severity, is really the *one constant symptom or sign.* Fever is not striking in the unruptured case and was absent in nearly 20 per cent of these. Vomiting is common. In this series, it had occurred in 83 per cent. The unhappy and irritable little child with appendicitis will localize his pain poorly and will be completely confused—as will his physician—by questions involving such things as rebound tenderness. However, one side of his belly (almost always the right) will be found the site of more discomfort than the other. The rectal palpation of a small and frightened child is often limited in diagnostic value, but here it really helps in two ways —by demonstration of unmistakable localized tenderness on the right side, and by the sense of resistance offered to bringing the hand on the skin of the right abdomen toward the finger in the rectum. The white blood count is not a very strong diagnostic support (Table 2), almost one child in ten having a count of less than 10,000.

Treatment cannot be discussed here, but two aspects of it are important. Delay is dangerous. Seven of the eight deaths in this series occurred when operation was delayed more than 36 hours after symptoms began (Tables 3 and 4). Second, I believe that a properly serious appreciation of the mildness of symptoms will lead to the occasional removal of a normal appendix. Better that this should happen than that a child die becaues his symptoms were not taken sufficiently seriously.

The commonest conditions which masquerade as acute appendicitis in children are the *abdominal pains associated with throat and ear infections,* the *pneumonias* with abdominal pain, and the not too uncommon instances in which such pain is a manifestation of *rheumatic fever.* All of these are conditions marked by fever and tendency to elevated white blood cell count. Those associated with *throat infections* are far the most common sources of confusion in my part of the country. The tenderness and pain may be localized to the right side, as to any other part of the abdomen. Rectal tenderness is, however, very unusual in mesenteric adenitis. A complete examination, including the ears as well as the throat, is, of course, helpful, but it must be remembered that appendicitis may occur in the presence of tonsillitis, and the demonstration of a throat or ear infection does not remove an inflamed appendix from the list of diagnostic possibilities. A useful hint is often given by a higher temperature in the abdominal pain of a throat infection than would be expected in that of an acute appendix. In conclusion, it must be admitted that the most expert diagnosicians occasionally open a young child's abdomen for appendicitis only to find a more or less normal appendix and, usually, fairly obvious swelling of the mesenteric glands. *Pneumonia* is less difficult, especially if one thinks of it, watches for a hint of the characteristic shallow and grunting respiration, and takes a chest rœntgenogram on suspicion—even though careful percussion and auscultutation have given negative results.

The *abdominal pain of rheumatic fever* is to us most difficult of all, because its great characteristic is that it is not characteristic. There is usually, however, less nausea and vomiting than in appendicitis, and if one dares to wait, the response to salicylates may be diagnostic. If a history of an earlier cycle of rheumatic symptoms is obtainable, one's

troubles are perhaps easier. But if, among the multiple manifestations of the rheumatic state, abdominal pain happens by chance to be the overture, then the best surgeon may be lured into operating, and need feel no shame if the appendix is normal and joint or cardiac manifestations appear a few days or weeks later.

Having dealt at some length upon these not uncommon simulators of appendicitis, I should just like to mention that *infectious mononucleosis* and *infectious hepatitis* may sometimes afford confusion, and that children are occasionally seen with *primary peritonitis*. Then let us consider that other common surgical emergency of the pediatric abdomen, *intussusception*.

Here, though the diagnosis of *intussusception* is much simpler, the possibility of its presence seems often to be forgotten—perhaps because it is so strikingly limited to a narrow age range of infancy. The usual patient is a male infant of 6 to 12 months, characteristically attacked by obvious and sudden pain at a time when his physical condition seems better than average. The pain tends to rise and fall in intensity. Either vomiting, or blood in the rectum, is almost always present—and usually both. The mass, usually along the course of the colon, may require sedation with a barbiturate for its definite palpation and the use of a sedative for this purpose is a rewarding maneuver. Our surgeons seldom use a barium enema, and are in general not fond of the procedure, since it will not reveal the occasional ileo-ileal intussusception. Like everyone else's statistics, those of Dr. Gross's department point to the tremendous value of early diagnostic and prompt operative reduction (pushing, *not* pulling the bowel back ino place). Mortality at the Children's Hospital has been *nil* when operation is performed within 24 hours after onset, and rises sharply to 30-40 per cent if more than 48 hours elapse before operation.

There are now to be considered the group of conditions which give rise to recurrent pain like the functional group, only more definite and severe. These are the children in whom absence of fever, of rectal or abdominal tenderness, and of elevated white count, intusssusception-like mass, or blood per rectum make one quite sure he is not dealing with an appendix or its imitators, or with an intussusception. Yet the pain seems to be too marked to be on the basis of simple digestive discomfort, dietary indiscretion, or constipation. Often a careful history will elicit that the chilld has had a good deal of it before. Equally commonly, after one has reassured the parents and been cheered to find the pain gone by the next day, the child will later appear at one's office (or someone else's) with the same complaint. In an adult one would think of gall bladder, gastric or duodenal wall as the site of the trouble. We have found ulcer to be extremely rare and gall bladder disease even more so in our child patients.

In these situations we have learned to start by studying the urinary tract before studying the bowel. The best investment of everyone's time, and the patient's (or the hospital's) money is a series of intravenous pyelograms. The most frequent diagnosis arrived at by this maneuver is a recurrent or low grade *hydronephrosis* consequent upon *pressure of an aberrant renal vessel upon the ureter*. This is a nice diagnosis to make because one can promise a future free of pain by operating and dividing the vessel, as one can also perform a useful service in preventive medicine by the same maneuver. Now and then, anomalies such as reduplications of portions of the urinary tract are discovered by pyelography in children with painful abdomens, but these conditions more commonly result in urinary infections than in pain. And, in passing, simple acute or chronic pyelonephritis has not in our experience been very often so painful as to call attention to itself on that score or to suggest appendicitis. The child with *acute pyelonephritis* is usually a more generally sick individual than the one with an inflamed appendix, and has a higher white cell count and more fever. Thus, convulsions are extremely common at the onset of pelonephritis, but very uncommon in appendicitis.

In returning to the urinary tract as a source of diagnosis in children with stubbornly recurrent abdominal pain, I should like to add a few more remarks. One is that we find every now and then the most important pathology in the survey film taken before

the diodrast is introduced, since *renal or ureteral calculi* are occasionally encountered. Secondly, we insist on a routine skin sensitivity test before subjecting a child to diodrast injection. If a wheal or other sensitivity manifestations are encountered and pyelography seems really indicated, it should be done from below. Finally, our surgical staff has found it a wise measure to do pyelography on *any* child whose abdomen is to be explored for a suspected but undiagnosed disease process. The reason is that the usual laparotomy incision allows a fairly complete estimate of the status of most organs, but *not* of the kidneys and upper urinary tract. It would be embarrassing to discover after the laparotomy that the symptoms came from that part of the body which, though nearby, could not be explored.

Gastrointestinal x-rays rarely help to diagnose abdominal pains in children and barium enemas seldom do. The reason for this is that most of the reduplications, malrotations, and other congenital anomalities which one may hope to demonstrate by these techniques are so much more frequently marked by vomiting than by pain. Moreover, many quite important anomalies, such as those *improper mesenteric attachments* which allow the intermittent wandering of the bowel into unfavorable positions, are frequently not discernible by barium and require exploration (after careful weighing of other possibilities) for their discovery.

I have no idea what your situation regarding the consumption of raw milk from untested cows is in this part of the continent, but when that was common in our part—not long ago—we saw a number of children with pain associated in some way with *calcified abdominal glands*. These children had a rural background as a rule, gave a positive tuberculin test, and showed the calcified mass or masses on x-ray. About half of them had a good deal of pain, and after a period of some months' observation, we sometimes had the glands removed—with relief of the pain.

I have left until nearly the end the question of *intestinal parasites*. These have a regional distribution, so that you may not have to think about them here. We see the pinworm, *Oxyuris vermicularis*, extremely commonly, the tapeworm and the round worm only two or three times a year. My own clinical impression is that none of them is—with us—to be very seriously thought of as a cause of significant abdominal symptoms. It is true that in a few of the appendices removed by our surgeons, oxyuris has been found. However, when one considers that random surveys of all children brought to our medical clinic with whatever conditions have discovered pinworms in one out of three, the significance of a small percentage of appendices containing these parasites is pretty questionable.

In summarizing, it is obvious that many conditions have been left out—such as the *colics of infants*, the relation *of Meckel's diverticula* to abdominal complaints, and the pains associated with certain cases of *purpura* and—in regions where the Negro population is large—the very confusing crises occcurring in *Sickle-cell anemia*. These, and others, have been omitted to allow concentration largely upon common conditions which may on the one hand be the source of over-investigation, or on the other be dangerous through neglect of taking them sufficiently seriously. Let me conclude by repeating then that one need not be ashamed to be unable to label with exactness the cause of perhaps half of the abdominal pangs of children if he avoids the mis-diagnosis or too-late diagnosis of the other half. In this latter group, he should keep the thought of appendicitis before him, and try to sort out the distinctions between that and the pains of throat infections, pneumonia, and rheumatic fever. He should never consider obvious and severe pain in the abdomen of an infant properly dealt with until he has satisfied his own conscience on the matter of intussusception. An in his handling of recurrent abdominal pain in which the symptoms are more than transient in character he should learn to trust the rœntgenological study of the urinary tract as his best diagnostic tool.

TABLLE 1

RELATION BETWEEN TYPE OF APPENDICITIS AND AGE

Acute Unruptured		*Acute Ruptured*	
Age in Years	Number of Cases	Age in Years	Number of Cases
0— 1	1	0— 1	0
1— 2	0	1— 2	22
2— 4	15	2— 4	59
4— 6	37	4— 6	42
6—12	195	6—12	109
12—16	24	12—16	2

Data from: Scott, H. William, Jr., and Ware, Paul F., Acute Appendicitis in Childhood, Arch. Surg., 1945, 50, 258-268.

TABLE 2

RANGE OF LEUKOCYTE COUNT

Leukocytes per Cu. Mm.	Acute Unruptured, Number of Cases	Acute Ruptured, Number of Cases
Under 10,000	25	17
10,000-15,000	86	59
15,000-20,000	89	61
20,000-30,000	50	82
Over 30,000	2	19

(Scott and Ware, loc. cit.)

TABLE 3

RELATION BETWEEN DURATION OF SYMPTOMS AND TYPE OF APPENDICITIS

Duration of Symptoms	Appedicitis Unruptured Acute	Appendicitis Ruptured Acute	Per Cent Perforation Incidence of
0 to 12 hours	67	2	3
12 to 24 hours	116	36	23
24 to 36 hours	28	28	50
36 to 48 hours	24	43	64
2 to 3 days	11	19	63
3 to 4 days	14	34	70
4 to 5 days	5	11	70
5 days and over	7	61	90

(Scott and Ware, loc. cit.)

TABLE 4

DURATION OF SYMPTOMS IN RELATION TO MORTALITY

Duration of Symutoms Before Operation	Cases	Deaths	Mortality, Percentage
9 to 12 hours	69	0	0.00
12 to 24 hours	152	1	0.65
24 to 36 hours	56	0	0.00
36 to 48 hours	67	1	1.49
2 to 3 days	30	2	6.66
3 to 4 days	48	1	2.08
4 to 5 days	16	1	6.25
5 days and over	68	2	2.94

(Scott and Ware, loc. cit.)

PHYSIOLOGICAL PECULIARITIES OF NEWBORN INFANTS

CLEMENT A. SMITH, M.D.

Read before the Summer School of the Vancouver Medical Association,
June, 1947.

Infant mortality statistics from my part of the United States show that in the last 40 years the death rate during the first year per 1000 live births has fallen from about 1445 to 30. Almost all of the saving has been effected in deaths occurring after the newborn period, and thus that period has become the frontier of pediatrics.

Because the little patients with whom we deal at this age are fundamentally different in various physiological ways from those seen later in life, I am devoting this first period to a somewhat rambling discussion of certain of their outstanding characteristics. The child is not a little man, nor is the newborn merely a very small child. Among the differences are certain obvious ones of delicacy and fragility which count as serious disadvantages, hampering us in our attempts to help the newborn. However, I think it can be shown that in other ways there are interesting physiological advantages possessed by the newborn infant but denied to older patients. Sometimes we need to be reminded of these.

Without stretching the facts, I believe the situation may be best suggested by a simple diagram. (Slide shown here.) This smaller circle is a rough diagrammatic concept of the physiological status of our usual child or adult patient, indeed of ourselves as living organisms. We exist normally at or near the exact center of a rather narrowly limited physiological field. Scores of ingenious devices have been arranged by Nature to keep us at that equilibrium point which Cannon called "homeostasis." I would stress the fact, then, that this field of physiological range in whose carefully guarded center we exist is of comparatively narrow compass; that its walls are strong and high, and that we stay almost exactly in its center when well and alter but little from that point even when ill.

By contrast, the newly-born human or animal organism is, I think, the occupant of a wider circle of physiological range. The barrier separating conditions which are tolerable from those which are intolerable for his existence encloses more territory. It is not so strong a barrier as that of the adult, as indicated by its more fragile outline in the diagram, and (and this is important) the newborn is less often to be found at its exact center. I should like to mention some simple examples of this state of affairs, then to dwell at greater length upon some others, and, in conclusion, to suggest certain applications of these observations to our every-day dealings with newborn patients.

The infant at birth (and all these things are even mort true of the premature infant) has little of the adult's ability to deal wih body temperature alterations. Injudiciously cover him with blankets and his temperature may jump to 104° or more; subject him to exposure and it may fall below 90°. But, while neither of these experiences is in any way good for him, he will usually survive them with less evidence of affront than will a shocked adult whose temperature has not been distorted half as much. And, in passing, we do not expect to find that even under normal room temperature conditions the thermometer will demonstrate the infant's temperature at exactly the 98.6 level where the adult's is held.

The blood sugar of the newborn is not uncommonly as low as 40 mgm. per cent during the first day of life in perfectly normal babies. Not only is it often not immediately and correctly righted from this point by physiologcal adjustment—as would occur in ourselves—but while it is at this low level the newborn baby does not seem particularly embarrassed by the circumstances. An older child might well be in hypoglycemic shock with a blood sugar of 40. Again, I am not saying that it does the infant any good to have this hypoglycemia. What is to be stressed is that Nature has equipped him so that such a level is physiologically tolerable, whereas it could not be so easily tolerable by an older individual.

As to acid-base balance and its regulation by the kidneys and lungs, we have less data for the newborn subject. But we do know that the pH of his blood is not so exactly fixed at 7.4-7.5, as with the adult, and if it wanders down to 7.2 or so, he gives less evidence of trying to put it right by hyperpnea than he would in later life. Moreover, while a pH of less than 7 is supposedly too much acidosis for the human organism to survive, in laboratory investigation I have at least once found an infant whose blood at birth showed a pH of 6.69, and who lived through it. The experience did not benefit the baby. The point is that neither did it demolish him. These, ten, are a few simple examples of the wider range of tolerable physiological situations within which the newborn subjects stray.

Now let us scrutinize a few of these peculiarities more closely. Respiration, when conceived in its ultimate function of bringing sufficient oxygen to the tissues, is a matter of prime significance in the newborn. What do we know about its fundamentals? One thing we know from experimental animals is that the newborn has a relatively wide tolerance to lack of oxygen. It is apparent from Table 1 that newborn animals possess means of continuing to live during periods of oxygen lack long after an older animal would have succumbed.

As to the human infant's performance, we have, of course, no experimental data. Yet we have some impressions based upon the persistence of heart beat for many minutes without breathing. Most of us have worked over a newborn infant for five or ten minutes or even more to induce respiration—and often been successful. An infant whose blood oxygen we happened to be following took no breath at all for 14 minutes after birth and then began to breathe, which he has continued to do successfully since. This, I think, is beyond the record to be expected from an adult.

The newborn then does have more latitude in regard to bearing anoxia than does the older organism. Let me say again that this is not necessarily good for him in all instances. It has been, however, an extremely fortunate circumstance for the human race as a whole, even though it is occasionally the cause of persistence of life in damaged individuals.

Not only is this wider latitude of tolerable anoxia present right at birth, it appears to linger for some days or weeks thereafter, during which time, as in our crude diagram shown earlier, these small patients do not exist at the exactly balanced center of the broad area of allowable oxygen economy. Close observation will show that in the newborn period babies do not usually breathe regularly and smoothly, but at times slow, very often their rhythm has a Cheyne-Stokes-like periodicity, sometimes they seem to forget to breathe at all. Only gradually do the nice adjustments of respiration to which we are accustomed supervene.

It will not be possible to build up a detailed explanation of why the newborn subject can exist over such a wide range of respiratory possibilities nor why he seems to wander so much at random through the range. I should only like to point out a few of the factors concerned.

One, about which we shall probably hear much more in years to come, is the so-called "anærobic metabolism" characterizing the period. In some way, and I shall mention it, the fetus and his successor, the newborn infant, seem to have their fundamental tissue metabolism of glucose breakdown adjusted to produce more organic acids and less CO_2 than later in life. Another factor is the excess of hemoglobin accumulated during the final fetal months. Not only is the newborn endowed with an excessive amount of hemoglobin. His hemoglobin is qualitatively a different protein from that of the adults with whom we usually deal, its differences being such as would contribute to efficiency under circumstances of oxygen lack. This is shown in three slides indicating that the embryonic or immature creature has a hemoglobin which takes up oxygen under circumstances at which the usual adult hemoglobin would have to relinquish it.

Before we leave the subject of respiratory peculiarities in neonatal patients, I would like to mention two circumstances of a purely circulatory nature which suggests a tem-

porarily advantageous state of affairs in the newborn patient. One is that the heart at birth has just been relieved of the work of pumping about a third of the blood volume through about 80 cm. of umbilical cord and placental vessels. Consequently, during the first two weeks after birth, the heart grows less rapidly than until then. The other is the remarkable adjustability of the infant in the face of a varying blood loss left behind in these vessels when the cord is clamped at birth. Look at two newborn babies, one of whom has had the umbilical cord tied immediately upon delivery, whereas the other has been allowed to retrieve his placental blood by the obstetrician's waiting until pulsation ceases before clamping the cord. The former will have given up about as much as a 2.5 liter blood loss would be in an adult. And yet you would be unable—at least I am unable—to tell the deprived baby from the other by anything short of careful blood studies, so great are the powers of circulatory adjustment at this time.

Now let us examine excretory physiology for physiological peculiarities. The kidneys have been shown by certain workers (notably McCance and his colleagues) to be somewhat less adequate in performing their jobs during neonatal life than later—as is quite understandable when one recalls that they have had little or no practice, excretion having been taken care of by the placenta. Yet, seen from certain angles, the kidneys do not do so badly under newborn circumstances, and what is more to the point, the infant seems at this period able to withstand the effects of his relatively impaired renal performance.

Thomson's figures on the urine of normal newborn infants were obtained with an average fluid intake of about 100 cm. during the first two days of life, in contrast to our infants who get no fluid during these days. Thomson's data, as shown in the next two slides, are interesting. Note not only the respectably high specific gravity achieved, but also the degree of variation. Note also the very wide range of urine output soon after birth. Certain infants passed no urine over 24-hour periods (I do not mean to imply that their kidneys made no urine) others passed from 60 to 80 cc. Imagine yourself faced with a group of supposedly healthy adults, some of whom pass no urine in 24 hours, while others get rid of a liter and a half during the same period. You would have considerable respect for organisms able to tolerate such a wide degree of excretory latitude.

Here are two slides of material from work in progress in our laboratory on one aspect of renal function in premature and full-term infants. It will be seen that when it comes to the job of making a little water go a long way by excreting a concentrated urine, even the premature infant's kidney does fairly well.

Let us look for just a minute at matters of nutrition. Until the time of birth, the gastro-intestinal tract is one of the few vital parts of the body which has done no work at all. Two weeks later, the average infant is taking at least 2½ ounces of milk per pound per 24 hours. If I took 2½ ounces of milk per pound per 24 hours, I should have to digest 450 ounces, or about 14 quarts of milk. Every 4 hours around the clock, my alimentary canal would have to handle nearly 2½ quarts of milk. Even with a good many years of practice, I doubt if it could be done. This is, of course, an oversimplification. A more significant point is that infants, when born, are in a position to go a couple of days, at least, without any water, and a good deal longer without any calories, and still come up to the mark of meeting their relatively tremendous digestive responsibilities a few days later.

I am aware that you may take all I have been saying in exactly the wrong way. I do *not* mean to imply that newborn infants are so excessively rugged that we should deprive them of oxygen, water, and other requirements of life. What I do wish to suggest is that they are physiologically different creatures from those we deal with in later years, and that their differences are here and there of a sort which are singularly useful to them, and to us in helping them survive. (Indeed, it is likely that without these adaptabilities few of them would have survived before we were around to help them.) I also wish to stress the fact that, since they do not exist in the exact center

of a limited circle of physiological possibilities, well-meaning attempts to get an infant from a borderline situation to a more satisfactory one may push him beyond the point of our aim. Thus, a few extra blankets or a heat lamp applied to a small and chilly infant may raise his temperature not to 98.6 but to 104_2. One may, at times, administer extra fluid to a somewhat dehydrated infant, only to rapidly overshoot the mark and produce severe edema.

I have used this first lecture period to discuss these matters not merely because they seem to me interesting but because we often feel they are overlooked to the detriment of the baby. This is more apt to be true in the case of the premature than the full-term infant, but it is observed in both. For example, we see in our Children's Hospital many more premature and other newborns brought to us in trouble because they have been fed too early and too much than too little and too late. Much better that a baby should be unfed and hungry at four days of age, even though considerably under birth weight, than that he should be vomiting from over-feeding with food he neither wanted nor needed. We often see mild edema made worse because the kidneys have put out little fluid and someone has become over-anxious and inserted some salt solution under the skin where merely waiting would have served. We used to see obstetrical house officers pounding infants who did not breathe at once on emergence from the birth canal, whereas merely leaving the infant undisturbed in a warm oxygen tent might be sufficient and safer. And we often see hurried activity of all sorts confusing the diagnosis, where time could better be spared for quiet consideration of symptoms.

It is, then, our feeling that infants are as often—perhaps more often—overtreattd than undertreated. What is it that constiutes the line between masterly inactivity and criminal negligence; between watchful expectancy and dangerous procrastination? Actually, it is what is implied in the words "masterly" and "watchful." If we do master the physiological distinctions of these infants and if we are really "watchful" in their case, we shall be neither dangerous nor criminal in our dealings with them.

TABLE 1

(Data of Snyder and Webster)

SURVIVAL TIME IN PURE NITROGEN AT VARIOUS AGES

Age	Rabbits	Dogs	Guinea Pigs
At birth	31 min.	31 min.	6 min.
1 day	27	25	4.5
4 days	13	17	3.5
7 days	9	14	3
Adult	1.5	3	3

FOR SALE—In Yorkton, Saskatchewan, Eye, Ear, Nose and Throat Specialty practice with two complete Ritter Chairs with Units and Green Retractor Heads and all complete equipment. Exceptional opportunity for any Eye, Ear, Nose and Throat man. Yorkton serves an area of approximately one hundred thousand people. For further information write to Mrs. R. E. Whitteker, Box 730, Yorkton, Sask.

DISEASES OF THE NEWBORN: ASPHYXIA, ATELECTASIS, ERYTHROBLASTOSIS

CLEMENT A. SMITH, M.D.

In a very simple way, it is possible to divide the problems which arise out of the birth process and affect the infant into two major groups—those of mechanical obstetrics and those of physiological obstetrics. Emphasis is increasingly shifting from the mechanical to the physiological aspect. This is borne out by two sets of data to be shown on slides (Tables 1and 2).

These figures teach us that our obstetricians have got the answer to all but an almost irreducible minimum of the mechanical problems. No trauma, but anoxia (or asphyxia), now leads the list of easily attacked causes of fatal loss. That is why I thought we should begin with the general subject of respiratory difficulties.

In doing so, it might be helpful to sketch out the present status of information on how the baby normally begins to breathe at birth. The facts about this matter seem to be pretty well cleared up, largely by the work of Barcroft. Just before his death, he pointed out that there were two main types of respiratory movement observable both in the fetus and in the newborn infant or animal. One of these is *rhythmical*, it has a very definite *inspiratory component*, and a very definite *expiratory component*, and it occurs in response to all sorts of superficial stimuli. In the human infant there may be crying instead of this sort of respiratory movement, particularly if the stimulus is excessive. In the animal fetus, if the mother's abdomen is opened under spinal or local anesthetic, this type of movement is elicited with increasing ease as term approaches. Near term, simply bringing a hypodermic needle near the nose of a quiesscent sheep fetus and gently directing a current of amniotic fluid at its face will start such movements. They seem to be the sign of an *intact respiratory center*—actually of an integrated series of intact respiratory centers.

On the other hand, the fetus is capable of an entirely different type of respiratory performance, as it the newborn subject also. This is essentially an instantaneous gasp, with only an inspiratory component. It is entirely irregular in timing. It is *never* produced by peripheral stimulation nor punctuated by crying. Characteristically it may be best produced experimentally by opening a pregnant animal at term under deep general anesthesia and then pinching the umbilical cord leading to a fetus. In about a minute, the fetus will begin to gasp in this way. This inefficient, irregular gasping has been seen by all of us in certain infants at birth, indeed, in dying patients at any age. As Barcroft has pointed out, the gasps are exactly like those produced by cyanide and indeed they have the same meaning—a poisoned or dying respiratory center.

Sometimes this poisoning in the newborn infant is from too much anesthetics, more often too little oxygen, as in placenta previa, pressure on the cord, etc., often a combination of the two. Sometimes, it means damage from intra-cranial bleeding. The one thing most useful in curing it is an increase in the amount of oxygen reaching the brain. Now, fortunately for the human race, if these irregular gasps continue long enough, especially if extra oxygen is provided, they may bring enough of it to the blood and thence to the brain so as to induce the more normal type of rhythmical response. As Barcroft puts it, "The last gasps of the dying fetus may open the door to life for the infant." If this does not happen, the irregular breaths or gasps peter out, and the baby dies.

In summarizing then, perfectly normal, natural delivery, with cord and placenta intact, will usually produce an infant whose rhythmical, efficient respiration starts right off—apparently from cutaneous stimuli. Delivery which is abnormal—in numerous possible ways—may result in an infant with an entirely different respiratory performance, but which is often capable of being transformed into the other, by skilful handling. Between these lies a whole spectrum of possible gradations.

Among the ways in which the nervous control of breathing can be damaged at birth are: too much pre-anesthetic medication; too much anesthesia; too little oxygen with the anesthetic; premature separation or placenta previa; compression of the cord; trauma to the brain; or an enfeebled control of respiration, as in prematures. I would just like to discuss our own feelings about the narcosis-anesthesia problem, and our treatment of these babies, with a word as to their ultimate course.

We believe that pre-anesthetic medication and inhalation anesthesia offer more good than harm. We do not believe that *any* drug introduced into the mother's circulation and capable of producing real analgesia or even amnesia will not slow up the onset of respiration in some—perhaps one-third—of the babies. We thought demerol was going to be such a drug, but, with more experience, have more or less given it up and gone back to mixtures of nembutal and scopolamine, potentiated, oddly enough, with a small amount of amorphine. Our obstetricians usually deliver the baby under ether, given by machine, so that oxygen can be added. They have pretty well given up cyclopropane, and regard nitrous oxide mixtures as potentially, if not actually, hazardous. Spinal anesthesia is not regarded as safe enough for a routine, and the feeling about caudal anesthesia is still more strong.

The best pre-anesthetic medication is the one with which the user has had the greatest experience, though I'm not sure if morphine comes under that rule. The best delivery anesthetic is also the one most familiar to its user, though we would disallow caudal under that rule, and might not allow spinal or nitrous oxide either. The best medication an anesthetic for delivering a premature is no medication or anesthetic at all.

Now, let us suppose we have—as we do have from time to time—an asphyxiated, or, as we should say, an anoxic baby to work with. He may not be breathing at all, or he may be gasping irregularly—the diagnostic implications are the same. It will do little or no good to apply cutaneous stimulation—his respiratory state indicates that he will not respond. We should secure a reasonably open airway by posture and suction (though in our clinics we have not encouraged laryngoscopy) and then we should inflate the lungs with oxygen in some simple manner. After trying many machines, we always come back to a home-made modification of that devised by Kreisleman. Our feeling is that rupture of the lung is not a very likely possibility, and that often one has to use considerably more force than that advised by makers of resuscitating devices—up to 35 or 40 cm. H_2O (26-30 mm. Hg) for the first expansions. The need for this has been shown by experiments in our clinic—as has been the safety of such pressures. We have always felt that oxygen works better than CO_2 and oxygen, but there is not time to go into that argument. There is almost no modern testimony now available in favor of drugs as respiratory stimulants, and we certainly can add none. There is certain testimony suggesting they may do harm. Once breathing improves, it goes without saying that warmth, watchfulness, and an oxygen tent will be required for hours—sometimes for days.

How many infants who have been subjected to severe anoxia at or before birth, will later show permanent central nervous system damage is a matter upon which we need information, as asphyxiated infants who developed normally are missed by this method. It seems clear that tragic sequelæ do occasionally occur, but we are as yet in no position to condemn the whole practice of obstetrical anesthesia and analgesia because of them. What we should do is to strive to accumulate scientifically sound data about the whole problem, and to improve our use of drugs in obstetrics, and our alertness and skill in dealing with their occasional consequences.

Before leaving the subject of respiratory difficulties in the newborn, I should like to say a word about atelectasis. Every baby at birth has completely atelectatic lungs. X-rays of normal-appearing infants at 10 days of age have shown that, in perhaps 20 per cent of them, some parts of the lungs have not expanded (i.e. some atelectasis is present). Atelectasis is thus a relative matter. If a serious degree persists, it is not a disease condition in itself so much as a sign that something is fundamentally wrong in

the background. This may be weakness of thoracic structures, pulmonary edema, aspiration of amnotic sac contents, enfeeblement of C.N.S. control from anoxia, even intracranial hemorrhage or sepsis may be at the bottom of the trouble. Atelectasis, then, is a lead to be followed up and not a diagnosis in itself.

Erythroblastosis

There is so much information and so much misinformation current about the Rh factor that I should like to confine myself to the simplest presentation of basic facts.

The Rh factor is a property of the red cells in about 85 per cent of whites, 95 per cent of Negroes, and 99 per cent of Chinese. This disregards the subgroups, but is true enough to go on in the vast majority of clinical situations. Conversely, then, 15 per cent of the white population, 5 per cent of the Negro, and 1 per cent of the Chinese lack the Rh factor and are spoken of as Rh-negative. If they receive cells containing the Rh factor into their blood, they form antibodies, exactly as occurs when typhoid vaccine is introduced.

Both sexes may (and usually will where Rh-negative) form such antibodies if injectew with Rh-positive blood by intramuscular or intra-venous transfusion. In women, another mechanism is possible—the transplacental passage of red cells from an Rh-positive, which means that he was the child of two Rh-positive parents, *all* of her fetuses events, many of them unfortunate, may occur. The most serious is that a later transfusion of Rh-positive blood may be given, with a profound or even fatal transfusion reaction occurring. If the woman's antibodies resulted from one or more pregnancies, transfusions thereafter with Rh-positive blood are especially dangerous. On the other hand, reversing the situation, if the antibodies in a woman's blood resulted from transfusion, she may bear infants with impunity provided they be Rh-negative, which will be the case if her husband is Rh-negative. If her husband is homozygous and Rh-positive, which means that he was a child of two Rh-positive parents, *all* of her fetuses will be Rh-positive and the chance is strong that her anti-Rh antibodies will cross the placenta and produce some form of incompatibility disease in the infants. This may be merely a profound anemia, or it may be so-called icterus gravis (the common form of erythroblastosis) or, if severe, it may be the edematous still-born or short-lived fetus called congenital hydrops. The more babies she has, the more severely they are apt to be involved.

On the other hand, if her husband is a so-called heterozygous individual, in other words, the product of an Rh-negative and an Rh-positive parent, roughly half of the offspring may be Rh-negative and entirely escape trouble.

This, then, is a very simple summary of the mechanism by which the Rh factor assumes clinical importance. It is important to mention that although statistically an Rh-negative woman and an Rh-positive man are mated in about 12 per cent of all marriages, so many variables enter the picture in the way of paternal homo- or heterozygosity, placental permeability, ability of he woman o form antibodies, etc., that in less than one in twenty of such marriages does erythroblastosis occur in an infant. As Diamond has said "Other forms of incompatibility between man and wife may well be more dangerous than the Rh factor."

Now a word as to clinical diagnosis of erythroblastosis in infants. This matter is important because infants are frequently sent to us who have a picture of erythroblastosis but due to some other cause than the Rh factor, such as sepsis, anoxia, or maternal diabetes. The main clinical criteria as listed by L. K. Diamond are given below.

Erythroblastosis fetalis

(Suggestive Clinical Criteria*)

Edema	Rare
Early jaundice	Variable

Anemia	Early or late
Erythroblastosis	Variable
Splenomegaly and Hepatomegaly	Variable
History of earlier sibling affected.	
History of transfusion of mother.	
Increasing severity in succeeding children.	

To these should be added certain laboratory tests among those now to be described. In this and other aspects of the problems, the laboratory can and should be used as follows:

1. All women ought to be Rh-typed (as well as to have their ordinary blood groups determined) early in pregnancy. This is done on a slide simply by adding two drops of blood, directly from the finger or from a tube of oxalated whole blood, to one drop of hyperimmune testing serum. The slide is warmed and agitated gently for 3 minutes, and if the blood is Rh-negative nothing will happen, whereas Rh-positive blood results in grossly visible agglutination. The husband's blood, the baby's blood, and the blood of any donor can and should be tested in the same manner. Serum can be obtained from the Blood Grouping Laboratory, 300 Longwood Avenue, Boston 15.

If the mother's blood is thus found to be Rh-*positive* one can almost surely reject erythroblastosis from the Rh factor as the cause of the baby's symptoms. If, however, the mother is Rh-*negative* and the father and infant Rh-*positive,* the situation is confirmatory of Rh-incompatibility as the explanation of these symptoms.

It is also important to discover whether the mother has antibodies and, later, whether free antibodies from her are demonstrable in the infant's blood. This calls for a reverse type of test, the simplest of which is merely the combination of another slide of two drops of the suspected blood serum with two drops of group O Rh-positive blood. (A control test must be done with serum from the prospective donor, or with Group A serum.) Agglutination means antibodies. If present in the mother's and infant's sera, the diagnosis is not only proven but the implications suggest severe disease.

Antibodies of this sort, if found in the blood of an Rh-negative woman, early in pregnancy, should be determined again at 30 weeks of gestation and thereafter to note if they are present in rising titer. If this is the case, our obstetrician induce labor at not more than three weeks before term.

On being presented with an infant with probable erythroblastosis we feel there are three possible courses open to the physician: (1) to await developments; (2) to transfuse with Rh-negative group O blood in amounts of 10 cc. per lb. of the infant's weight, and (3) to replace practically all the infant's blood with group O Rh-negative blood by replacement transfusion. This, of course, must be from a source lacking in antibodies, and thus maternal blood is not used.

Waiting is justifiable only if the baby appears normal and *has no free antibodies* as shown by negative slide test. If the infant appears jaundiced, or becomes so during the first 24 hours, or becomes severely anemic without jaundice during the first 10 days, and *has no free antibodies* at birth, then transfusion will probably take care of the situation. It may need to bt repeated. If the baby has *free antibodies* in his blood at birth, or, *even without them,* if he develops icterus within six hours after birth, our hematologists consider that he has severe erythroblastosis and at the moment favor replacement transfusion of Rh-negative blood.

For replacement, group O Rh-negative blood, free from antibodies is used, and supplied to the infant by a special plastic catheter inserted into the umbilical vein. The tcehnique is one of removing and then inserting about 10 cc. per pound weight of blood. After seven or eight such removals and additions, most of the infant's blood will have been replaced. Dr. Diamond, to whom I am indebted for most of this discussion and all of the slides used, is shortly to publish his results with this technique. With its use in about 50 cases selected as most severely threatened by erythroblatosis, the mortality has been reduced to about 10 per cent.

TABLE 1

CAUSE OF INFANT AND FETAL DEATH (TABLE FROM POTTER)

Cause of Death	New York Lying-in and Sloane Hospital for Women	Chicago Lying-in Hospital
Anoxia	19.8 per cent	28.7 per cent
Primary prematurity	18.5	14.4
Congenital malformation	14.1	11.1
Birth trauma	11.6	13.0
Infections	8.1	4.7
Erythroblastosis	2.8	2.2
Hemorrhagic disease	2.1	0.3
Syphilis	0.6	0.2
Maceration and maternal toxemia	5.2	5.3
Maceration, no toxemia	13.5	11.9
Unknown, not macerated	3.0	6.5
Miscellaneous	0.7	1.7
Total mortality	3.87	4.28
Mortality, over 1,000 Gm.	3.52	3.50
Total cases	1,000	1,173
Stillbirths		614
Neonatal deaths		559
Duration of study	1935-1940	1931-1941

TABLE 2

INCIDENCE OF TRAUMATIC AND ASPHYXIAL HEMORRHAGE

1931-1935 Compared with 1941-45 (Boston Lying-in Hospital)

Subjects		Post-mortem Examinations: Number	Per cent showing: A. Traumatic Hemorrhage	Per cent showing: B. Asphyxial Hemorrhage
Premature stillborn	1931-35	42	9.5	7.2
	1941-45	52	7.8	13.5
Premature liveborn	1931-35	63	35.0	9.5
	1941-45	89	20.2	12.4
Term stillborn	1931-35	54	24.0	7.4
	1941-45	84	10.1	11.4
Term liveborn	1931-35	60	50.0	10.0
	1941-45	103	22.5	18.4

Mortality (Combined neonatal deaths and stillbirths of viable fetuses):

1931-35 — 5.05 per cent

1941-45 — 3.65 per cent

DISEASES OF THE NEWBORN: DIARRHEA, PREMATURITY

CLEMENT A. SMITH, M.D.

It is clear from experience and the literature that since about 1938 an increasing number of epidemics of diarrhea have occurred among young infants, particularly in obstetrical nurseries. It is difficult to describe this as a disease entity because the descriptive term "Epidemic Diarrhea of the Newborn" has undoubtedly served as a wastebasket into which conditions of varying etiology have been tossed. We can, however, sort three major groups of conditions out of this wastebasket.

The first of these includes tht outbreaks caused by a demonstrable micro-organism, such as a strain of salmonellæ, a staphylococcus, or even a dysentery bacillus. These are usually febrile infections with a fulminant onset, and represent the easiest type of epidemic to bring under control. A second group consists of diarrheal disease occurring concomitantly in both adult and infant members of a community. The adults have a mild disease presumably of virus etiology and usually labelled grippe, or "intestinal flu." Though most severe in younger infants, these attacks are not spectacularly dangerous, and are usually manageable mainly on a basis of simple epidemiology and therapy. Finally, there are the outbreaks in which no organism is demonstrated, no adults are usually involved, and the disease passes mysteriously and often fatally from one small infant to another. At least two viruses appear to have been isolated from such epidemics—one by Light and Hodes, the other by Buddingh and Dodd. How consistently these same viruses will reappear in other epidemics remains to be seen.

Is this a new disease? The situation seems to me analogous with the position of infectious hepatitis during the last war. There, a relatively mild and infrequent disturbance of peace-time became, through the unusual circumstances of overcrowded troop conditions, an epidemiological problem of great importance and a serious and sometimes fatal disease. The unusual circumstance which has created the diarrhea problem among newborns may well be the recent great increase in hospital as compared to home deliveries—an increase with which the available number of beds and nurses has not kept pace. Therefore, this may well have been an occasional disease of the past which new circumstances have brought into great prominence.

Our pediatricians seldom encounter these conditions in the home care of infants unless the baby was recently sent home from an obstetrical or infants' hospital where cases occurred. It is, on the other hand, an important problem of pediatrics in hospitals, either obstetrical ones or hospitals like ours for infants—which act as the vortex of a funnel collecting sick babies from the newborn nurseries over a large community.

Since the condition is ill-defined, only a very general symptomatology can be given. In epidemics of the first sort, due to specific bacterial infection, fever is common; if staphylococci are causative agents, pustular skin rashes may occur. Otherwise, watery stools, vomiting, more or less distension, dehydration and acidosis (often more marked than hyperpnea indicates) make up the picture. Blood count, blood cultures stool cultures, etc., are not revealing unless one is fortunate enough to be dealing with a specific micro-organism. Spread to nearby infants is so characteristic that, as Clifford has said, two cases equal an epidemic. The infectiousness and seriousness of the condition can never be predicted from the first case, so that even one case must be very seriously regarded.

As to the mechanism of spread, all that can be said is that indirect fecal-oral contact such as may happen from poor technique, overcrowding, insufficient attendants, and improper food handling, appears to be more important than air-borne contamination or —in most epidemics—than immune adult carriers. Soap and water cleanliness, individualization of supplies, autoclaving or steam sterilization of formulæ in the bottle with nipple (covered) attached, all seem to be more useful interrupters of spread than are masks and sterilization of air.

The relationship of breast-nursing to resistance is unsettled, but certainly for many obvious reasons this type of feeding increases the safety of infants, if not actually protecting them.

In the recently published statistics of Rubenstein from 19 Massachusetts epidemics, the disease was acquired by 50 per cent of premature infants and by 20 per cent of full-term infants exposed. The same study showed an average case *fatality* rate of 53 per cent for premature infants and 25 per cent for full-term ones. In several epidemics all premature infants who were infected have died, as well as nearly half the infected full-term infants.

No specific preventive or therapeutic results have been noted from transfusion of blood or plasma, injection of gamma globulin, or the use of sulfonamides, penicillin, or streptomycin.

How, then, should an epidemic of diarrhea or an individual case be managed? The key procedure for stopping an epidemic are (1) absolute isolation of infected patients, (2) prompt recognition and declaration of the situation rather than attempts to minimize or conceal it, (3) delegation of responsibility to one staff physician, (4) stool cultures, which may later be abandoned if no significant organisms appear, (5) critical study of techniques of food preparation and nursing care, and (6) readiness to close for complete cleaning any ward in which cases persist in appearing in spite of the foregoing measures.

In the individual infant, therapy must be one of replacement of electrolyte, water, and other losses. At present, we are trying a modification of the routine recently advocated by Darrow and others, which introduces potassium in relatively high concentration to replace loss of intracellular electrolyte. "Darrow's solution," made as follows, has the chemical structure indicated:

KC1	— 2 gm.	K	— 35 mM./L.
NaC1	— 3 gm.	Na	— 122 mM./L.
Molar sodium lactate	— 40 cc.	C1	— 104 mM./L.
Water	— 710 cc.	Lactate	— 53 mM./L.

The routine therapy at present on trial in our own wards is carried out as follows:

First day Nothing by mouth.

By I. V. drip	— 10 cc. matched blood per lb.
(up to)	— 10 cc. M/6 Na lactate or $NaHCO_3$ per lb.
	— 40 cc. 10 per cent glucose solution per lb.
Total	— 40 cc. Darrow's solution per lb.
By S. C. clysis	—100 cc. per lb.

Second day. A (if vomiting, distended, or especially weak):

By I. V. drip	— 55 cc. 10 per cent glucose.
By S. C. clysis	— 30 cc. (½ Darrow's solution ½ 5 per cent glucose).
Total	— 85 cc. per lb.

or B (if able to eat):

Total	— 20 cc. Darrow's solution with
By mouth	— 60 cc. 5 per cent glucose solution.
	— 80 cc. per lb.

Third day. Continue A or B above.

Fourth or Fifth day. Begin orally, 5 or 10 calories per lb. of dilute skim milk, with water to make 75 cc. per lb. To this is added 1 gm. to 2 gm. of KC1 daily, depending on the size of the infant and dividing among the feeds. Calories are increased very slowly, so that most infants are still receiving less than 50 calories per pound by 10 or even 14 days after treatment was begun. One cc. of crude liver extract is given intramuscularly every day from the first, and chemotherapy only on definite indications.

We have not yet been strikingly impressed with the results of this treatment, and I introduce it here merely because Dr. Darrow and his colleagues, for whom we have great respect, have introduced it to us. Our mortality is perhaps 10 per cent at present, but the slow and interrupted progress the infants make, with many set-backs requiring re-starting treatment has been a very impressive feature of the problem. Certainly we hope as fervently for means of preventing this condition as for methods of curing it.

Prematurity

Since prematurity, although occurring only in about 3 per cent of all deliveries, is directly or indirectly responsible for 50 per cent of neonatal deaths, we will conclude with some very brief remarks about the care of such infants. Our diagnosis is purely by weight, as we consider any baby of less than 5 lbs. to be premature. At the Lying-in Hospital, where babies are brought directly from the delivery room to the air-conditioned special nursery, their mortality is about as follows:

Birth weight	1—5 lb.	about 30 per cent
	1—2 lb.	" 95 "
	2—3 lb.	" 66 "
	3—4 lb.	" 25 "
	4—5 lb.	" 2-5 "

In the Premature Nursery at the Children's Hospital, to which babies are brought from a few hours to a day or two old, our death rate is almost 50 per cent rather than 30 per cent, although almost exactly the same techniques are used. The main difference is that infants admitted to the latter nursery may have been skilfully delivered and less protected from trauma and infection than the ones born at the Lying-in Hospital.

Premature infants present a list of specialized problems. First is that of *respiration*. As factors preventing or relieving this problem, we believe the following are especially important: (1) the most normal delivery possible; (2) no analgesia or general anesthesia, (3) oxygen for days or even weeks after birth, (4) careful observation with gentle suction of mucus and occasional superficial stimulation if needed (by an experienced nurse), and (5) delay of 24 to 48 hours or longer in instituting feeding (see below).

For the *temperature problem*, stability is more important than an arbitrary level of 98.6°. A *steady* temperature of 93° or even less is preferable to one fluctuating widely about 98° or 99°. Temperatures should be taken by axilla. A *constant* environment, both as to temperature and humidity ,can be supplied by an air-conditioned room or by one of the incubators devised by Dr. C. C. Chapple of Philadelphia, which have the great advantage of providing the infant with his own individual amosphere which is not breathed by the nurses, doctors, and other infants. Of less expensive incubators not providing conditioned outdoor air, the Armstrong type is a good one.

The *nutrition problem* is approached by us from the attitude that fluid and food are not urgent requirements during the first two or three days, and that each feeding is a time of potential accident to the respiratory tract. Therefore, the more precarious the baby's condition, the longer do we delay the first feeding, delays of four days being not unusual. The gavage feedings are given at two- or three-hour intervals for two- to three-pound babies, at four-hour intervals for larger ones. Conventionally, we begin with 5 or 10 per cent lactose or glucose in water, in increasing amounts of 1, 2, 3, and 4 drams for the smaller, and 2, 4, 6, and 8 drams for the larger infants. At the 4- or 8-dram level, the solution is replaced one or two drams at a time by breast milk. Later increases are gradually made so that by 10 to 14 days of age the infant is getting his maximum of 65 calories per pound, if in good condition.

Though we still use breast milk, Levine and Gordon have brought considerable evidence to show that modified milks with more protein, carbohydrate, and minerals, and less water and fat may be better utilized by the *premature* (not full-term) infant. Levine's best results have been obtained with the following mixture:

Half-skimmed milk powder ("Alacta")	— 1 tbsp./lb.
Carbohydrate (Dextri-maltose or Karo)	— 5 gm./lb.
Water to	2¼ oz./lb.
Makes	55 cals./lb.

Beside the basic diet, the premature has obviously increased need for accessory food substances, which we introduce by the end of the second week as:

Ascorbic Acid	50 mg./day
Vitamin D	1,000 to 4,000 U./day
Vitamin A	2,500 to 5,000 U./day

Supplied in a non-oil vehicle such as propylene glycoll in "Vi-penta." This will also provide adequate Vitamin B complex.

(Vitamin K — 2.5 mgm. at birth.)

It is our supposition also that, although the infant may at first be physiologically unable to manufacture hemoglobin, provision of 20 to 40 drops daily of elixir of ferrous sulfate from the third week onward will provide available iron at such time as he may acquire this ability.

Finally, one constantly faces an *infection problem*. Reducing to a minimum the human contacts of a premature infant is the major requirement. Separation of prematures and their nurses from others, especially from sick infants, is almost equally important. Education of the profession toward immediate admission of such infants at birth to a central premature station is extremely worthwhile. It may well be that half the advantage of an air-conditioned premature nursery to a community is actually that isolation and separate staffing provide or contribute to the provision of these desirable prophylactic measures against infection.

NOTICE

Locum Tenens, Assistantships, Partnerships, Locations for Practice, Etc.

All doctors who are available for locum tenens, assistantships, etc., are requested to forward the particulars to the Executive Secretary of the College of Physicians and urgeons, Room 203, Medical Dental Building, Vancouver.

Doctors now established in practice who are looking for suitable partners or assistants are similarly requested to forward particulars to the Executive Secretary.

Many enquiries are received each week from doctors in the Province, and outside it, for information regarding openings available.

Every effort will be made to comply with individual wishes and requirements and to arrange for suitably qualified men to meet each other so that private matters re finance, etc., can be discussed.

British Columbia Medical Association

(Canadian Medical Association, Britsih Columbia Division)

President ..... Dr. Lavell H. Leeson
President-elect ..... Dr. Frank Bryant
Vice-President ..... Dr. W. Laishley
Honorary Secretary-Treasurer ..... Dr. J. C. Thomas
Immediate Past President ..... Dr. Ethlyn Trapp

REPORT OF REPRESENTATIVE ON EXECUTIVE COMMITTEE, C.M.A.

To: The President, Officers and Members of the
British Columbia Medical Association.

As your representative on the Executive of the Canadian Medical Association for the term 1946-47, I beg to report as follows:

1. ATTENDANCE AT MEETINGS

I attended two meetings of the Executive Committee in Ottawa, one in October, 1946, and the other in March of this year. I also attended a meeting in Winnipeg in June of his year. It so happened that the National President was also from British Columbia, in the person of Dr. Wallace Wilson. The British Columbia doctors were further represented at the June session in Winnipeg by Dr. Ethlyn Trapp, President, and Dr. F. L. Whitehead, our new executive secretary, who sat in as observers.

2. SUMMARY OF PROCEEDINGS

This summary will be boiled down to bare essentials, as there is much other important business to consider at this meeting and I do not wish to take up too much time.

(a) *Medical Care of Veterans.*

As you know, a D.V.A. schedule of fees has finally been worked out and sent to all doctors. While it might casually appear that D.V.A. work has pretty well petered out as far as civilian doctors are concerned, it should be remembered that should work become more scarce and incomes less, this activity might easily become of renewed importance.

(b) *Income Tax*

It has long been felt that doctors have been unfairly discriminated against in the matter of income tax. I shall not go into details but a strong committee has been quite active in this regard and finally have reached the responsible cabinet ministers. They have achieved some definite reforms and the promise of serious consideration of other points.

To date the chief accomplishments are:

(1) Motor car depreciation has been raised from $1750 to $2500.00.
(2) Mileage has been raised from 4½c to 7c per mile beginning January 1, 1947.

A committee was appointed to pursue further the question of deductions for attend ance at post-graduate courses, medical conventions, etc.

(c) *Economics*

During the past year Dr. G. F. Strong has been chairman of the Dominion Committee on Economics. The main problem has been to meet the insistent demand for Prepaid Medical Plans. A meeting of the executive officers of these plans and representatives from the various provinces was arranged to precede the June meeting in Winnipeg. This

four-day conference proved highly instructive as well as bringing into relief the strengths and weaknesses of the various schemes. As a result of this meeting, and its recommendations, a Committee on Prepaid Medical Plans was formed and is headed by Dr. Lavell Leeson of Vancouver. This committee is to consider especially the wisdom or possibility of forming a Dominion-wide body, and if advisable, to suggest ways and means of putting such a scheme on a workable basis. Endeavours to correlate the activities of plans of voluntary prepaid medical care have indicated that a schedule of medical fees applicable throughout Canada would be desirable. Although the elaboration of tariffs has hitherto been a provincial responsibility the C.M.A. is now consulting the Divisions to determine their wishes in this matter.

(d) *Publicity*

The opinion was expressed that while proponents of all sorts of schemes for giving so-called free medical services to the public were given plentiful and not always accurate publicity, the medical men were keeping too quiet and perhaps failing in their duty in, first crystallizing their own opinion, and second, in educating the public and keeping it informed as to the stand of organized medicine on these important matters. A subcommittee of the executive was appointed to act in the interim and bring in recommendations as to our future course.

(e) *General Practitioners*

Dr. W. A. Wilson has been very active in devising ways and means of maintaining and reviving the status of the General Practitioner and you will hear more of this later.

(f) *World Health*

As you no doubt know, two new world organizations have been set up—one Lay,, the other Professional. The lay Organization is the World Health Organization and the medical one is the World Medical Association. Canada has played a leading part in this, largely due to the ability of our General Secretary, Dr. T. C. Routley, who is occupying posts in both.

(g) *Group Life Insurance*

A sub-committee of the Dominion Executive spent considerable time looking into the possibility and advisability of making arrangements for a group life insurance scheme, which could be participated in by any member of the association. It was decided that up to the present no plan had been put forward which merited acceptance.

(h) *Rheumatism*

Consideration was given to the question of giving leadership to certain lay bodies which have been very active in Canada, especially in British Columbia. This matter is still under consideration.

(i) *Radio Interference*

Every doctor in Canada has been notified that he must discontinue or shield all short wave apparatus before December 31, 1947. In view of the fact that in the United States, doctors are being allowed an additional five years in which to accomplish a changeover, the executive passed a resolution to the effect that we should have parallel consideration. Time will tell what effect this will have.

(j) *Nursing Problems*

In co-operation with the Canadian Nurses' Association and the Canadian Hospital Council the C.M.A. has been studying the means of alleviating the existing shortage of nurses. Consideration has been given to the proposal that in addition to the training of fully Registered Nurses a new class of nurses with more limited training should be established, the "service nurse," who would be most useful for bedside duty.

Many other matters were disposed of but would not, I believe, be of enough general interest to be included in this short report.

All of which is respectfully submitted.

A. H. MENEELY, M.D.

College of Physicians and Surgeons

President ..... Dr. E. J. Lyon
Vice-President ..... Dr. Murray M. Baird
Treasurer ..... Dr. G. S. Purvis
Registrar ..... Dr. A. J. MacLachlan
Executive Secretary ..... Dr. F. L. Whitehead

We publish herewith Section 8, paragraphs 1 and 2 of the Coroner's Act of the Province of British Columbia, at the request of the College of Physicians and Surgeons.

"(1) Every legally qualified medical practitioner who was last in attendance during the last illness or on the death of any person who dies from other than natural causes shall, within twenty-four hours after having notice or knowledge of the death of such person, notify in writing the Coroner within whose jurisdiction the death occurs that such person has died from other than natural causes.

"(2) Every legally qualified medical practitioner who in contravention of this section neglects or fails to notify any Coroner respecting the death of any person shall be liable, on summary conviction, to a penalty of not less than one hundred dollars and not more than two hundred and fifty dollars."

The medical men have been somewhat under the impression that a case which was under their care for some time, but which ultimately died as the result of injuries, did not need to be reported. As you will see from the Act, this is not so, and I feel that the medical men of the Province should be advised, as one of our members appeared in Court not so long since, and was told that he was liable to a penalty from $100.00 to $200.00 for infraction of this law.

A. J. McLachlan, M.D.,
Registrar

BLOOD BANK SUPPLIES GROWING DEFICIT

The Red Cross is currently running a campaign for more volunteer blood donors. At present there is a deficit between the amount of blood given out and the amount received through the Donor Clinics.

The Red Cross has asked for the help and support of the doctors of British Columbia.

At the Annual Meeting of the British Columbia Medical Association it was unanimously resolved that we endorse and support the Red Cross Blood Transfusion Service and their efforts to secure a greater number of donors.

The doctors of B. C. are, therefore, requested to support the campaign for donors in every way possible. In particular the doctor who has carried out a transfusion or transfusions on any patient is requested, *at the time*, to remember to impress on the relatives and friends that this blood is being given free, that it has come from someone, and it is their duty to volunteer at once to replace the amount used with an equal or greater quantity.

The present situation re donors is serious and requires our complete co-operation to prevent the system breaking down.

F. L. Whitehead, M.D.,
Executive Secretary,
British Columbia Medical Association.

News and Notes

Members of the profession extend congratulations to Dr. and Mrs. J. H. Rivers on their recent golden wedding anniversary.

We welcome Dr. W. R. L. Gunn, who has come to Vancouver as head of Shaughnessy Hospital. Dr. Gunn, a veteran of both World Wars, has a distinguished record and we extend our best wishes to him in his new post.

Dr. Richard E. Knox, formerly at Vancouver General Hospital, is now taking a post-graduate course in psychiatry at the State Hospital at Raleigh, North Carolina.

Dr. Marion G. Irwin has come from Moose Jaw, Sask., to take up practise in Kaslo, B. C.

Dr. A. H. Povah, from Kelowna, B. C., is now at the Sanatorium Board of Manitoba at Ninette, Man.

Dr. Leslie Saunders took over Dr. R. Matiko's practise at Port Alice, V. I., for a month n mdsummer.

Dr. W. D. Wilkey is doing a two to three month locum for Dr. F. B. Roth of Whitehorse, Y. T.

Dr. H. H. Black relieved Dr. Cecil H. Hankinson of Prince Rupert from early July until the latter's return to work after his recent illness.

Dr. G. A. Low relieved Dr. A. P. Miller of Port Alberni for a month.

Dr. W. S. Wilson has accepted an appointment with the Department of T.B. Control.

Dr. T. R. Harmon of Vancouver took over Dr. W. C. Pitt's practice in Alberni for three weeks in July.

Dr. T. J. Speakman, now doing post-graduate work at Montreal Neurological Institute, relieved Dr. H. E. Cannon, Abbotsford, for the first two weeks of August.

Dr. S. L. Swartz, recently returned from the Old Country, did a month's locum at the Vernon Clinic and is now relieving Dr. V. J. Guttormsson of Vanderhoof for a short period.

Dr. J. W. Green, formerly at Salmon Arm, has accepted an assistanship with Dr. D. S. McHaffie's group in Duncan.

Dr. Joseph J. Scales recently took up an appointment with Dr. R. H. L. O'Callaghan and associates at Kimberley, B. C.

Dr. S. A. Strachan is relieving Dr. T. C. Holmes of Burns Lake for a short period while the latter enjoys a well earned rest.

Dr. Duncan T. R. McColl has taken up practise at Wells, B. C.

Dr. G. H. Stephenson, of North Vancouver, is taking on a permanent position with the Provincial Mental Hospital at Essondale.

Dr. L. B. McLaren is relieving for Dr. S. R. Arber at Haney, B. C., for the month of October.

Congratulations and best wishes extended to the following doctors on their recent marriages:

Dr. and Mrs. L. F. Brogden, who will reside in Penticton, B. C.

Dr. and Mrs. J. E. Harrison, who will make their home in Vancouver.

Dr. and Mrs. J. L. McMillan, who plan to reside in Vancouver.

Dr. D. L. Epp has arrived from Coaldale, Alta., to take up practise in Chilliwack, B. C.

Dr. B. Schwartz, formerly of Ashern, Man., is now residing in Theodore, Sask.

Dr. D. G. Ulrich has left Victoria to take up practise at Zeballos, B. C.

Dr. E. Lewison is going to New York to do post-graduate work at the New York University and College of Medicine.

Congratulations are being received by the following parents:

Dr. and Mrs. F. L. Skinner, on the birth of a son.

Dr. and Mrs. D. A. Steele, on the birth of a daughter.

Dr. and Mrs. W. M. Tait, on the birth of a daughter.

Dr. and Mrs. W. M. G. Wilson, on the birth of a son.

OFFICE HELP FOR DOCTORS

Stenographers, Receptionists, Technicians, Etc.

The Board of Directors of the British Columbia Medical Association has approved the offer of the National Employment Service to help in selecting stenographers, receptionists and technicians for employment in doctors' offices.

The National Employment Service through their Executive and Professional Division has the organization necessary for carefully checking into the past experience and record of job-seekers in the strictly professional sphere, and can, if necessary, contact suitable persons from outside the Province.

Doctors anywhere in British Columbia who may wish to use the service should write to the National Employment Service, Room 26, Old Hotel Vancouver, 700 West Georgia Street, Vancouver, or phone PAcific 8253 (Mr. J. G. McDonald), simply stating in the first instance what their requirements are and the proposed salary. (There are no forms to be filled out until the applicant becomes an employee.)

The Employment Service will then refer one or more suitable applicants, as available, to the doctor concerned for his final decision.

ARTHRITIS and ECZEMA
of endogenous origin
claimed to be allergic, may be favored or induced by calcium and sulphur deficiency, impaired cell action, and imperfect elimination of toxic waste.

LYXANTHINE ASTIER
administered per os, brings about improved cell nutrition and activity, increased elimination, resulting symptom relief, and general functional improvement.

Write for Information

L-17

Canadian Distributors
ROUGIER FRERES
350 Le Moyne Street, Montreal

Nunn & Thomson

2559 Cambie Street
Vancouver, B.C.

RUTIN B.D.H.

A RATIONAL APPROACH TO THE TREATMENT OF

HAEMORRHAGIC DISEASES

ASSOCIATED WITH

INCREASED CAPILLARY FRAGILITY

THE value of Rutin in decreasing capillary fragility associated with hypertension has been shown in recent clinical trials.*

In view of the fact that abnormal capillary fragility may be a contributing factor in certain haemorrhagic states, it is suggested that the administration of Rutin B.D.H. may have a beneficial effect in haemorrhagic diseases which are not due primarily to disturbance of platelet formation or blood-coagulation mechanism. It is further suggested that the prophylactic use of Rutin B.D.H. may prove of value in hypertension particularly when under treatment with thiocyanate.

Rutin, the chemical and pharmacological properties of which have been thoroughly investigated, is a flavonol glucoside of quercetin and is non-toxic in the dosage recommended.

Rutin B.D.H. is available in capsules of 20 mgm. in bottles of 100 and 500.

*Griffith, J. Q., Jr., Couch, J. F., and Lindauer, M.A., (1944), Effect of Rutin on Increased Capillary Fragility in Man, Proc. Soc. Exper. Biol. & Med., 55:228, March.

*Shanno, R. L. (1946), Rutin: A Drug for the Treatment of Increased Capillary Fragility, Amer. J. Med. Sc., 211:539, May.

THE BRITISH DRUG HOUSES
(CANADA) LIMITED
TORONTO CANADA

89A-47

dyspepsia

the most common gastric disturbance

"Dyspepsia" due to hyperchlorhydria is the most common of all gastric disturbances. . . By prescribing Creamalin for the control of hyperacidity, the physician is assured of prolonged antacid action without the danger of alkalosis or acid rebound. Through the formation of a protective coating and a mild astringent effect, nonabsorbable Creamalin soothes the irritated gastric mucosa. Thus it rapidly relieves gastric pain and heartburn.

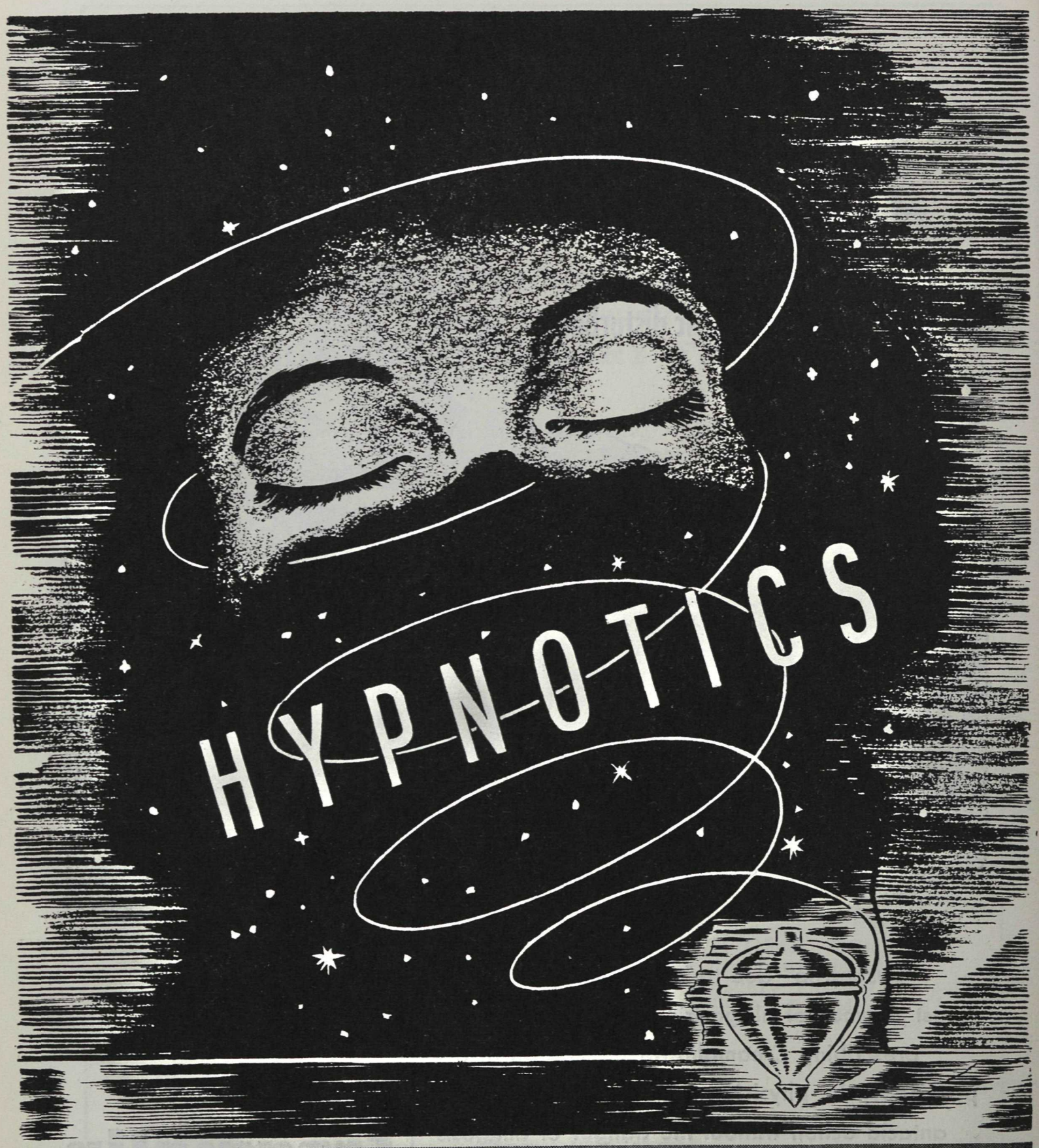
Creamalin

Brand of aluminum hydroxide gel

LIQUID IN 8 OZ., 12 OZ., AND 1 PINT BOTTLES
TABLETS IN BOTTLES OF 50 AND 200

Winthrop CHEMICAL COMPANY, INC.
NEW YORK 13, N. Y. WINDSOR, ONT.

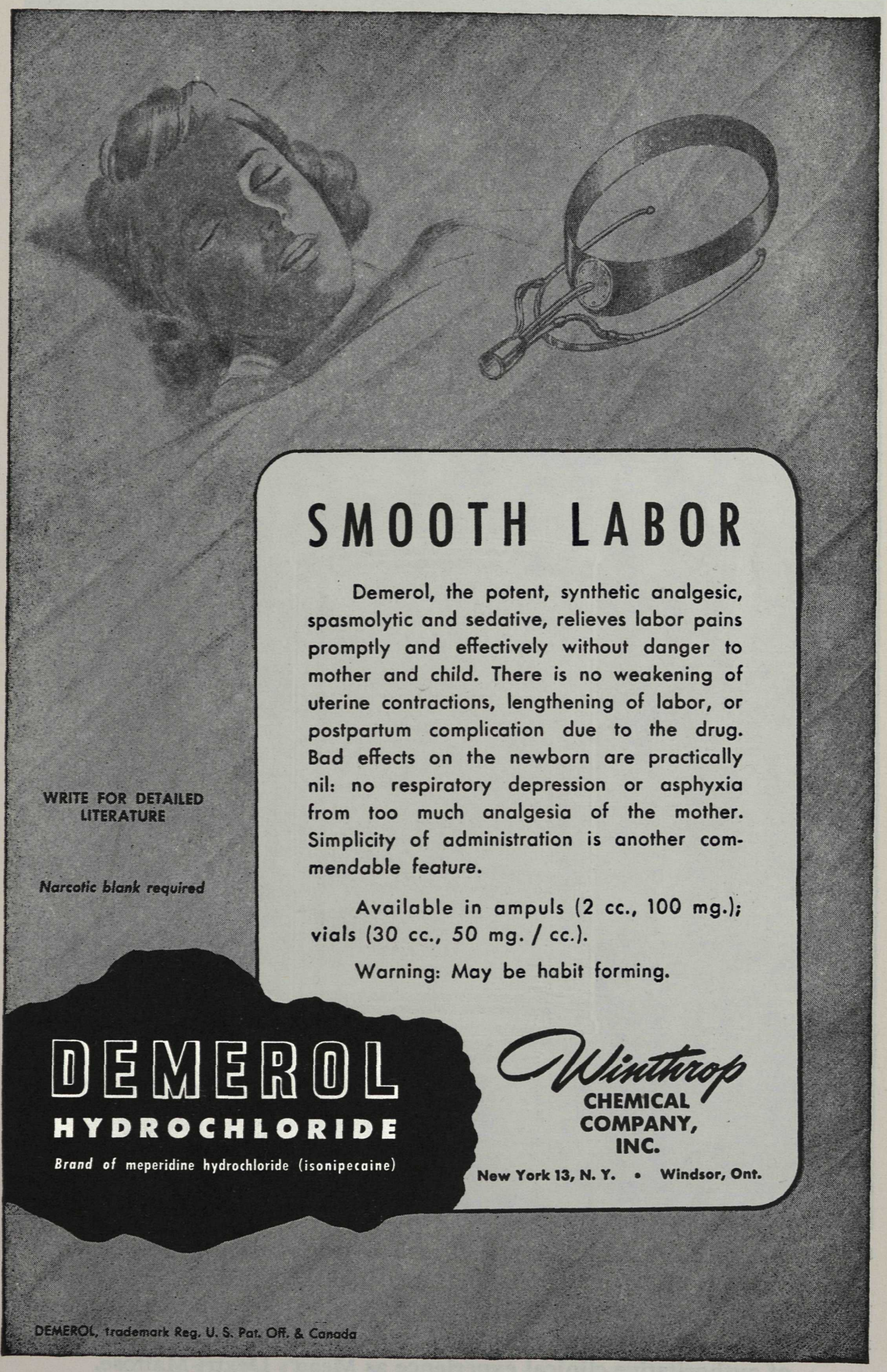
CREAMALIN, trademark Reg. U.S. Pat. Off. & Canada



POULENC

CARDENAL • SONERYL

LABORATORY POULENC FRÈRES OF CANADA LTD.



SMOOTH LABOR

Demerol, the potent, synthetic analgesic, spasmolytic and sedative, relieves labor pains promptly and effectively without danger to mother and child. There is no weakening of uterine contractions, lengthening of labor, or postpartum complication due to the drug. Bad effects on the newborn are practically nil: no respiratory depression or asphyxia from too much analgesia of the mother. Simplicity of administration is another commendable feature.

Available in ampuls (2 cc., 100 mg.); vials (30 cc., 50 mg. / cc.).

Warning: May be habit forming.

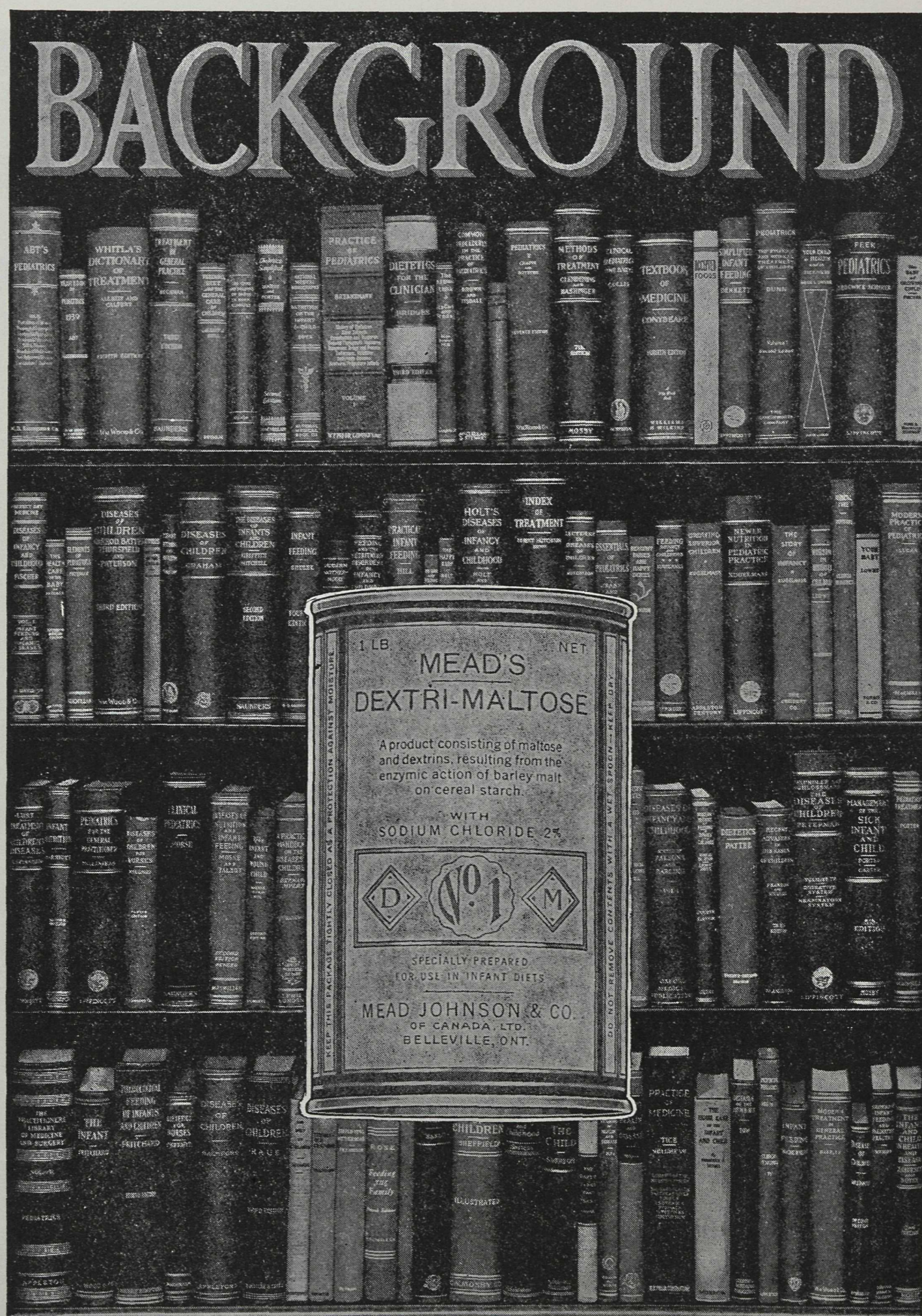
WRITE FOR DETAILED LITERATURE

Narcotic blank required

DEMEROL
HYDROCHLORIDE
Brand of meperidine hydrochloride (isonipecaine)

Winthrop
CHEMICAL COMPANY, INC.
New York 13, N. Y. • Windsor, Ont.

DEMEROL, trademark Reg. U. S. Pat. Off. & Canada



THE use of cow's milk, water and carbohydrate mixtures represents the one system of infant feeding that consistently, for over three decades, has received universal pediatric recognition. No carbohydrate employed in this system of infant feeding enjoys so rich and enduring a background of authoritative clinical experience as Mead's Dextri-Maltose.

When they run to you for relief...

Hay fever's moist and swollen discomforts respond promptly to Neo-Synephrine... the familiar ¼ per cent for nasal decongestion... the ⅛ per cent ophthalmic for excessive lacrimation, itching, burning and palpebral edema. Repeated doses are uniformly effective and virtually free of rebound congestion.

Neo-Synephrine

HYDROCHLORIDE

Brand of Phenylephrine (Laevo • α • Hydroxy • β • Methylamino • 3 • Hydroxy • Ethylbenzene) Hydrochloride

For Hay Fever Relief

THERAPEUTIC APPRAISAL: Quick-acting, long-lasting . . . nasal decongestion without appreciable compensatory recongestion; virtual freedom from local and systemic side effects; sustained effectiveness upon repeated use; isotonic to avoid irritation.

INDICATED for relief of nasal and ophthalmic discomfort in allergic rhinitis, sinusitis, and the common cold.

ADMINISTRATION: By dropper, spray or tampon for intranasal use; by dropper... 2 or 3 drops... in the eye.

SUPPLIED: *For Intranasal Use* — ¼% and 1% in saline solution, bottles of 1 fl. oz. ½% jelly in convenient applicator tubes.

For Ophthalmic Use — ⅛% in a special low-surface-tension aqueous vehicle*, bottles of 15 c.c.

Trial Supplies Upon Request

Frederick Stearns & Company

of Canada, Ltd.

WINDSOR • ONTARIO

NEW YORK KANSAS CITY SAN FRANCISCO DETROIT SYDNEY, AUSTRALIA AUCKLAND, NEW ZEALAND

S136B

*Contains Aerosol OT 100 (dioctyl ester of sodium sulfosuccinate) 0.001%.

Neo-Synephrine Trade Mark Regd.

INDIVIDUALIZED TREATMENT WITH

Ayerst

LIVER EXTRACTS

The four standardized preparations of Ayerst Liver Extract enable the physician to prescribe the type best suited to the requirements of his patient.

POWDER — No. 915
May be taken in liquid or food.

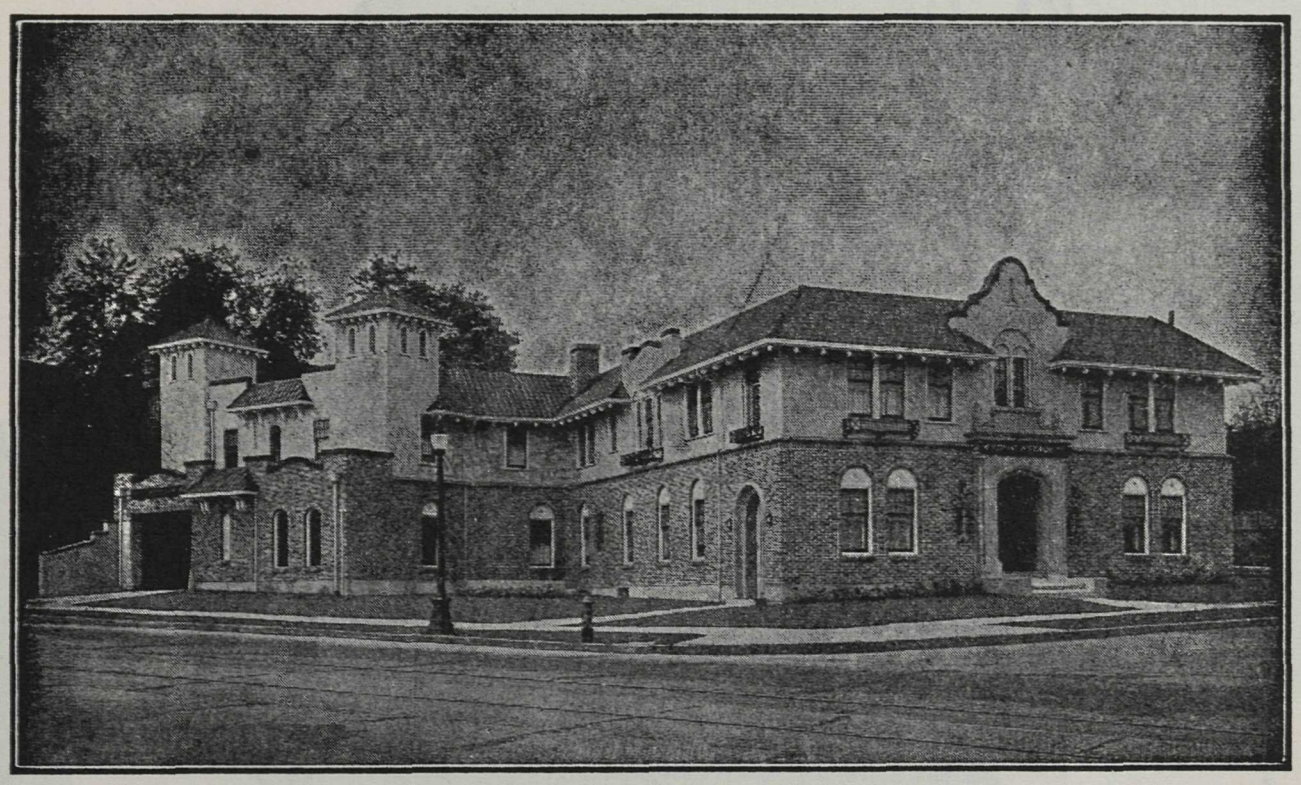
LIQUID — No. 936
Readily miscible with fluid medicaments.

CAPSULES — No. 350
Dry powder capsules for convenience.

INJECTABLE — No. 499 and No. 530
For intensive therapy.

Ayerst

AYERST, McKENNA & HARRISON LIMITED
Biological and Pharmaceutical Chemists • **MONTREAL**

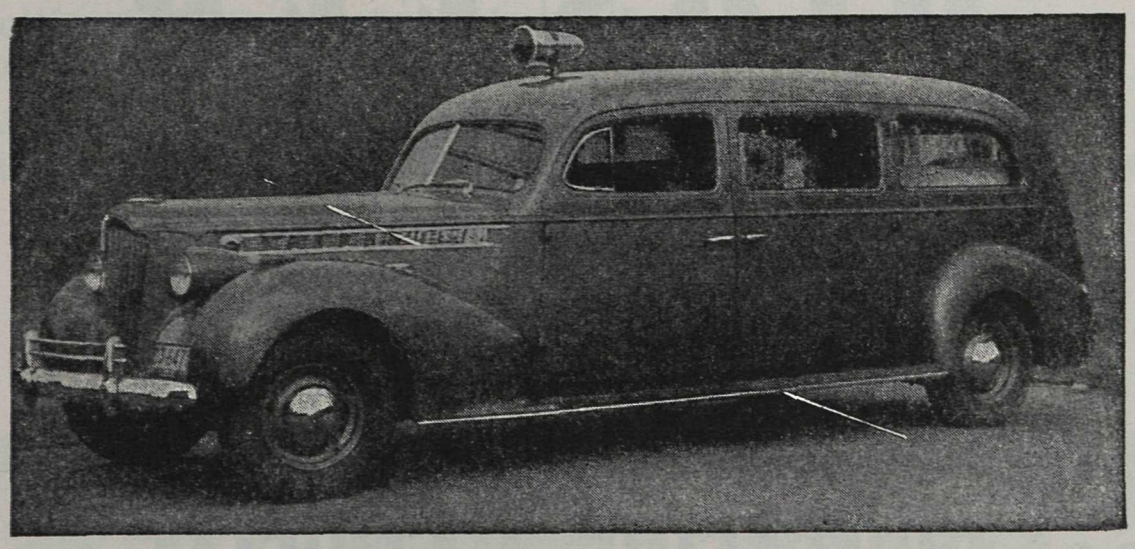


Mount Pleasant Undertaking Co. Ltd.

KINGSWAY *at* 11th AVE. Telephone FAirmont 0058 VANCOUVER, B. C.

W. E. REYNOLDS

EXCLUSIVE AMBULANCE SERVICE

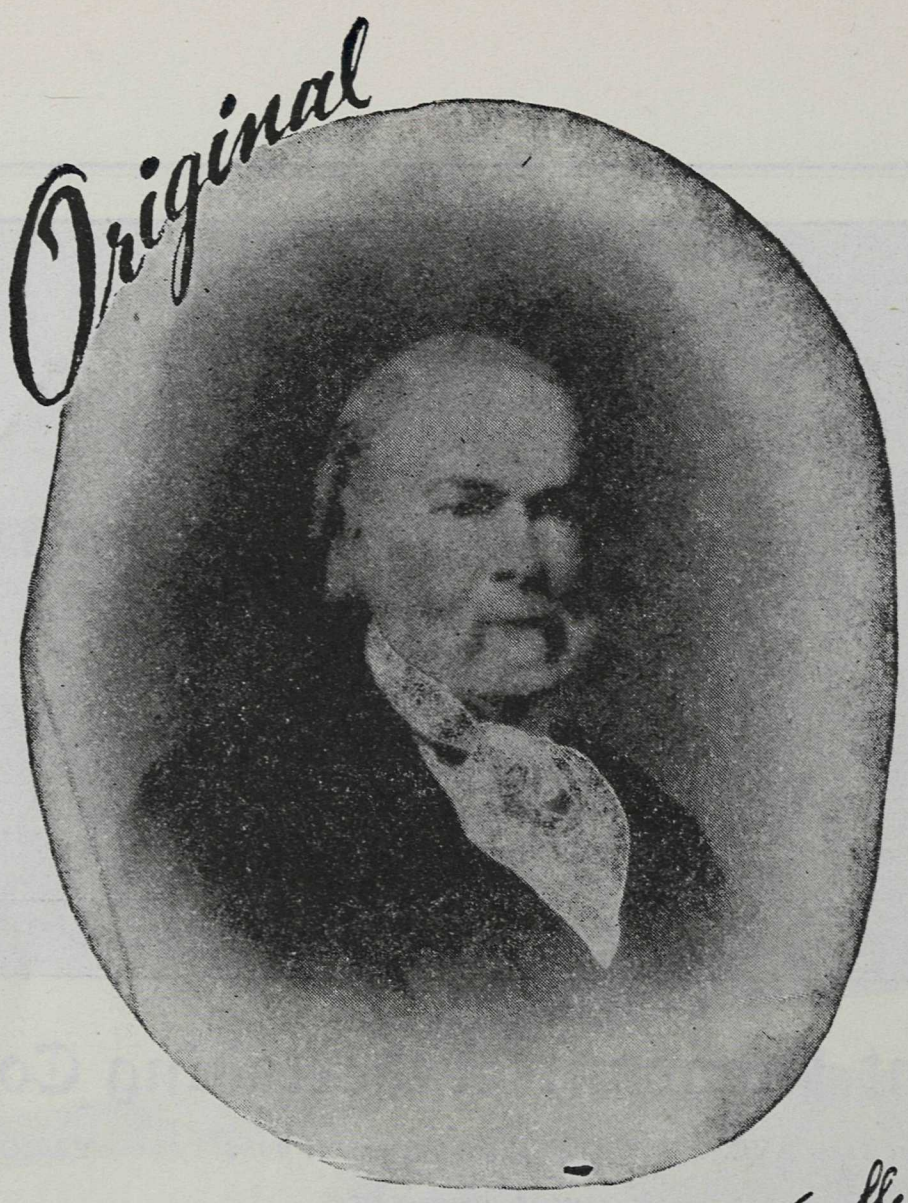


VANCOUVER: 13th Avenue and Heather Street **FAir. 0080**

NEW WESTMINSTER: 814 London Street **NW. 60**

We Specialize in Ambulance Service Only

J. H. GRELLIN W. L. BERTRAND



AS THE SIGNATURE OF C. A. Nativelle

PIONEER

OF THE ORIGINAL BRAND OF DIGITOXIN

. . . also known and described as Digitaline Nativelle in the U.S.P-XIII (Official April 1947). In the year 1868 Digitaline (Digitoxin) was first isolated by Claude Adolphe Nativelle and has been used since that date, as it is today by world renowned clinicians such as: Basil-Parsons-Smith, James Orr, Harry Gold, S. A. Levine, Sir James MacKenzie and many other authorities in the field of digitalis therapy.

DIGITALINE NATIVELLE

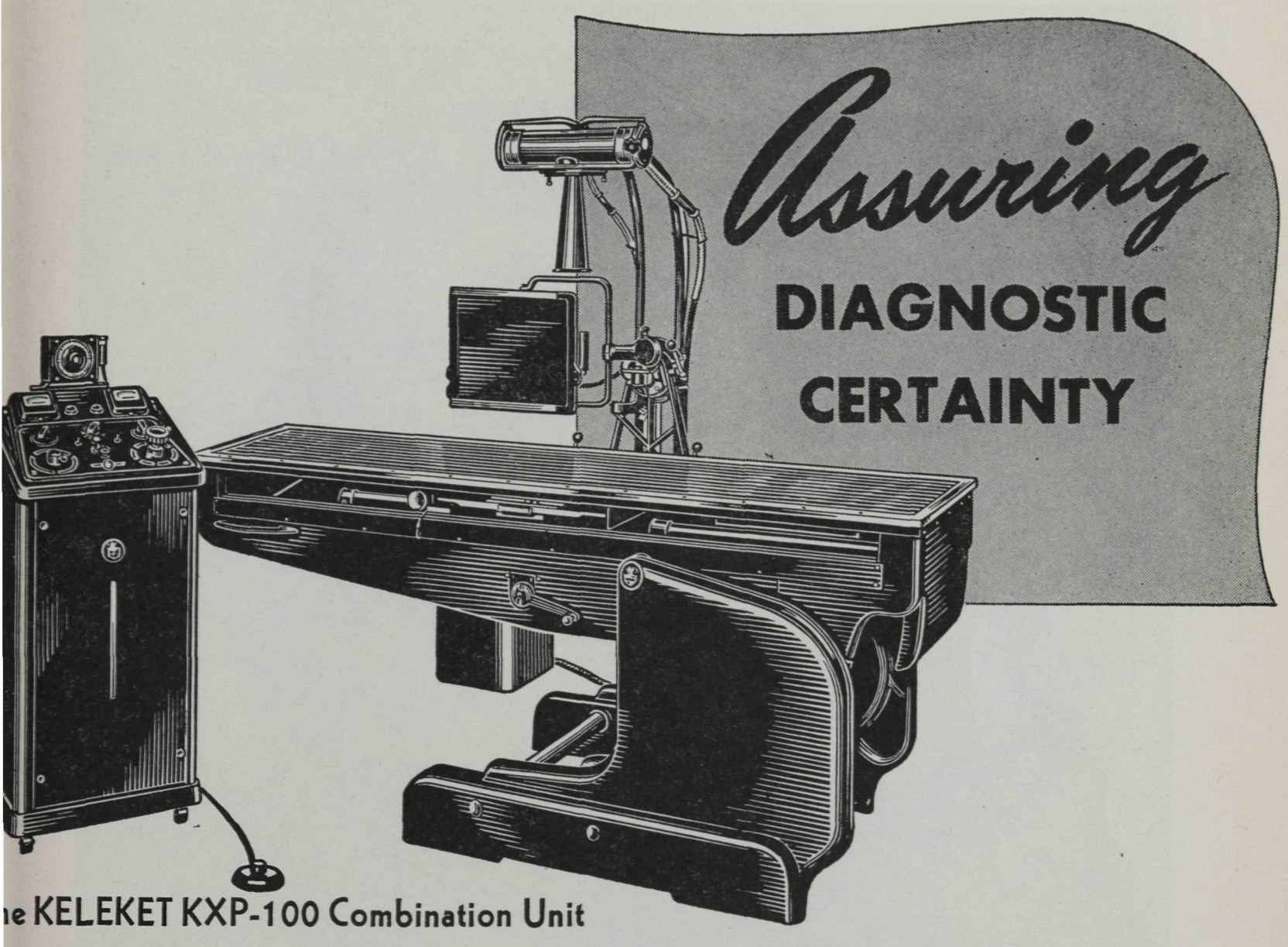
The Digitoxin Original as the Name it Bears.

CANADIAN DISTRIBUTORS

ROUGIER FRERES

350 LE MOYNE STREET - - MONTREAL, P.Q.

Strictly Ethical Preparations.



ne KELEKET KXP-100 Combination Unit

This compact, space-saving unit provides diagnostic certainty for you and absolute assurance for your patients. A room as small as 8 by 10½ feet is adequate for this complete radiographic and fluoroscopic installation.

The Multicron Control performs instantly and automatically, essential operations normally performed by hand.

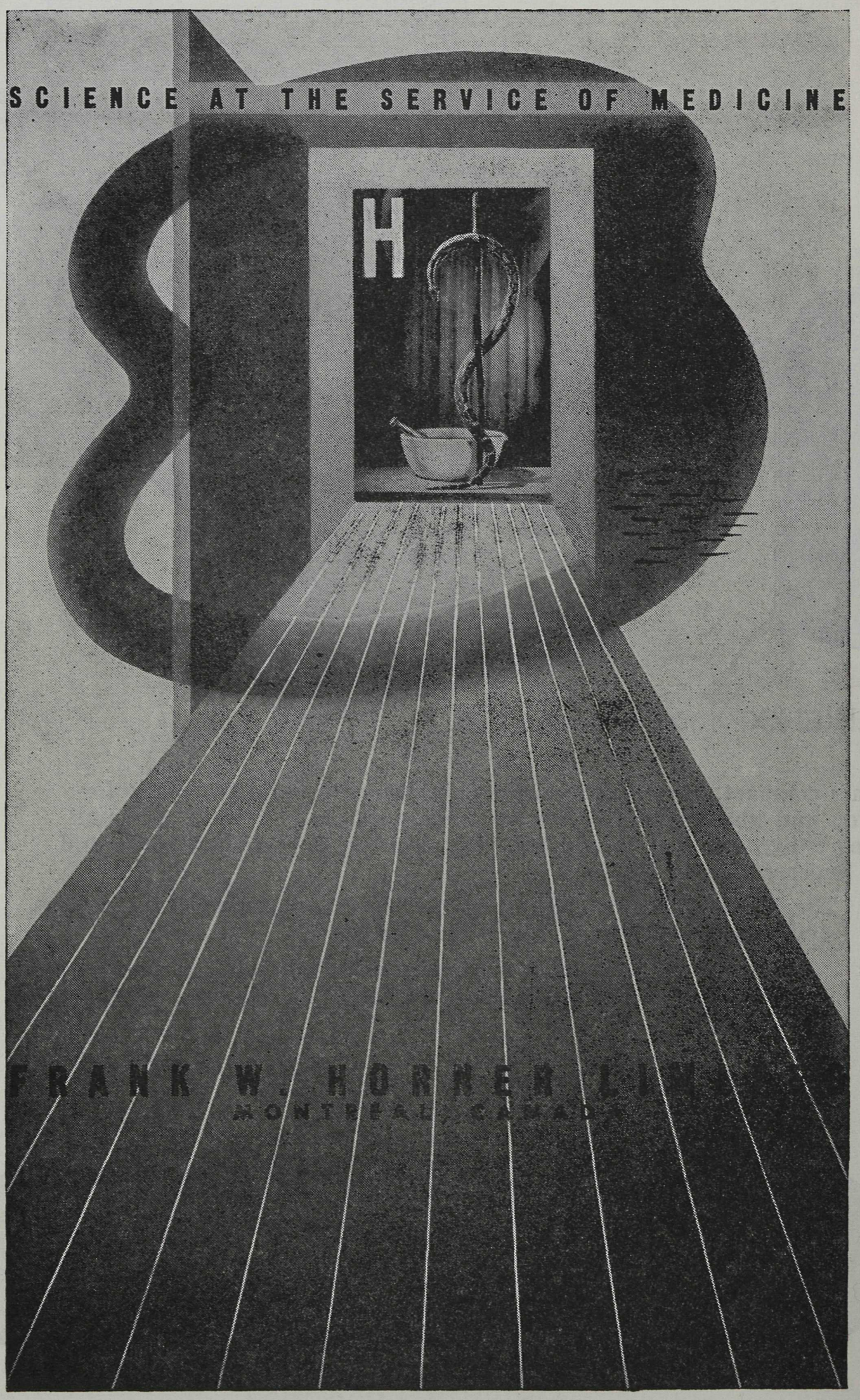
Ample x-ray energy plus a three-position tilt table, make this combination the answer to all your radiographic and fluoroscopic needs.

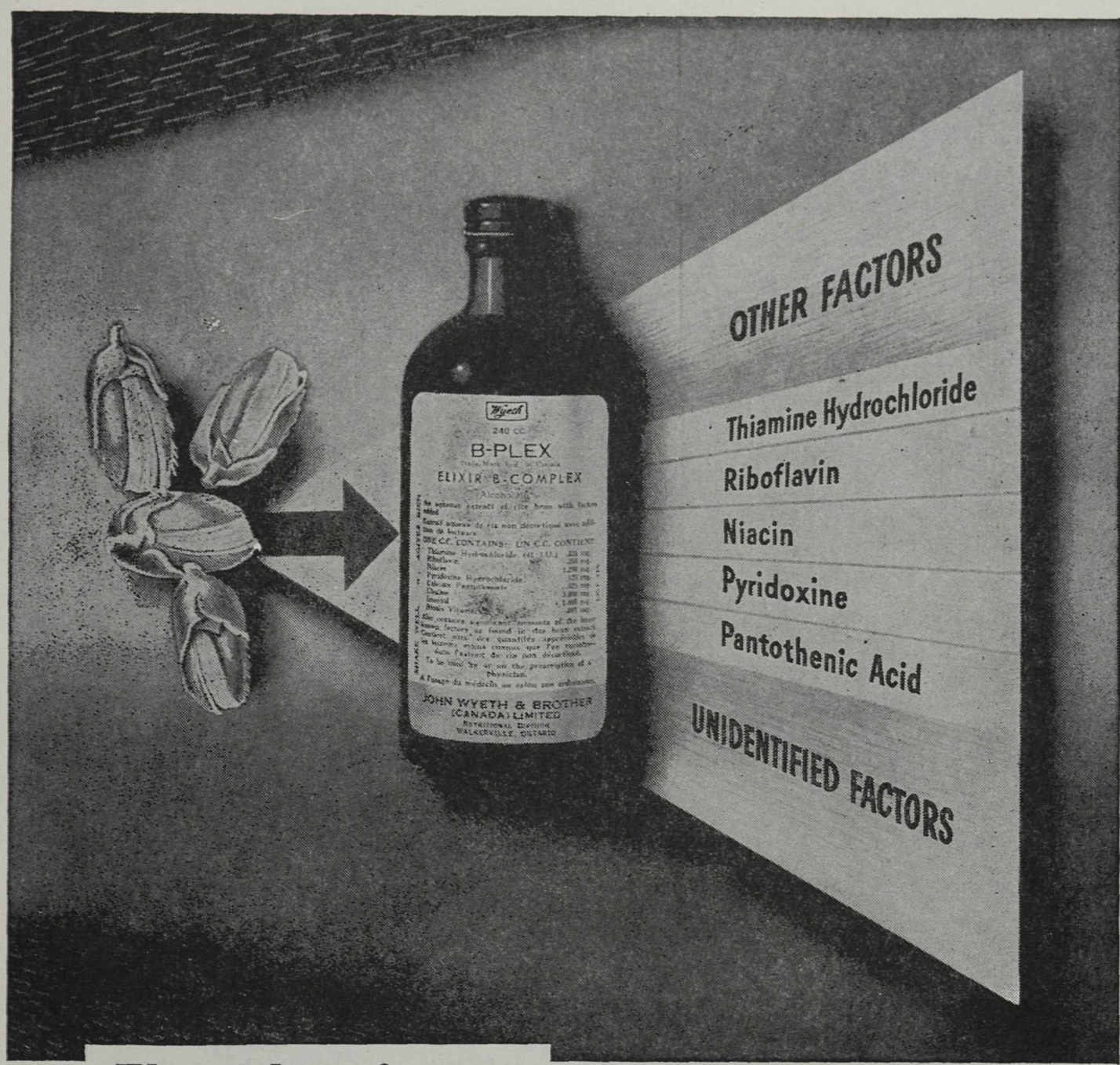
For further information on Keleket KXP-100 Combination Unit write this company for Catalog 86444.

X-ray AND Radium INDUSTRIES LIMITED

261 Davenport Rd. - Toronto 5

UEBEC • MONTREAL • WINNIPEG • EDMONTON • CALGARY • VANCOUVER


SCIENCE AT THE SERVICE OF MEDICINE
H
FRANK W. HORNER LTD.
MONTREAL, CANADA



The other factors are important, too

The superior results obtained from natural vitamin B-complex therapy, are due to the combined effect of many components, some well known and others as yet unidentified.

The increasing preference for natural vitamin B-complex therapy parallels the growing concept that B-vitamin deficiencies are usually multiple.

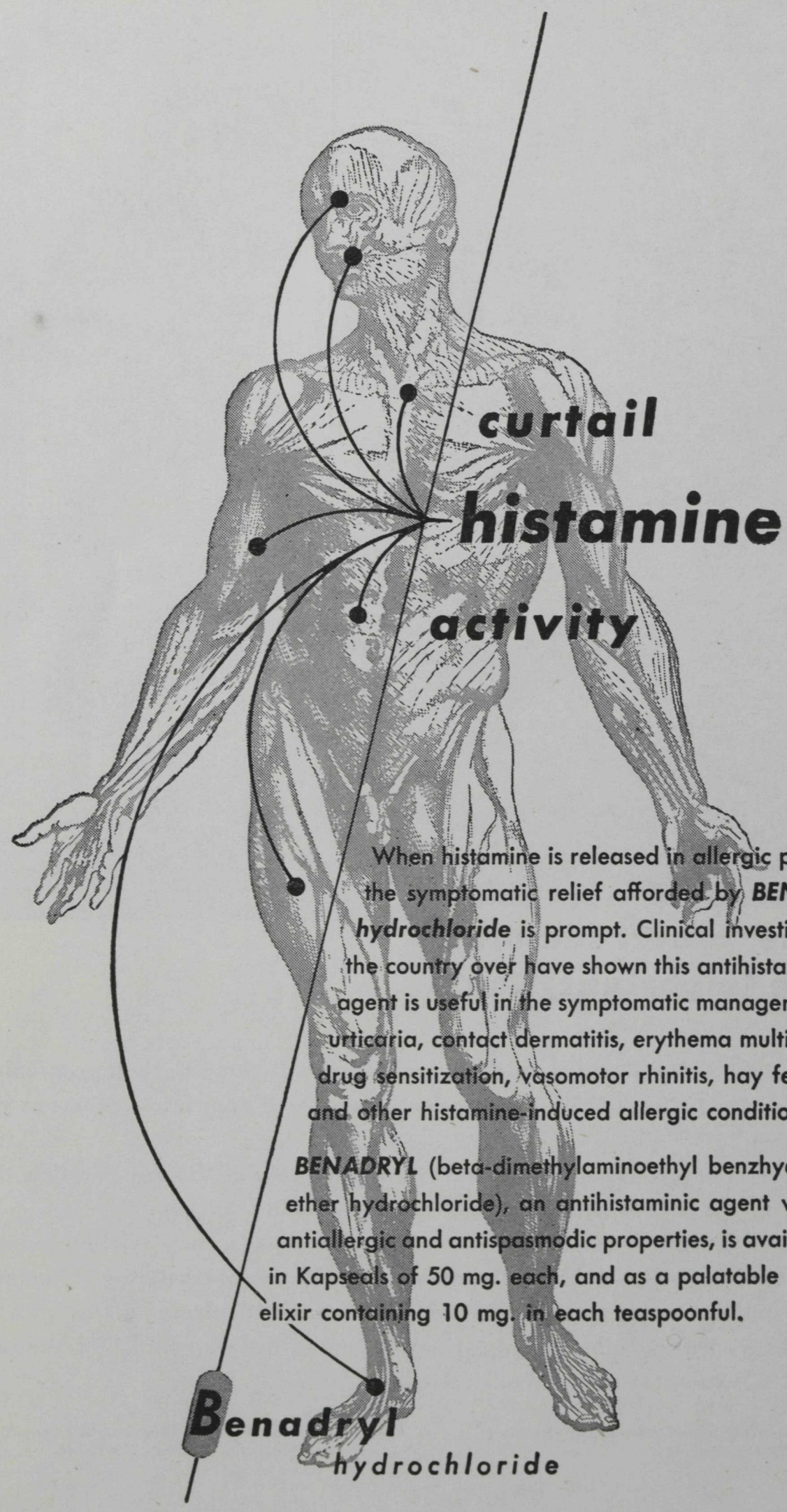
B-PLEX Wyeth is an aqueous extract of rice bran—one of nature's richest sources of the B-Complex—Biologically Balanced[1] by the addition of crystalline B Factors. B-PLEX supplies thiamine hydrochloride, riboflavin and niacin in the ratio of 1:2:10[2] PLUS adequate amounts of pyridoxine, pantothenate acid PLUS the unidentified factors naturally present in rice bran extract.

[1] The evaluation of Preparations of the vitamin B-Complex. C.M.A.J. May, 1942.

[2] Council on Pharmacy and Chemistry and Council on Foods and Nutrition. J.A.M.A. 119-12-948.

Trade Mark Reg. in Canada

JOHN WYETH & BROTHER (CANADA) LIMITED • WALKERVILLE, ONTARIO



When histamine is released in allergic patients the symptomatic relief afforded by ***BENADRYL hydrochloride*** is prompt. Clinical investigations the country over have shown this antihistaminic agent is useful in the symptomatic management of urticaria, contact dermatitis, erythema multiforme, drug sensitization, vasomotor rhinitis, hay fever, and other histamine-induced allergic conditions.

BENADRYL (beta-dimethylaminoethyl benzhydryl ether hydrochloride), an antihistaminic agent with antiallergic and antispasmodic properties, is available in Kapseals of 50 mg. each, and as a palatable elixir containing 10 mg. in each teaspoonful.

Benadryl
hydrochloride

PARKE, DAVIS & COMPANY, LTD., WALKERVILLE, ONT.

MEDICAMENTA VERA · PD CO.

Constant Carefulness

Only an understanding professional skill could maintain the confidence of the Medical Profession which we enjoy.

Phone MArine 4161

Leslie G. Henderson

Gibb G. Henderson

Center & Hanna Ltd.

ESTABLISHED 1893

VANCOUVER, B. C.

North Vancouver, B. C.

Powell River, B. C.

Hollywood Sanitarium

Co. Limited

NEW WESTMINSTER, B. C.

★

For the treatment of

NEUROPSYCHIATRIC DISORDERS

★

Reference—B. C. Medical Association

★

For information apply to

MEDICAL SUPERINTENDENT, NEW WESTMINSTER, B. C.
NEW WESTMINSTER 288

or 721 MEDICAL-DENTAL BUILDING, VANCOUVER, B. C.

PACIFIC 7823 PACIFIC 8036