The . . .

BULLETIN

of the . . .

VANCOUVER MEDICAL ASSOCIATION

UNIVERSITY OF BRITISH COLUMBIA
OCT 6- 1945
LIBRARY

With Which Is Incorporated
Transactions of the

VICTORIA MEDICAL SOCIETY

the

VANCOUVER GENERAL HOSPITAL

and

ST. PAUL'S HOSPITAL

In This Issue:

Page

HODGKIN'S DISEASE AND ALLIED CONDITIONS
—By Henry Jackson, Jr., A.B., M.D. 269

THE REPAIR OF DEFORMITIES OF THE HAND
—By Lt.-Col. Stuart D. Gordon, R.C.A.M.C. 279

MANDIBULAR FRACTURES
—By Lt.-Col. Stuart D. Gordon, R.C.A.M.C. 281

TREATMENT OF THERMAL BURNS
—By Lt.-Col. Stuart D. Gordon, R.C.A.M.C. 283

THIOURACIL—CASE REPORT—By G. M. Wilson, M.D. 286

NEWS AND NOTES 290

VOL. XXI. NO. 11 — AUGUST, 1945

for

COMFORT and RELIEF

in

HAY FEVER

To Relieve Nasal Congestion:

AQUAPHEDRIN, E.B.S.

Aquaphedrin, E.B.S. is an aqueous solution of ephedrine hydrochloride. It is isotonic with normal mucous membrane secretions and thus causes no painful osmotic disturbance when used.

The pH of Aquaphedrin E.B.S. is carefully adjusted to 5.5, which is at the acid end of the normal range of nasal secretions.* Hence, Aquaphedrin helps to restore normal acidity to the mucous membranes, thus aiding the physiologic control of pathogenic organisms.

Indications for Aquaphedrin, E.B.S.:

Asthma, hyperaemia, swollen and congested turbinates, sinus blockage, hay fever, rhinitis, rhinosinusitis and nasopharyngeal inflammations.

Packages: One-half ounce, one ounce dropper bottles, and in bulk for atomizer use.

Prescribe thus: Aquaphedrin, E.B.S.

*Fabrikant: Arch. Otolaryng. Vol. 34, p. 227-301 (1941)

To Prevent Nasal Congestion:

ASCORBIC ACID, E.B.S.

Vitamin C has been found to be remarkably effective in relieving some patients of all symptoms of nasal congestion caused by allergens of types as diverse as pollens and house dust. There is no criterion by which response can be foretold, but a trial treatment entails no hazard, no toxicity to Vitamin C having been reported from doses as high as 1000 mg. daily. The effective doses of from 200 to 500 mg. daily are bringing complete relief to increasing numbers of patients every month.

C.T. No. 81 Ascorbic Acid tablets are especially compounded to prevent deterioration in the Vitamin C content.

C.T. No. 81 Ascorbic Acid E.B.S. contains 100 mg. of Vitamin C in each tablet. They are packaged in bottles of 100, 500 and 1000.

Prescribe thus: C.T. No. 81 Ascorbic Acid, E.B.S.

THE E. B. SHUTTLEWORTH CHEMICAL CO. LIMITED

TORONTO — *MANUFACTURING CHEMISTS* — 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. XXI AUGUST, 1945 No. 11

OFFICERS, 1945 - 1946

DR. FRANK TURNBULL, *President*

DR. H. A. DES BRISAY, *Vice-President*

DR. H. H. PITTS, *Past President*

DR. GORDON BURKE, *Hon. Treasurer*

DR. G. A. DAVIDSON, *Hon. Secretary*

Additional Members of Executive: DR. R. A. GILCHRIST, DR. D. M. MEEKISON

TRUSTEES

DR. J. A. GILLESPIE DR. A. W. HUNTER DR. W. T. LOCKHART

Auditors: MESSRS. PLOMMER, WHITING & CO.

SECTIONS

Clinical Section

DR. S. E. C. TURVEY.....Chairman DR. E. R. HALL.....Secretary

Eye, Ear, Nose and Throat

DR. GRANT LAWRENCE.....President DR. ROY MUSTARD.....Secretary

Paediatric Section

DR. HOWARD SPOHN.....Chairman DR. HARRY BAKER.....Secretary

Orthopaedic and Traumatic Surgery Section

DR. D. M. MEEKISON.....Chairman DR. J. R. NADEN.....Secretary

STANDING COMMITTEES

Library:

DR. W. J. DORRANCE, Chairman; DR. F. J. BULLER, DR. R. P. KINSMAN, DR. J. R. NEILSON, DR. D. E. H. CLEVELAND, DR. S. E. C. TURVEY.

Publications:

DR. J. H. MACDERMOT, Chairman; DR. D. E. H. CLEVELAND, DR. G. A. DAVIDSON, DR. J. H. B. GRANT, DR. S. E. C. TURVEY, DR. GRANT LAWRENCE

Summer School:

DR. G. A. DAVIDSON, Chairman; DR. J. C. THOMAS, DR. R. A. GILCHRIST, DR. A. M. AGNEW, DR. L. H. LEESON, DR. L. G. WOOD.

Credentials:

DR. J. R. NEILSON, DR. H. H. PITTS, DR. A. E. TRITES

V. O. N. Advisory Board:

DR. ISABEL DAY, DR. J. H. B. GRANT, DR. G. F. STRONG

Metropolitan Health Board Advisory Committee:

DR. W. D. PATTON, DR. W. D. KENNEDY, DR. G. A. LAMONT

Representative to B. C. Medical Association: DR. H. H. PITTS

Sickness and Benevolent Fund: THE PRESIDENT—THE TRUSTEES

In Pregnancy

TOCOPHEREX

Suggested for Treatment of Threatened or Habitual Abortion Due to Vitamin E Deficiency

● Each capsule contains 50 milligrams of mixed tocopherols, equivalent in vitamin E activity to 30 milligrams of a-tocopherol.

Tocopherex contains vitamin E derived from vegetable oils by molecular distillation, in a form more concentrated, more stable and more economical than wheat germ oil.

For experimental use in prevention of habitual abortion (when due to Vitamin E Deficiency): 1 to 3 capsules daily for 8½ months. In threatened abortion: 5 capsules within 24 hours, possibly continued for 1 or 2 weeks and 1 to 3 capsules daily thereafter.

Tocopherex capsules are supplied in bottles of 25 and 100.

VIOPHATE-D

For Increased Calcium Requirements

● Each capsule of Viophate—D contains 4.5 grains Dicalcium Phosphate, 3 grains Calcium Gluconate and 330 units of Vitamin D. The capsules are tasteless, and contain no sugar or flavouring. Where wafers are preferred, Viophate—D Tablets are available, pleasantly flavoured with wintergreen.

One tablet is equivalent to two capsules.

How supplied:

Capsules—Bottles of 100 and 1,000.

Tablets —Boxes of 51 and 250.

E·R·SQUIBB & SONS OF CANADA, Ltd.
MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

VANCOUVER HEALTH DEPARTMENT

STATISTICS—JUNE, 1945

Total population—estimated	311,799
Japanese Population—Estimated	Evacuated
Chinese population—estimated	6,395
Hindu population—estimated	335

	Number	Rate per 1,000 Population
Total deaths	299	11.7
Chinese deaths	18	34.2
Deaths—residents only	253	9.9
BIRTH REGISTRATIONS:		
Male, 378; Female, 313	691	27.0

INFANT MORTALITY:	June, 1945	June, 1944
Deaths under one year of age	18	14
Death rate—per 1,000 births	260	21.7
Stillbirths (not included above)	11	9

CASES OF COMMUNICABLE DISEASES REPORTED IN THE CITY

	May, 1945		June, 1945		July 1-15, 1945	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Scarlet Fever	25	0	20	0	6	0
Diphtheria	0	0	1	0	0	0
Diphtheria Carrier	0	0	0	0	0	0
Chicken Pox	95	0	97	0	11	0
Measles	348	0	243	0	15	0
Rubella	45	0	47	0	1	0
Mumps	9	0	14	0	1	0
Whooping Cough	2	0	3	1	0	0
Typhoid Fever	0	0	0	0	0	0
Undulant Fever	0	0	0	0	0	0
Poliomyelitis	1	0	1	0	0	0
Tuberculosis	49	13	60	17	--	--
Erysipelas	2	0	4	0	1	0
Meningococcus Meningitis	0	0	1	1	0	0
Paratyphoid Fever	0	0	1	0	0	0
Infectious Jaundice	0	0	0	0	0	0
Salmonellosis	1	0	1	1	6	1
Dysentery	0	0	0	0	1	0
Syphilis	--	--	80	0	--	--
Gonorrhœa	--	--	179	0	--	--

BIOGLAN-A

The most effective therapy for waning mental and physical energy, deficient concentration and memory, reduced resistance to infection, muscular weakness and debility, neurasthenia and premature senility. The efficacy of this very potent endocrine tonic has been confirmed by the clinical evidence of many thousands of cases treated during 1932-1943.

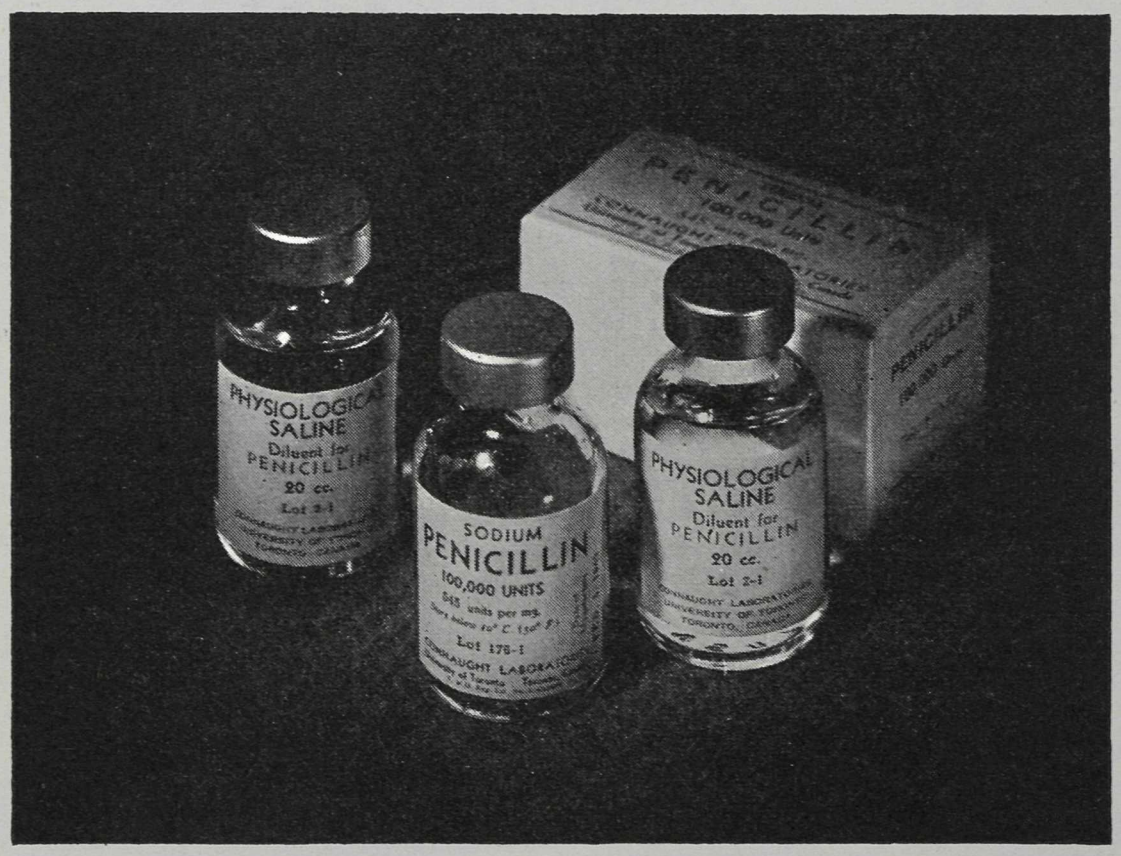
Stanley N. Bayne, Representative

Phone MA. 4027 **1432 MEDICAL-DENTAL BUILDING** **Vancouver, B. C.**

Descriptive Literature on Request

THE SCIENTIFIC HORMONE TREATMENT

SODIUM PENICILLIN - CONNAUGHT



SODIUM PENICILLIN is supplied by the Connaught Laboratories in sealed rubber-stoppered vials as a dry powder which remains stable for at least a year if stored at a temperature below 10° C. (50° F.). Each vial contains 100,000 International Units.

PHYSIOLOGICAL SALINE, sterile and pyrogen-free, is supplied in 20-cc. rubber-stoppered vials, permitting of the convenient preparation of various dilutions of penicillin, *e.g.*, by adding 20 cc. of saline to a vial of penicillin a solution containing 5,000 units per cc. is obtained, or if 2 cc. be used, a solution containing 50,000 units per cc.

As supplied by the Connaught Laboratories, Sodium Penicillin is of high quality and is free from irritating substances.

CONNAUGHT LABORATORIES

University of Toronto Toronto 5, Canada

DEPOT FOR BRITISH COLUMBIA

MACDONALD'S PRESCRIPTIONS LIMITED

MEDICAL-DENTAL BUILDING, VANCOUVER, B.C.

VANCOUVER MEDICAL ASSOCIATION

Founded 1898 :: Incorporated 1906

PROGRAMME OF THE FORTY-EIGHTH ANNUAL SESSION

GENERAL MEETINGS will be held on the first Tuesday of the month at 8:00 p.m.

CLINICAL MEETINGS will be held on the third Tuesday of the month at 8:00 p.m. These meetings will continue to be amalgamated with the clinical staff meetings of the various hospitals for the coming year. Place of meeting will appear on the agenda.

October 2—GENERAL MEETING. Psychopathic Personality. Major C. H. Gundry.

October 16—COMBINED CLINICAL MEETING AND STAFF MEETING AT VANCOUVER GENERAL HOSPITAL.

November 6—GENERAL MEETING. Protruded Intervertebral Discs—Analysis of Sixty Cases. Major P. O. Lehmann, R.C.A.M.C.

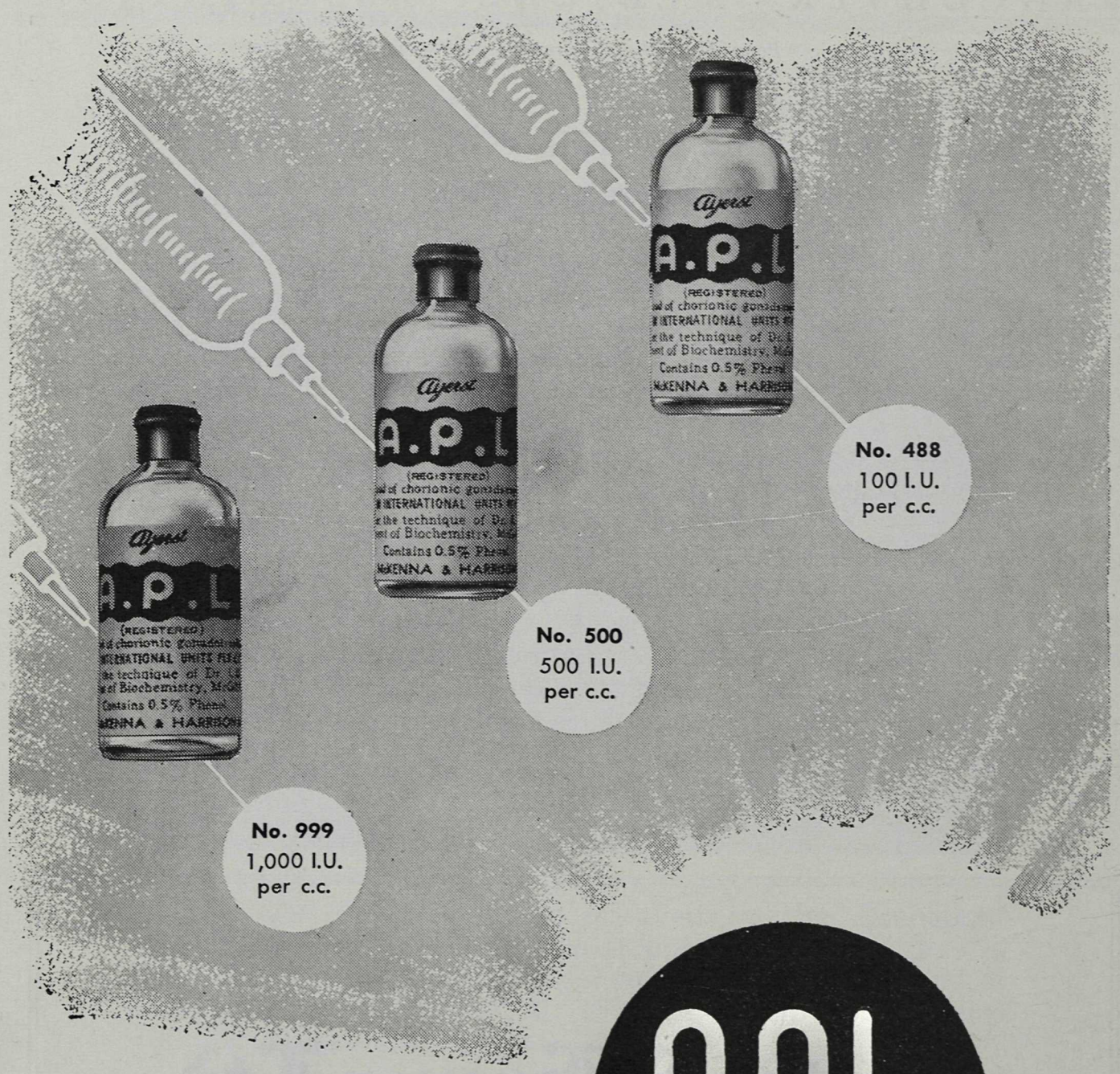
November 20—COMBINED CLINICAL MEETING AND STAFF MEETING AT ST. PAUL'S HOSPITAL.

Center & Hanna Ltd.

ESTABLISHED 1893

VANCOUVER, B. C.

North Vancouver, B. C. Powell River, B. C.



A.P.L.

Brand of chorionic gonadotrophin

For the treatment of cryptorchidism, Fröhlich's syndrome, hypogonadism, menorrhagia and metrorrhagia.

3 STRENGTHS

for economy and convenience of administration

- ★ **potent**
- ★ **economical**
- ★ **painless on injection**

AYERST, McKENNA & HARRISON LIMITED

Biological and Pharmaceutical Chemists • MONTREAL, CANADA

Ayerst

331

The Editor's Page

Now that the war is over, the question of the continued chlorination of water in Vancouver and Victoria has again arisen. The City Council of Vancouver has come out, we are told unanimously, in favour of discontinuing this protective measure. One member, Ald. George Buscombe, has been particularly vehement in his remarks. As far as we have been able to make out from what we have read in the press, no scientific refutation has been given of the reasons which influenced the adoption of the measure of chlorination. The appeal for its cessation seems to be entirely to sentiment, the tradition of "the purest water in the world," and so on.

It is suggested that a plebiscite be held, and a local quiz poll in the papers has elicited strong public support for stopping chlorination. But this does not appeal to us as a reasonable or wise way of settling the question. Any such expression of opinion, in the case of the vast majority of those who respond, must be based on sentiment, prejudice, or personal bias, rather than knowledge or intelligent appreciation of the facts. We know this is sometimes said to be the democratic way, but we do not agree for a moment that this is so, in the truest or best meaning of the word democracy. We cannot agree that the man in the street, and that includes ourselves, is qualified to give a decision on such questions, and that his decision is to govern the action of the authorities—and that is the root of our objection to plebiscites—but that is another story.

We said once before on this page that in our opinion this is not a case for City Councils, or laymen as a whole, to decide. It is a matter for trained experts, just as are the questions of immunization, sewage disposal, and other health questions. The men in charge of our Health Departments, provincial and municipal, are, we believe, unanimous in recommending the continuation of chlorination, and we should support them in this position.

The arguments against chlorination are, we believe, thoroughly unsound, and we have seen no harm whatever that we can recognize as such. They are chiefly in line with the arguments against anything new, which an old Roman long ago said is always to be feared—and all health measures have had, at some time or another, to run the gauntlet. We are quite sure that men like Drs. Amyot and Dolman have no personal axe to grind when they urge chlorination, and that their opinion is based on the most scrupulous and disinterested investigation of the facts, and upon an exact and trained scientific knowledge of preventive medicine. These things must be our guides, not the demagogic clamour of men who know nothing of the subject. We cannot disregard the warnings and advice of our Health Authorities without grave risk to life and health. We have no right to run this risk. It is, we think, the duty of the medical profession to support those who are in charge of Preventive Medicine and Health, by every means in our power—in personal contact with the public, and by any other methods at our disposal, private or public. The question at stake is not only the necessity or otherwise for chlorination: it is a bigger matter. It is whether in matters of public health we are to be governed by the best considerations, and by the expert knowledge of those whom we put in charge of our health, or by prejudice and reaction. We trust that the former will be the case.

ANNUAL DINNER
VANCOUVER MEDICAL ASSOCIATION

The old institution of the Annual Dinner, which was discontinued during the war years, is to be revived.

Plans are being made for Friday, November 30th.

The keynote of the Dinner will be the welcome back to practice of our former members, and it is expected that this will be a particularly happy occasion.

LILBRARY NOTES

RECENT ACCESSIONS TO LIBRARY—

Medical Clinics of North America, Symposium on Medical Emergencies, Mayo Clinic number, July, 1945.

Recent Advances in Medicine, 11th ed., 1944, Beaumont and Dodds.

Oxford Loose Leaf Medicine Supplements, as follows:

Bright's Disease, by Dr. Henry A. Christian (Revision of article).

Reticulum Cell Sarcoma and Giant Follicle Lymphoma and Lymphosarcoma, by Dr. Henry Jackson, Jr., and Dr. Frederic Parker, Jr. (New articles).

Industrial Toxicology, by Dr. Alice Hamilton and Dr. Rutherford T. Johnstone. (Revision of article.)

Food-Borne Disease, by Dr. V. A. Getting. (New article.)

Aphasia, by Dr. J. M. Nielsen. (Revision of article.)

* * * *

BOOK REVIEW

MY SECOND LIFE, by Thomas Hall Shastin, 1174 pp., $10.00, George Wahr, Ann Arbor, 1944.

Interesting autobiographies of famous surgeons have been written lately, each tending toward greater size. Of these, "My Second Life" by Dr. Thomas Hall Shastid is just about the biggest, covering 1200 pages. The Doctor, in a fascinating style, describes the experiences of his early youth, more especially his relations with his father, an early physician in southern Illinois, who had impressed him enormously. Much data is included about Lincoln and the men of his era since the locale of the book is around Lincoln's early home. I would strongly recommend the book to any student of American history. Nothing especially technical is included that would be uninteresting to a layman, and, as it consists of a large series of relatively unrelated incidents, any one of these can be read as a short story.

H. M.

FOR SALE!

All-Metal White Examining Table, Adjustable Stool and Instrument Stand.

Apply --- Dr. W. T. LOCKHART

3224 West 3rd. Avenue BAyview 3093-M

HODGKIN'S DISEASE AND ALLIED CONDITIONS

HENRY JACKSON, JR., A.B., M.D.

It is difficult to coin a proper term to cover all the neoplastic and near-neoplastic diseases of the lymph nodes and lymphoid tissue. Perhaps the best compromise is the term malignant lymphoma. Under this, then, I would classify the various forms of Hodgkin's disease, as well as reticulum cell sarcoma, giant follicle lymphoma and lymphosarcoma. It is my purpose to discuss these entities from a practical point of view.

Before entering into a discussion of these various diseases I would like to say a word about biopsies and I realize that I may well be treading on somebody's toes in so doing. It is, however, far too important a subject to omit.

No clear-cut and definitive diagnosis can be made in any of the lymphoma group without an adequate and proper biopsy. It may well be that no biopsy can be taken but if there be an accessible mass or lymph node which can be safely approached a biopsy should be taken in every case. The clean excision of an isolated lymph node has never in my experience been followed by any trouble. One should not choose a small satellite lymph node for these are often the site of entirely non-specific and non-diagnostic changes. In all cases a reasonably large lymph node should be taken. Furthermore it should immediately be fixed in an appropriate fixative, preferably Zenker's fluid, and subsequently stained by appropriate methods. Unless the pathologist has at hand such an adequately fixed and stained section he cannot possibly make a correct diagnosis.

By and large the groin should be avoided and it is risky to cut into a large mass or to cut across a large lymph node, leaving a portion of it behind. Above all the tissue must be fixed immediately. Even the most experienced pathologist cannot make an accurate diagnosis from a gross specimen.

Giant Follicle Lymphoma

Giant follicle lymphoma or follicular lymphoblastoma was originally described by Brill, Baehr and Rosenthal in 1925. The characteristic histologic feature of the classic type of giant follicle lymphoma is the tremendous number of huge lymphoid follicles often visible with a hand lens in the fresh specimen or stained section. The greatly enlarged follicles virtually fill the entire node, compress the surrounding pulp and not infrequently break through the capsule.

The disease must be differentiated from chronic nonspecific inflammatory conditions of the lymph nodes. Uniformity of the cells within the follicles, lack of phagocytosis and invasion of the capsule all favor the diagnosis of giant follicle lymphoma. It is well to remember also that chronic enlargement of lymph nodes in an adult only rarely is due to inflammation alone, unless the causative effect is obvious. This generality is too often disregarded.

The lymphadenopathy may be generalized but more commonly appears to be confined, especially in the early stages of the disease, to a comparatively small region. Involvement of the retroperitoneal nodes is, however, common. Internal organs, such as the spleen, are involved occasionally even in the uncomplicated disease. Much more rarely there is giant follicle formation in the liver, bone marrow, breast and other structures.

The predominant cell in the enlarged follicles may be the lymphocyte or the reticulum cell. Baehr believes that the condition is a form of lymphosarcoma and further states that in the terminal stage of the disease he has twice observed a marked increase in leukocytes and the appearance of lymphoblasts in the blood stream. It is our experience, too, that in certain cases the condition develops into lymphosarcoma, the type cell then being the lymphocyte or lymphoblast.

Similarly, though less often, there may arise subsequently from the predominant reticulum cells a reticulum cell sarcoma or presumably from the same cell Hodgkin's disease of one or the other type. This metamorphosis into a more malignant disease may be seen occasionally in some small portion of an excised lymph node, when the patient is

Read at Vancouver Medical Association Summer School, 1945.

first seen, or it may occur months or years later, when all the histological evidence of the original giant follicle lymphoma has disappeared. It is obvious that two or more biopsies or a biopsy and subsequent autopsy are necessary to combat the claims made by some that such changes are fortuitous.

In our own series there were 25 cases that at the time of biopsy showed the characteristic histological picture of simple, uncomplicated, giant follicle lymphoma as originally described by Baehr. Fifteen of these cases remained uncomplicated so far as could be told. With the passage of time, however, as proved by subsequent biopsy or autopsy, 5 developed Hodgkin's granuloma, 1 lymphosarcoma, 1 Hodgkin's sarcoma and 1 reticulum cell sarcoma. Two patients were lost sight of.

Fourteen additional cases showed at the time of first biopsy evidences of transformation into some other type, that is, within the node showing the characteristic picture of giant follicle lymphoma there were small areas having the histological features characteristic of some other form of malignant lymphoma. In 10 the picture was that of a lymphosarcoma. In 2 there was unmistakable evidence of Hodgkin's granuloma, and in one each were seen the features of reticulum cell sarcoma and Hodgkin's sarcoma. In every instance the subsequent course of the disease was that of the particular form of lymphoma evidenced by the first biopsy.

It is evident, therefore, that while giant follicle lymphoma is a comparatively benign condition, there is a strong tendency for the condition to become malignant, for 28 per cent of our patients eventually developed "lymphosarcoma," confirming Baehr's contention that the giant follicle lymphoma is a specialized form of that disease, and in 29 per cent more one or another form of lymphoma developed, and the subsequent course was that of the second type.

Giant follicle lymphoma is most common in middle aged and elderly people though it may be seen at any age. All of our patients were 20 years of age as were Baehr's; Baehr reported cases from the age of 20 to 68 with an average of 42 years. The rarity in the first decade of life of giant follicle lymphoma in comparison with the simple inflammatory conditions of the lymph nodes on the one hand and the occurrence of lymphosarcoma, lymphatic leukemia and Hodgkin's granuloma on the other is worth more than passing notice from the diagnostic point of view.

The onset is insidious, the initial symptoms being most commonly painless enlargement of the superficial lymph nodes which are discrete, soft or rubbery and non-adherent. It is worth noting that inguinal lymphadenopathy is far more common early in the disease than in other form of lymphoma. Systemic symptoms, such as fever and loss of weight, are rare.

Anemia does not develop, unless complications occur, and the white blood cell count and the differential cell count are normal, unless lymphatic leukemia develops, a complication which has been reported, although we personally have not seen it.

The disease in its simple and uncomplicated form may be confused with acute and chronic inflammatory lymphadenitis, Hodgkin's disease, tuberculosis, lymphatic leukemia and indeed with any condition causing painless enlargement of superficial lymph nodes without other symptoms of note. It is obvious, therefore, that the diagnosis can be made only by very careful histological examination of an excised lymph node. In some cases the differential diagnosis between the disease and a simple inflammatory condition may be impossible. Under these circumstances the patient must be watched carefully over a period of time and subsequently biopsies taken if it seems wise. From a clinical point of view, the larger the nodes, the more generalized the adenopathy, the more liable the diagnosis of giant follicle lymphoma is to be correct.

The course of the disease naturally is variable and depends to a large extent upon whether or not the initial simple giant follicle lymphoma is replaced subsequently by some other form of lymphoma.

In those cases showing only uncomplicated giant follicle lymphoma, there is usually painless lymphadenopathy, most frequently in the inguinal or cervical regions. The lymph nodes are soft or rubbery, discrete and unattached to the surrounding tissues.

Occasionally they are tender. In 12 of Baehr's 19 cases the spleen was enlarged. Splenomegaly in our own experience has been less frequent. Only 4 of 15 cases, which apparently remained simple and uncomplicated, had during life clinical evidence of enlargement of this organ. Hepatomegaly is still more unusual. In a few cases there is loss of weight, anorexia, or abdominal distress, the latter symptom presumably being due to enlargement of retroperitoneal nodes. Serious effusions in the pleural and peritoneal cavities were found in 6 of our 39 cases. So far as our experience goes, in the pure form of giant follicle lymphoma the blood picture remains essentially normal.

In short, we believe that in patients suffering from the uncomplicated condition such symptoms as they have are due to the presence of painless, though often generalized, lymphadenopathy. It should be emphasized that not infrequently the lymph nodes regress spontaneously for a time and thus lull both the patient and the physician into a false sense of security. Such temporary regression, even though of comparatively long duration, is not infrequent. Should some other form of lymphoma develop, signs and symptoms of that disease are not slow in appearing and the occurrence of symptoms and signs, such as marked loss of weight, hematemesis, fever, bloody pleurisy with effusions and the like, call for a careful re-evaluation of the patient's prognosis and treatment.

The treatment of giant follicle lymphoma is prompt irradiation; to such therapy the condition responds favorably, as Baehr has pointed out.

Lymph nodes involved by pure giant follicle lymphoma are commonly very sensitive to X-ray and 200 r to 800 r to each portal are often sufficient to bring about their complete disappearance. Further radiation should be withheld until additional signs and symptoms appear, at which time a second biopsy should be done, if a superficial lymph node is accessible, in order to rule in or out the development of some other form of malignant lymphoma. If the disease remains uncomplicated, subsequent X-ray treatments may be moderate. If, however, by biopsy or clinical evidence it appears that some other type of lymphoma has appeared, correspondingly heavier doses should be used. It is possible that radical surgical intervention might bring about better results, provided the disease process is sharply limited to one readily accessible area, though we have no very good evidence that such is the case. All foci of infection should be removed if possible.

The prognosis of giant follicle lymphoma is varied and depends in large measure on whether the type changes or not. So long as the disease remains simple and uncomplicated the outlook is fairly good, the average duration being in the neighborhood of 6 years, and a small number of cases are alive and free from symptoms as long as 12 years after their initial symptom. If, however, the type changes or complications ensue, the prognosis becomes that of the newly developed condition. In all cases the prognosis must be guarded. Sudden death may occur, though it is very rare.

Reticulum Cell Sarcoma exclusive of that of Bone.

This tumour is known by a confusing number of synonyms such as Retothelsarcom, large round sell sarcoma, lymphosarcoma reticulum cell type and reticulocytoma. As far as we can learn, Ewing in 1913 first suggested that certain tumours might be derived from reticulum cells.

Many authors still regard reticulum cell sarcoma as one variety of lymphosarcoma and use the term lymphosarcoma, reticulum cell type. However, we believe that reticulum cell sarcoma is a distinct entity from the point of view of histogenesis, cell type, pathological and clinical characteristics.

From our 24 autopsies on cases of reticulum cell sarcoma, which occurred among a total of 17,458 autopsies at the Boston City Hospital, it would seem that the point of origin of the tumour was most common in the retroperitoneal nodes or in the gastrointestinal tract. Occasionally it arose in the mediastinal or cervical nodes or in the pharynx. Two tumours were primary in the substance of the brain.

Clinical evidence substantiates the frequency with which the tumour originated in

the gastrointestinal tract, especially the stomach, but indicates, on the other hand, a frequent origin in the pharynx, especially the tonsil, and in the cervical lymph nodes.

The lymph nodes are almost invariably involved, the gastrointestinal tract very frequently, and in decreasing order of frequency the liver, spleen, tonsils and brain.

The common initial symptoms reflect the invasive and destructive character of the condition. Pain, often constant and occasionally extreme, is frequent and is liable to be resistant to the usual forms of irradiation therapy. It is most common in the neck or deep in the abdomen. It cannot, we believe, be too strongly emphasized that persistently enlarged nodes in an adult must be regarded as "neoplastic" until proved to be benign.

Enlarged lymph nodes, usually in the cervical region, are frequent early in the course of the disease, though superficial, painless lymphadenopathy as the only initial symptom is far less common than in Hodgkin's granuloma or Hodgkin's paragranuloma. The nodes not infrequently are painful, occasionally tender and usually firm or even of the stony hard consistence usually regarded as characteristic of metastatic carcinoma. In sharp contrast to Hodgkin's granuloma the nodes not infrequently are fixed to the underlying tissues, and occasionally the overlying skin is thickened and of a dull brownish red color. The firm consistence of the nodes and their tendency to fixation is of some value in the clinical differentiation of reticulum cell sarcoma from Hodgkin's disease. Long continued sore throat was an initial symptom in over 20 per cent of our cases, and the persistence of this symptom for any great length of time in an elderly patient always should arouse the suspicion of malignant disease, particularly if associated with bleeding, notable enlargement of the tonsil or other symptoms suggestive of neoplastic disease. Dysphagia was found to be an occasional initial complaint. It may be caused by pressure from enlarged lymph nodes or much more rarely by an intrinsic lesion of the esophagus itself. Loss of weight is frequent, even early in the disease. Nasal obstruction, often intermittent and associated with a purulent or more rarely a sanguineous discharge, is an infrequent but important initial symptom as pharyngeal reticulum cell sarcoma is one of the most formidable and distressing forms of the disease. These nasal symptoms in elderly people, when not caused by obvious infection, must be evaluated very carefully. Chills, fever, general malaise and sweating are conspicuously absent, particularly so in contract to Hodgkin's granuloma.

Reticulum cell sarcoma may arise in any organ of the body, and of course any organ may be invaded subsequently either directly or by metastatic nodules. This is true also in Hodgkin's disease, but from a clinical point of view there is very great difference between these conditions, not only in regard to their initial symptomatology but also in respect to the organs involved. In reticulum cell sarcoma neither the mediastinum nor the lungs are involved nearly so commonly as in Hodgkin's granuloma or sarcoma, nor are the liver and spleen, and these latter organs, even when involved, are not apt to reach the massive size often seen in Hodgkin's disease. On the other hand, clinical evidence of secondary bone lesions is relatively infrequent in reticulum cell sarcoma (16 per cent) as compared to Hodgkin's sarcoma (50 per cent), though rarely one sees massive bone destruction apparently secondary to a focus elsewhere and similar to the massive primary reticulum cell sarcoma of bone.

Involvement of the pharynx is common in reticulum cell sarcoma (34 per cent); rare in Hodgkin's sarcoma (15 per cent) and exceedingly rare in Hodgkin's granuloma. Of the pharyngeal tumours, those of the tonsils are by far the most frequent.

Clinical evidence of the involvement of the gastrointestinal tract is seen in approximately 20 per cent of the cases. The lesion usually is single and is most common in the stomach, where it may give rise to symptoms indistinguishable from those of carcinoma, namely, epigastric pain, anorexia, vomiting, hematemesis and often marked and rapid loss of weight. Unfortunately such lesions often are silent.

A slight degree of anæmia is seen in half the cases. The white count is normal. Once the condition has made itself manifest further symptoms are not slow in appearing, and these, once more, indicate the destructive nature of the disease. It is to be noted in particular that loss of weight and pain are common and often extreme. We have seen

one patient die apparently from excessive continual pain. Sore throat, dysphagia, hemoptysis, hematuria, melena and nasal obstruction are seen more commonly during the course of the disease than in any other form of lymphoma.

On the other hand pronounced fever unless due to associated sepsis is rare, and the itching and marked tachycardia so common even early in Hodgkin's granuloma is almost never encountered. The so-called Pel-Ebstein fever does not occur in this condition. The usual course of the disease is relentlessly onward. The spontaneous remissions, occasionally seen in Hodgkin's granuloma, do not in our experience occur.

The treatment of choice in those forms of reticulum cell sarcoma which are not amenable to surgical intervention (and it must be confessed that very few are) is heavy irradiation with high voltage X-ray, though it must be said that this form of therapy is not always attended by any notable degree of success. Often, however, the results of X-ray are at least temporarily gratifying. For those cases in which the disease appears to be more or less generalized our experience would lead us to believe that heavy doses of X-ray are indicated. We are inclined to favor the X-ray therapy programme outlined by Sugarbaker and Craver and to advocate, as they do, a total dosage of 2,000 r to 3,000 r to each area involved, this amount to be given over an appropriate period of time. If the process is sharply limited, yet not amenable to radical intervention, as, for example, in the nasopharynx, we would advocate such dosages of X-ray as are employed in carcinoma, namely, from 4,000 to 5,000 r over an appropriate period of time. Further X-ray therapy should be withheld until new signs or symptoms require treatment. It is our firm belief that the roentgenologist and clinician should follow the patient together and that decisions as to treatment should be reached in consultation. It is hardly necessary to point out that the treatment of each case must be individualized. If the process is apparently sharply confined, and no distant metastases are apparent, radical surgery seems clearly to be indicated. It should be remembered, however, that like other sarcomas, the pathological process not infrequently extends beyond the limits that are obviously diseased, and therefore excision should be wide.

In general the prognosis of reticulum cell sarcoma is poor. Neither age nor sex appear to be of any particular prognostic import. In general, those patients whose initial symptom is merely painless lymphadenopathy have a relatively good prognosis. Of the 22 cases in whom the disease first manifested itself in this manner, 55 per cent survived the 3-year period, and the average duration of life in this group was 3.6 years; 5 survived over 6 years. On the other hand, when the disease begins with pain or with symptoms such as dyspnea, melena or hematemesis, indicating involvement of internal organs, the outlook is correspondingly poor. Seventy-five per cent of the patients who lived more than 3 years had painless enlargement of superficial lymph nodes as the first obvious sign of the condition, while of those patients who lived 6 months or less nearly 90 per cent had initially either pain or some symptom indicating visceral involvement. Neither splenomegaly nor hepatomegaly appear to be of prognostic importance, but involvement of the mediastinal nodes, the lung or the gastrointestinal tract is of ill omen. Fourteen of our 18 cases that lived less than 6 months from onset had involvement of either the lung, mediastinal lymph nodes or gastrointestinal tract, and all of those patients with mediastinal or gastrointestinal tract involvement died within less than one year of onset except 1, in whom the disease was discovered comparatively early so that radical surgical intervention could be carried out with apparent success. It should be remembered that as in other forms of malignant lymphoma sudden death may occur.

Lymphosarcoma.

Lymphosarcoma, one of the rarest forms of "lymphoma," was described originally by Kundrat. The literature on the subject is extraordinarily confusing. On the one hand the reader often has difficulty in being certain whether a given writer refers to true lymphosarcoma or some other variety of lymphoma, and on the other hand certain authors with easy disregard for exact nomenclature and pathological entities include under the term lymphosarcoma many other quite separate and distinct primary diseases of lymph nodes. The situation is confused further by the facts that lymphosarcoma and

lymphatic leukemia may coexist in a given patient, and that lymphatic leukemia may develop in a patient with lymphosarcoma, whose blood previously had been entirely normal.

Lymphosarcoma is a highly malignant, invasive tumour composed of mature or immature lymphocytes. We restrict the term lymphosarcoma to those cases which present a single invasive and destructive primary tumour. While invasion of neighboring structures is common, metastases are rare, and widespread involvement of the lymphoid tissue is not found with the exception of those cases in which leukemia develops.

Grossly the tumour varies somewhat in appearance. In some instances the lymph nodes can be recognized as such, although markedly enlarged; in others their outlines cannot be distinguished. The tumour then appears as a large, more or less homogeneous mass of tissue. The color varies from white to pinkish to yellowish. Areas of necrosis are not infrequent. The consistence may be soft or fairly firm. Histologically the tumour is composed of mature lymphocytes or of lymphoblasts. Mitoses usually are numerous. Neither giant cells nor multinucleated cells occur. The age distribution of lymphosarcoma differs strikingly from that of any other form of malignant lymphoma. It is commonest in early childhood and is again found in the later decades. It is extremely rare between the ages of 20 and 40.

The initial symptoms in childhood are pallor, bleeding, enlarged lymph nodes or mediastinal tumour. In adults we see enlarged cervical lymph nodes, fatigue, loss of weight, cough, sore throat and abdominal pain.

The course of the disease is almost always progressive to death. Great alleviation of symptoms and marked inprovement in health may follow X-ray therapy. The results, however, are but transitory, and often it seems that the more favourable the initial treatment, the sooner the disease will return. Aside from appropriate high-voltage X-ray at proper intervals, there is little to be offered other than symptomatic relief. Transfusions are, of course, indicated if the red blood cell count falls, or if a bleeding tendency develops, as it so frequently does in children.

The question of radical surgery is a moot one. We have seen but one case suitable for such therapy. There are a number of reports of successful excision of a localized lymphosarcoma, and radical surgery might well be indicated in certain cases, though a careful scrutiny of the case reports in the literature leaves some doubt as to whether these patients had lymphosarcoma or reticulum cell sarcoma, the latter a condition in which we do believe that radical surgery may rarely result in a cure.

Lymphosarcoma kills rapidly, especially in childhood. No case under 12 years of age lived more than 8 months; most were dead in 4 months. In the older age groups an occasional case will live 3 or even 4 years from onset.

Just a word about primary reticulum cell sarcoma of bone first described by Dr. Frederic Parker and myself in 1939. It occurs at any age. The X-ray picture is extremely varied. A diagnosis can be made only by careful biopsy. The symptoms are those of any bone tumour—pain. It is extraordinary how large the tumour may grow and leave the patient in good health. Pathological fracture is frequent. Any bone may be involved.

It is impossible to conclude exactly what the best form of treatment is. Amputation followed by irradiation to the adjacent nodes seems to give the best results; and even very massive tumours may be cured. Of 6 cases treated by this method 5 are alive and well from 7 to 17 years after onset. The remaining case died but there were metastases at the time of operation. It is a curable tumour though one would never think so from its gross or microscopic appearance.

Hodgkin's Disease.

Hodgkin's disease should be divided into three separate forms, namely, the paragranuloma, granuloma and sarcoma. This classification is being increasingly recognized and is of practical value to both the pathologist and the clinician because each form runs a different course and has a different prognosis.

This is not the time nor the place to enter into the details of the pathological features of each form. A few generalities may be in order. In each form of Hodgkin's disease we find the typical Reed-Sternberg cells, described incidentally forty years before these authors' description by the Englishman Greenfield. Without these cells the diagnosis cannot be made. In Hodgkin's granuloma there is in addition fibrosis and necrosis. In the paragranulomatous form neither of these changes are found. In the sarcomatous form the Reed-Sternberg cells are predominant and both classic and very young forms are found in such profusion as to give the appearance of a true tumour, which in essence this type of the disease actually is.

Hodgkin's paragranuloma is a comparatively benign condition, the onset of which is usually heralded solely by painful lymphadenopathy most frequently in the cervical region. The condition occurs at any age. At first systemic symptoms are absent. In fact the patient appears initially in good health. Many patients with this condition live a comparatively long time. Unfortunately, however, approximately 20 per cent progress after months or years into Hodgkin's granuloma and then the prognosis is that of the latter condition. It must be emphasied that the insidiousness of the onset in no way precludes the development of this change and one cannot, even by the most careful histologic study, distinguish those cases that are going to progress from those which will remain unaltered. If this condition does remain unaltered, that is if the lesion persists as a paragranuloma, the patient may well live 10, 15 or even 30 years without serious impairment to health. As already indicated, if Hodgkin's granuloma develops, the signs and symptoms of that condition ensue.

In simple Hodgkin's paragranuloma some enlargement of the mediastinal lymph nodes may occur and this complication carries with it no serious import. Enlargement of the spleen, the development of fever, generalized lymphadenopathy or other symptoms of the granulomatous form, indicate that the change is about to take place. One of our patients developed a small mass in the neck in 1905. This slowly grew until 1910 and was then excised. It showed the typical histological picture of Hodgkin's paragranuloma. Subsequent biopsies in 1936 and 1939 showed the same lesion and the patient is alive and well today. A second patient had a paragranuloma in 1920. The mass was completely excised and the patient remained perfectly well until 1940 when more cervical lymph-nodes appeared. These proved to be the granulomatous form and the patient died of that condition a year later, but 21 years after the initial lesion. A third patient with paragranuloma did very well for a little over a year and then suddenly developed generalized lymphadenopathy, fever, and marked anæmia. He died approximately two years from onset. From these three examples one can see that caution is needed in regard to prognosis—caution flavoured, if you will, with some degree of hope.

It is difficult to be dogmatic about the treatment of this condition. If the lymph nodes are very few in number and sharply confined to any easily accessible region, it is probable that the radical dissection followed by prophylactic irradiation is the treatment of choice. If there are many lymph nodes, or if they are situated in more than one area, irradiation is the only treament that can be properly advocated.

From the cases cited already it is clear that patients must be followed with care and examined at reasonably frequent intervals in order to determine whether there are any signs or symptoms calling for prompt treatment. Even in the field of malignant disease it is easier to keep a patient relatively well than to overcome symptoms of advanced disease.

The amount of irradiation and its exact type should in my opinion be left to the radiologist. It is further my considered opinion that the internist and radiologist should care for the patient conjointly, not as separately acting physicians.

Hodgkin's granuloma, far more common than the paragranulomatous form, also occurs at any age. It is generally taught that this form is far more frequently seen in the early twenties and is infrequent in childhood or old age. It cannot be too strongly emphasized that such is not the case. The incidence of the condition is virtually the

same throughout the first six decades. All forms of Hodgkin's disease are more frequent in males.

The histological features of this form of Hodgkin's disease are well known to all and have already been referred to. It is of the greatest importance to recognize clearly the extraordinary protean character of the symptomatology of this condition. It is true that in the majority of cases painless enlargement of the cervical lymph nodes first attracts the patient's attention, yet so diverse are the symptoms and so varied are the signs that practically any disease may be simulated and system may be implicated. As I have said, cervical lymphadenopathy is by far the most frequent initial symptom. However, pain, weakness, loss of weight and itching may be seen early in the condition and unless one searches carefully for superficial lymph nodes the true nature of the condition may be overlooked. The patient not infrequently gives a history of tuberculous lymph nodes many years before and it is well known that tuberculosis follows Hodgkin's granuloma like a shadow. In the majority of cases this condition progresses inexorably to a fatal termination, but the course is extremely variable and aside from the broadest generalities it is impossible in any given case to predict what changes will take place or precisely when they will occur. The disease does not advance in an even orderly fashion. Remissions occasionally occur in a quite unpredictable manner and patients who have seemed to be failing under the best treatment may unaccountably respond favorably to what is regarded as a final therapeutic gesture. On the other hand, it is not unusual to see a patient who has been doing well for many months, or even years, become rapidly worse and die within a few weeks.

In view of the fact that virtually any system of the body may be involved, it seems profitless to enumerate all the symptoms which may arise. It might be well, however to refer especially to certain features. In the first place, bone is not infrequently involved, giving rise to moderate or intractable pain. Some 20 per cent of patients have clinical evidence of bone involvement. The spine is most frequently involved but any bone may be.

Bone involvement may be early and there may at first be few or no radiologic signs. One of our cases was treated for over a year by a very competent internist who believed that the patient's low back pain was due to an orthopedic condition. In reality there was very early involvement of the lumbar spine and the sacro-iliac region by Hodgkin's granuloma. Another patient had marked involvement of three lumbar vertebrae with considerable degree of collapse. His really severe pain was controlled by salicylates and for 6 years after the development of the bone lesion he was a constant and skillful skier and general all-round athlete. Pathological fracture is rare in contrast to primary reticulum cell sarcoma of bone in which it is frequent.

Gastrointestinal symptoms are very frequent, but, paradoxically enough, actual gastrointestinal lesions are comparatively rare. Anorexia, nausea and vomiting may be distressing. They are frequently relieved by moderate irradiation directed from the back to the para-aortic and retro-peritoneal lymph nodes.

Intrinsic lesions of the gastrointestinal tract though rare are important. They may occur in the esophagus, the stomach or the intestine. In the stomach the lesions may be ulcerative or more frequently infiltrative. In the intestine they are most frequently ulcerative and curiously enough rarely give rise to any symptoms. The rupture of such a lesion, unsuspected by either the patient or the physician, occasionally brings about sudden death. One of our patients, apparently in good condition, was sent off on his vacation and died suddenly 6 hours later.

Skin lesions may be of any sort, ulcerative, nodular or infiltrative. It is perhaps not sufficiently widely appreciated that skin lesions occur. Some of them are of a non-specific sort, but others, particularly the nodular and ulcerative type, show on biopsy the typical histologic picture of Hodgkin's granuloma. Herpes zoster is frequent and often leaves an ugly scar behind, and in certain cases may be of the hæmorrhagic variety. It is said to be due, in part, to involvement of the dorsal roots supplying the involved area and X-ray therapy to the appropriate segment may, therefore, be indicated. The

nodular lesions are best treated by X-ray; those which are ulcerated sometimes respond well to X-ray therapy and sometimes clear up remarkably well by the local application of a salve containing vitamins A and D. Such a salve must be used with caution, however, as rather sharp untoward reactions have been seen following its use. Itching, as has been said, is a fairly frequent symptom and may be extremely distressing. This symptom perhaps is best relieved by irradiation to the retroperitoneal lymph nodes. Topical applications have little effect.

Involvement of the mediastinal nodes is common and the tumour may reach massive size, producing cough and dyspnea, either or both of which may be severe. It is very unusual to see mediastinal involvement without at least some peripheral nodes. This point may be of some practical value in diagnosis. Mediastinal tumours usually respond well to irradiation.

The parenchyma of the lung is involved in nearly one-third of the cases. There may be extension from a mediastinal mass or there may be isolated nodular masses toward the periphery of the lung. These too respond well to X-ray. It is perhaps worth while noting that hemoptysis is rare in Hodgkin's disease. This symtom should arouse a suspicion of tuberculosis. The spleen is enlarged in the majority of cases and may reach massive size.

The central nervous system proper is not involved, but granulomatous processes may infiltrate around the cord and compress it in such a fashion that either a spastic or, even more frequently, flaccid paralysis ensues. It is surprising what good results may be obtained in many of these cases by appropriate X-ray therapy to the region involved.

One of our patients, a police sergeant, became completely paralyzed from the waist down. He was given repeated X-ray treatments to the involved area and after 3 months time he was able to return to active police duty. Patients with this type of involvement are prone to show a mid-zone gold sol curve in the spinal fluid.

Fever is a frequent finding, particularly late in the disease. It usually is typeless. Any temperature is likely to be accompanied by a corresponding tachycardia, the pulse rate rising to 120 or even 160 with high temperatures. Rarely one encounters the so-called Pel-Ebstein fever in which the temperature rises steadily each day to a maximum of 104 degrees to 106 degrees and then, with equal steadiness, subsides to normal. There then follows an afebrile period which lasts for weeks or months. The fever eventually, however, returns, the afebrile periods become shorter and eventually the temperature becomes continuously high. Death is then not far off.

Curiously enough, this type of fever is often seen in patients with little or no peripheral lymphadenopathy. Though called after Pel and Ebstein it should be called Murchison's fever, because this English investigator accurately described this type of fever many years before either Pel or Ebstein, and Murchison further described it in a case of Hodgkin's disease. Neither Pel nor Ebstein knew of its origin or nature.

A moderate and rarely severe degree of anæmia frequently develops, particularly in children. If the red count falls below 3,500,000 I believe that transfusions of blood are called for and they should be continued until the red count is normal or until further transfusions produce no beneficial effect. The bloods must be carefully matched, for otherwise severe reactions may occur. Indeed, they may even then but the trial is worth the remote danger. In addition the white count is frequently elevated and the percentage of polymorphonuclears is moderately or greatly increased. Very rarely, the blood may mildly simulate myelogenous leukemia.

The treatment of Hodgkin's granuloma is appropriate irradiation except for the extremely rare case in which the lymph nodes are very few and sharply confined to one region. Under such circumstances, as with paragranuloma, it is probably justifiable to do a radical dissection followed by prophylactic X-ray therapy.

How much X-ray should be given and when? This question cannot properly be answered categorically and there are several schools of thought on the subject. With full recognition that such is the case, may I outline our own procedure. We use high voltage, that is, 250,000 volts. When the patient is first seen any involved area is given from 250 to 1800 r over an appropriate interval and with due regard to the patient's general condition. No patient can stand too much X-ray in any one area nor

too much X-ray in general over a given period of time. It is better to undertreat than to overtreat and, as has been said before, the internist and the radiologist should consider the matter of treatment conjointly. The results of such treatment, as you know, do not occur until after several weeks and it is wise to advise the patient that such is the case. Further treatment should probably be withheld until other symptoms or signs develop of such magnitude as to require therapeutic attention. Each case is a law unto itself and no two cases will respond in the same manner. Too much X-ray treatment is as bad as too little and aside from the deleterious effects that excess X-ray may have on the skin, we must remember that internal organs may well be damaged.

We must not forget, however, that ordinary care, good food, rest, fresh air, as well as transfusions of blood and X-ray therapy are all of material value. The beneficial results of all of these therapeutic agents are well known.

The average case of Hodgkin's granuloma lives approximately 4 to 5 years, but no individual is an average. I would like especially to stress this point for so often do we dwell on "averages" and so infrequently do we recognize that the individual case at hand may well deviate sharply from that "average." Therein lies both hope and fear. Is it not our part to be hopeful for our patient event though in our heart of hearts we may be fearful?

A very reasonable number of cases of Hodgkin's granuloma live 10 or even 15 years. Forty-five per cent of our cases under observation today have had their disease from 5 to 10 years and 5 per cent have had it for over 10. I personally have seen but one case which could be regarded as a true cure, being alive, well, free from symptoms 30 years after the initial symptom. Several other cases of apparent cures have, however, been seen by other physicians. The disease is a grim one but not entirely hopeless. Very rarely Hodgkin's granuloma progresses into the sarcomatous form. Such transformation is less frequent than the comparable progression of a paragranuloma into a granuloma.

Hodgkin's sarcoma, originally described by Ewing, is the most rapidly fatal form of this condition. In contrast to Hodgkin's granuloma, it is a disease seen in older people and is most frequent in the 50's and 60's. It is practically never seen below the age of 30. In contrast to the granulomatous form, pain is the most frequent initial symptom. It is usually abdominal, is unrelated to meals and is often accompanied by loss of weight. Weakness, dyspnea, cough and vomiting may occur very early. Symptoms indicating involvement of internal organs are not infrequent early in the disease. In a very short time marked fatigue, great loss of weight, dyspnea, hematemesis, cough and other systemic symptoms appear, thus reflecting the rapid, invasive and malignant character of the tumour. The disease runs an insidious, rapid course, even though the initial response to X-ray therapy may appear to be good.

The gastrointestinal tract is involved in nearly 50 per cent of the cases. Involvement in bone, on the other hand, is less frequent than in the granulomatous form. The central nervous system proper may be involved. We have seen 3 cases in which there was invasion of the pituitary and 2 cases in which there was a tumour of the cerebellum. In one of these latter cases complete autopsy showed that there were no metastases. This form of Hodgkin's disease, therefore, may fall within the province of a neurologist or neuro-surgeon. The disease progresses very rapidly and death occurs usually within a year and a half from onset. I have seen no case survive three years and many patients died within a few months of apparent onset. As for therapy, all one can say is that X-ray is indicated as a palliative measure.

Finally, I would like to say a few words about what we should say to the patient and to the family. If the patient be a physician, I believe he should be told the truth in so far as we know it, avoiding, obviously, any unpleasant details. If the patient is a layman, some responsible member of the family should be told what we believe to be the truth, but we must be careful to pick the proper person, for the next-of-kin may not be the right person to tell, and we should be careful not to be too dogmatic. A family will forgive a physician if they are told that their relative will get well and then the relative dies, for all men die. They will never forgive the physician who says irrevocably and categorically that a patient will die, if that patient recovers. In other words, one should not close the door too tightly, for all of us are human and all of us may err. It is best to err on the safe side.

THE REPAIR OF DEFORMITIES OF THE HAND

By Lieut. Colonel Stuart D. Gordon, R.C.A.M.C.

Read at Vancouver Medical Association Summer School, 1945

The repair of deformities of the hand is an extremely interesting, and at times aggravating, problem in surgery. This war has given us a large group of patients suffering from deformities of the hands. Accordingly it is felt that a review of what is being done in the combined services special treatment centres for plastic surgery would be timely and, I hope, interesting.

Skin

Injuries to the hand may damage a single part, or any combination of parts. Thus we meet injuries of the skin, of tendons, of bones, of joints, in single or composite lesions.

Loss of skin of the hand may be caused by a variety of injuries but the commonest cause we are encountering is fire. It does not take a great deal of loss of hand skin to interfere with function. Even if there has not been skin loss the thickened keloidal scars will not stand up to work, particularly in cold climates. Treatment is obvious: Excision of the damaged skin, or of the scar epithelium replacing the skin loss, and repair by free skin graft. The operation should be carried out under a tourniquet. This should be loosened after excision, and the bleeders tied with fine catgut. The tourniquet is re-applied and the graft sutured carefully into place. Thick dermatome grafts, 22 or 24/1000's of an inch make excellent cover for back of the hand and fingers. Some surgeons prefer free full thickness grafts for the palm but thick dermatome grafts are quite satisfactory in my experience. After suture of the graft a pressure dressing is applied in such a manner that the tips of the fingers can still be seen. After the dressing is in place, the tourniquet is removed. This dressing remains in place for ten days.

Fascia

Dupuytren's contracture is a curious disease, most likely neoplastic, which produces thickening and contracture in the palmar fascia. Characteristically it starts as a thickened nodule in region of the distal palmar crease opposite the fourth finger. Slow progression of the lesion, resulting in flexion contracture of the ring, fifth and mid-fingers respectively, is the rule. Eventually, in progressive cases, the skin becomes nodular and intimately intermixed with the lesion.

Treatment consists in excision of the entire palmar fascia, together with any extensions of the process over the proximal phalanges. Many incisions have been advocated: 1. multiple small incisions, 2. along the creases at the base of the fingers and proximally along the ulnar side of the hand, the flap outlined undermined and turned radially, 3. along the distal palmar crease, and the medial longitudinal palmar crease. Occasionally these two incisions are joined at their radial ends. I have tried each of these three and prefer the incisions along the palmar creases. The operation is done with tourniquet in place. Before closure the pressure is released and bleeders tied. The pressure is re-applied, and the incisions closed with fine interrupted silk, and a pressure dressing applied. If there has been definite contraction deformity the hand is fixed to a splint with the fingers in extension. Otherwise I like to have these patients move their fingers from the outset. The majority of these patients are in their 40's or 50's, and appear to have a definite tendency to joint stiffness if splinted for long. Two weeks is the usual time for splinting. If there has been marked involvement of the skin it has to be sacrificed and replaced by a thick dermatome graft. Healing takes place very slowly in palmar skin, particularly in the distal transverse crease. Stitches are left in place for at least two weeks.

Once the incisions are well healed occupational and physiotherapy should be started and kept up until there is no further improvement in range of movement. The patient is encouraged to use his hand, not to keep it carefully sheltered until his next period of physiotherapy.

Tendons

The repair of flexor tendons of the fingers is still a partially solved problem. I have seen one perfect flexor tendor graft of the index finger, and four others that were very good, all done by Furlong at Cambridge Hospital, Aldershot. Tendon grafts of extensor tendons are satisfactory, even in repairing the long extensor of the thumb. The palmaris longus, plantaris, and short extensor tendons of the foot may serve as grafts. Plenty of paratenon should be preserved about the graft. Fixation may be with either silk or stainless steel wire.

It appears imperative to passively move the finger whose flexor tendon has been grafted once daily after the operation. Attempts at active movement are started during the third week.

Either the nature of the material grafted has to be changed, or a technique devised for the forming of a suitable tunnel for the graft to slide in, before flexor grafts can be done routinely with expectation of a favourable result.

Dorsal expansions may be repaired by the use of slips of fascia. Tendons of the short muscles should be sutured to these slips.

A method of tendon lengthening that I have used for over a year now, and which has been uniformly successful, is the dissection of the tendon from its muscle belly and its re-insertion at a lower level.

Tendons caught in scar should be dissected free and surrounded, if possible, with fat. Should this not be possible they should be covered with a pedicle skin graft carrying a layer of fat. In some instances it may be advisable to cut the tendon, thread an end through a tunnel in the fat, and then resuture it. I have seen this manoeuvre very successfully done by Cuthbert of Basingstoke.

Joints

If movable joints are not present there is no use attempting to repair tendons.

Joints may be fixed or limited because of peri-articular, or of intra-articular, changes. Shortening of the anterior capsule may hold the mid-phalanx in flexion. The collateral ligaments are also involved in the process. Shaw suggested division of the collateral ligaments and then extending the joint. Active and passive movement is commenced in 4 or 5 days. Lengthening of the anterior capsule may be done by fashioning a flap of periosteum based on the capsule, and undermining the flap until the joint is entered. Straightening the finger slides the periosteal flap distally where it is kept until fixation occurs.

Shaw's operation is of particular value in the metacarpo-phalangeal joints, and was originally described in reference to them. Depending upon the position of the bones when fixation and shortening occur the collateral ligament may hold the joint in hyper-extension, or in flexion.

Arthroplasty is most successful in the metacarpo-phalangeal joints. I have used circular ear cartilege to cover the head of the metacarpal, and coned out the base of the proximal phalanx to produce a joint with satisfactory range of motion. Extension was applied to the phalanx for three weeks. An interesting attempt at arthroplasty is the use of vitallium, and now tantalum, caps to cover the head of the metacarpal or phalanx. Cloutier, working with us at Christie Street, has produced a functional range of motion in the proximal inter-phalangeal joint of two cases by its use.

Bones

Non-union is treated by freshening of the edges and insertion of a bone graft. A channel is cut across the fracture line and a bone peg inserted into the medullary cavity as additional fixation. Cancellous bone is then packed into and about the fracture line.

One frequently encounters instances of malunited fractures through the neck of the metacarpal. Typically the head is turned forwards at about 90°. Refracture and fixation in proper position by wiring is adequate. Length of metacarpal or phalanx may be restored by bone graft.

Rebuilding

There are many instances where function can be partially restored to a maimed hand by rebuilding a portion. Thus if the thumb alone is left a large soft tissue flap may be grafted from the abdomen, and later a bone graft added to form an opposition post. It is important that a sufficiently large attachment be provided for the pedicle graft, even to the point of sacrificing skin of the hand.

A short thumb can be lengthened by the addition of a tube graft, and later the insertion of a bone graft of sufficient length. The bone should be well fixed to the remains of either the metacarpal or proximal phalanx. It is usually possible to fashion a peg on the proximal end of the graft and place it in the medullary cavity of the stump. Such lengthening of the thumb improves function materially.

Conclusion

It is obviously impossible to cover with anything like completeness in the time at our disposal the treatment of the various deformities of the hand. I have purposely left out any discussion of congenital deformities, for example. Finality has not been reached in repair of flexor tendon losses, and considerable research, both laboratory and clinical, will have to be done before the problem is solved. Many of the deformities are such that no standardization of tratment can be attempted, therefore as individual problems they become all the more interesting.

MANDIBULAR FRACTURES

By Lieut. Colonel Stuart D. Gordon, R.C.A.M.C.

Read at Vancouver Medical Association Summer School, 1945.

Fractures of the mandible are by no means uncommon, nevertheless it is the one fracture with which most of us have but a very superficial acquaintance. Because it is frequently met with I feel that we as surgeons and physicians should have a very thorough knowledge of its proper management. Therefore I wish to outline for you today some of the things that I believe to be important in the treatment of these fractures.

Causes and Aetiological Factors

If the experience gained overseas is any criterion then, aside from gun shot injuries, the fist is the commonest cause of mandibular fractures. Following this any type of blow may result in fracture: a fall, a kick etc. Pathological fractures may occur with or without a blow. Just where the mandible breaks depends on: 1. the direction and force of the blow. 2. the condition of the bone. 3. whether the mouth was opened or closed. 4. and the distribution of the teeth. While direct violence is the commonest cause, many fractures are due to indirect violence. Commonly the mandible breaks at two points, the angle and the opposite mental region; but any combination of sites of fracture may occur.

Diagnosis

Usually there is no difficulty in making the correct diagnosis. The history of a blow, or of sudden pain on attempting to bite something firm, followed by pain on attempted use is the first point. Inspection reveals malalignment of the teeth, deformity, or, in fractures of the condyle, swelling in front of the tragus.

In all cases of fracture of the mandible due to violence the external auditory canals should be inspected. I have seen five patients in whom the mandibular heads had been driven backwards, rupturing the anterior wall of the canal and producing hæmorrhage and deformity: Hæmorrhage from the ear may therefore be a sign of fracture of the mandible. Fractures of the horizontal ramus usually cause an hæmatoma in the floor of the mouth; and in dentulous patients, a tear in the mucous membrane of the alveolar ridge. This may not be obvious on inspection if displacement has been slight but every fracture

of the body of a tooth-bearing mandible is compound into the mouth. Palpation indicates points of tenderness, and locates early swelling. Abnormal mobility and crepitus may be present. If one inserts the tips of the fifth fingers into the patients' external auditory meati and has him open and close his mouth the heads of the condyles can be felt. Failure to feel a head means fracture with displacement. Numbness is often present in the lower lip.

All cases of suspected fracture of the mandible should have X-rays of the complete mandible taken. These should be stereoscopic. It is also advisable to have dental films of the actual fracture line. Thus the chance of missing a second or third fracture of the mandible is eliminated, and the relation of teeth roots to it established.

Treatment — Infection

Many cases are not seen until the third or fourth day after injury. By this time there is usually a tender swelling of the soft tissues about the site of fracture. There is no soft spot present indicating the presence of pus.

Treatment consists in first, thorough cleansing of the teeth and mouth; secnod, reduction and immobilization of the fractures; and third, the local application of moist heat. We can now, I think, add a fourth. Penicillin pastilles of agar kept in the buccal sulcus appear to have a very beneficial effect.

Under this regime the great majority of these swellings will subside. A few will progress to abscess formation. Once pus is present it is imperative that it be drained; and it is important that it be properly drained. The incision should be adequate—making a short or stab incision is the commonest error in draining these abscesses. It should be as long as the diameter of the abscess, and be placed at the very lowest level of the abscess—remembering that these patients are ambulant shortly after operation. Light packing with oiled or vaselined gauze prevents superficial closure of the incision before there has been complete drainage, and allows such drainage to occur. Inflammation of the incised area, and foul discharge, present 48 hours after operation usually means osteomyelitis has developed: little discharge and no inflammation indicates soft tissue infection only has been present.

The question as to what to do with the tooth in the line of fracture is a vexed one. My own opinion is that each case has to be judged on its individual merits. A dirty mouth, with carious teeth present, should have a tooth in the line of fracture extracted, unless it is absolutely necessary to maintain position of a fracture. As a general rule I believe every tooth should be saved if possible. I have on two occasions kept a tooth, necessary for maintaining position, where one root had been fractured, and in neither case did we get into trouble. Many roots that appear to be in the line of fracture in ordinary X-ray films are shown in dental films to be covered with bone.

Whatever the type of fixation selected it is extremely important that all fractures through the body of a tooth bearing mandible should be reduced and immobilized as soon as possible. Waiting until tomorrow is malpractice in my opinion. It is certainly true that complications are very much fewer if this policy is adopted.

The simplest and easiest method of fixation that will produce the desired result is the one to employ. I believe that intra-oral wiring is the simplest to apply, the easiest to apply, and moreover allows a much more accurate reduction, as judged by the occlusion, than any other method of fixation. There need be no delay in fixation since the equipment required is minimal and readily available. Stainless steel wire of about 28 gauge is my choice. Half-round wire should not be used as it will trap more food than round wire and is therefore harder to keep clean. The two most widely used techniques in intra-oral wiring are the eyelet wire popularized by Ivy and Risdon's modified band wire.

Cast cap splinting has to be used where there are not sufficient teeth to use intra-oral wiring. As the splints have to be cast on models made from impressions there is delay in obtaining fixation, and more manipulation of the fractured mandible. Moreover the actual position of the teeth has to be guessed. It is a widely used method of treatment

particularly in England, where the cast cap splint has been developed to a high degree.

Circumferential wiring is used for fixation of fractures in edentulous mandibles. The wire is passed around the mandible either with needles, or a fine trocar and cannula. The ends are fastened over dental composition molded over the reduced mandible.

The double pin fixation method has been introduced since war began. Very early in its use I had the opportunity of treating a symphysis fracture, compound both internally and externally, by this method. I settled to my own satisfaction at least that, with the splint we used (the Cluston-Walker), movement could occur at the fracture line. Consequently we always use either intra-oral wiring or cast cap splints in conjunction. In effect we use double pin fixation to control an edentulous fragment. Thus it is occasionally of value when bone grafting a mandible. The splint is absolutely contra-indicated in delirious patients. In my opinion the method should not be used if intra-oral wiring or cast cap splinting can be used for fixation. The Cluston-Walker and the Roger Anderson are, I believe, the two best double pin fixation splints in use today.

Diet

It is never necessary to pull a sound tooth in order to feed a patient with a fractured jaw, although a couple may be removed from a denture for this purpose. Nor is it necessary to tube feed these patients.

All food should be pured. It may be sucked in through a nozzle attachment to the spout of a feeding cup, the end of the tube being placed in the buccal sulcus and at the level of the third molars. Or it may be pushed between the teeth with a finger. As a rule they are not dainty eaters and prefer to eat, where possible, in a group; or the solitary patient likes to eat behind a screen.

With a little thought and ingenuity a sufficiently high caloric diet may be given to maintain nutrition, and sufficiently appetizing by nature, colour and method of presentation to stimulate the appetite. These patients should not lose weight and in fact many of them gain.

Non-union

Non-union results from non-reduction, imperfect immobilization, or infection. All reductions should be checked radiologically. All patients treated with intra-oral wiring should be seen at least every two days as there is a tendency for the inter-maxillary wires to work loose. Early reduction and immobilisation, regular daily cleansing of the mouth and splint, early adequate drainage of abscesses, and chemotherapy all help to obviate or limit infection.

Non-union is best treated by freshening the edges of the fracture, and grafting with cancellous chips from the ilium. Fixation of the mandible by intra-oral wiring or cast cap splints is of course necessary. Union may be expected in 28 days.

You will have gathered, I hope, that I believe all fractures of the body of the dentulous mandible should be treated as soon as possible. The more motion at the fracture site the slower the union. Given early reduction and fixation, constant care of the mouth and splint, suitable diet, and fixation for an average period of five weeks, patients suffering from a fracture of the mandible should obtain solid union with good function and suffer minimal complications.

* * * *

TREATMENT OF THERMAL BURNS

By Lieut. Colonel Stuart D. Gordon, R.C.A.M.C.

The past six years have seen many radical changes in the treatment of the patient suffering from thermal burns. At the outbreak of war tannic acid was accepted widely throughout the world as the best local application to the burn. Experience gained in the Battle of Britain proved that in many instances its use was followed by severe infection and, in circumferential burns of the fingers interference with circulation, even to the point of gangrene. Then, in 1942, Wells et al published their experimental work

indicating thta tannic acid could, and did, produce liver necrosis. This work was later confirmed by Cameron. Finally, in 1944, Ham showed that tannic acid killed some of the viable cells to which it was applied and so actually deepened the burn.

This questioning of the value of tannic acid led to the introduction of other methods, the first of which was the saline bath therapy. Today I wish to discuss briefly the treatment of burns as it appears to me at the present time.

First Aid

One of the first things mentioned as occurring following a burn is the development of primary shock. I have never seen it, but I have rarely seen a burn earlier than 12 hours after injury. Nor have I talked to anyone who has seen the condition. Burns are painful—and we all fear pain: burns can produce marked disfigurement. It is quite possible that the combination of pain and fear may produce an ordinary faint. Other than this I wonder if primary shock of burns, as such, exists. Therefore I cannot see why a patient who has been burned should not be moved at once. He should be kept warm, but not too warm; and warm sweetened drinks should be given.

Tannic acid should never be applied locally as a first aid measure. This became evident before its use in definite treatment was questioned. Sealing an infected surface can only lead to trouble with infection. Covering the burned area with a clean cloth will do until hospital is reached. Better still, the surface may be covered with one of the sulpha ointments such as the M.G.H. 5% sulphathiathole emulsion, or Colebrook's No. 9 cream.

Plenary Treatment — General

Once admitted to hospital the general condition of the patient should receive first consideration. After burning a series of alterations in the body mechanism are initiated which, if untreated, may lead to profound, and occasionally, irreversible changes. One of the most obvious of these is the loss of plasma from the circulating blood into the tissue spaces adjacent to the burn. The œdema that develops appears to reach its peak about 15 hours after burning. This loss of fluid from the blood stream can be recognized quite early. As the fluid level goes down the relative quantity of cells rises and we therefore have a rising hæmoglobin value. In every burned patient the hæmoglobin should be estimated on admission and at intervals during the next week . It is a good rule to do it every 4 or 6 hours for the first 3 days, and thereafter once every second day. An As only the plasma is lost to the circulation, whole blood is not needed for replacement; elevated hæmoglobin indicates hæmoconcentration and the need for fluid replacement. —unless the burn is a very serious one. Reconstituted serum is preferable to the plasma in that less reactions to its use may be expected. It may be given concentrated or not as personal preference indicates. In my opinion the huge quantities that have been advised are not only not indicated, but dangerous. We have in the patient himself indications as to what is required; a falling hæmoglobin shows lessening hæmoconcentration for instance. About 3 pints of normally concentrated serum would appear to be the average dose. Whole blood should also be given in severe burns. The patient is encouraged to drink copiously. Thirst may be stimulated by adding a pinch of salt to the drinking water. If fluids cannot be taken by mouth, intravenous 5 per cent glucose in saline should be given; at least 1000 C.C.'s a day for the first two days. Other general measures to be adopted are the obvious ones of rest, warmth, and the alleviation of pain.

Local

The best local treatment of the burn is still being debated. All are agreed that the aims in the treatment of a burned patient are: 1. the saving of life. 2. the prevention, or control, of infection. 3. the prevention of deformities. The covering of raw surfaces by skin at the earliest possible moment is also universally agreed unpon. Such covering aids in the control of infection and the prevention of deformity. Early coverage also has a definite economic value in that morbidity is reduced. The earlier repair of such deformities as do develop is made possible.

Even the value of early cleansing and debridement are questioned. Cope, in describing the Cocoanut Grove burns, states that no attempt was made to clean or debride and on the basis of that experience questioned the value of the procedure. I cannot but feel that a clean, well debrided burn is a better burn to cover with dressing, be they what they may, than a dirty one replete with rolled up tags of dead skin. You know there are still people who say that a toxic product is absorbed from burned skin—and they may be right. The best substance, in my experience, with which to clean a burn is C.T.A.B.—an antiseptic detergent that will really clean. Failing this, soap and water is quite satisfactory. All dead skin is wiped or clipped off, as gently as possible.

The burn should be covered with an ointment containing one of the sulpha drugs, for example the 5 per cent sulphathiazole emulsion (MGH) or Colebrooke's No. 9 cream. Over this is placed a layer of coarse mesh gauze. From this point on treatment varies according to the particular preference of the surgeon responsible. The occlusive pressure dressing as suggested by Allen & Koch has many features in its favour. It is economical on dressings and on the time of trained help: it prevents secondary infection: and to a large extent prevents œdema. Over the gauze is packed machinists' waste. A large volume of this is padded about the burn and pressure obtained by firm bandaging with flannelette cut on the bias or with a crepe bandage. If it is felt necessary a light plaster of Paris shell may be placed over all. This dressing is left in place for from 10 to 14 days. A second degree burn should be healed by this time. If sloughs are present the burn may be redressed with a pressure dressing; it may be dressed daily with some substance which hastens the removal of slough: or the slough may be excised and a skin graft applied as is practised by Gerrie of Montreal.

Many surgeons believe that it is important to establish, and maintain, movement in all joints near to burned areas. This applies particularly to hands, of course, but is believed true generally. Consequently the burns, after cleansing and debridement, are dressed with an ointment as above, covered with tulle gras (or gelanet as it is called here) and dressed with saline gauze, pads, and a firm bandage. Once a day, for an hour the burned part is placed in a warm saline bath and moved as freely as possible. For extensive burns a special saline bath is required. This means that the method is applicable only in static hospitals.

The era of tannic acid in the local treatment of burns seems to be ended. It lasted under twenty years and undoubtedly saved many lives. However, it has been proven that tannic acid can cause liver necrosis, and as mentioned, it has been shown that it kills many skin cells undamaged by the burn. One point in its use has struck me and that is—tannic acid must be used carefully and the patients watched as meticulously as we watch a recent fracture put in a plaster of paris splint. Many of the failures of tannic acid were, in my opinion, due to the inexpert use of the method. Thus tanning an infected burn is simply asking for trouble; care must be taken that the curling edges of the separating tan are removed to prevent catching on dressings, etc., and to separate part of the tan from the raw or damaged surface; that soft spots are unroofed quickly; and that any signs of interference with circulation distal to a circumferential tan result in early splitting of the eschar. Nevertheless the methods now in vogue are aimed at saving every possible bit of skin, and undoubtedly allow earlier covering of areas where there has been total loss of skin. While there are not, insofar as I know, published mortality figures for a large series of cases treated by either saline or occlusive pressure therapy I believe the figure will be as good as, if not lower than, the published figures for tannic acid therapy.

I have purposely left out of this paper any discussion as to the plaster of Paris method of treating burns as used by Barnes and Trueta, or the Bunyan bag technique, since I believe the former will not receive universal approbation; and the latter is simply a type of dressing which, while efficient so far as the burn is concerned, is difficult to apply when compared with the other methods in use today.

Removal of Slough

Much attention has been paid to the early remvoal of slough. Saline dressings, chlorine containing drugs, and trypsin have all been used to hasten the process. Recently pyruvic acid has been suggested as a substance to remove slough rapidly. Lam has suggested that the process is simply one of maceration. The method is still on trial.

Skin Grafting

There are four periods in the course of a burn when skin grafting may be indicated.

First if the burn is over a relatively small area, and there is plenty of subcutaneous tissue, it may be excised and an immediate free graft done.

Second if the eyelids are burned so that there is danger of corneal ulceration developing, thin grafts should be applied to the lids, and tarsorrhaphy done. This will absolutely prevent the development of corneal ulceration, and subsequent loss of sight from perforation, provided, of course, the eye ball has not been damaged by the burn.

Third, the coverage of the raw areas at the earliest possible time. This, I believe, should be done with the definite aim of obtaining coverage only—function and appearance are of secondary importance at this period. Thin grafts should be used, since less is lost when grafting an infected wound. After healing has occurred a better graft may be used to replace the early one, if considered necessary.

Fourth, the grafting done to alleviate or cure the late deformities of burns.

This has been a somewhat rapid review of a most interesting, and much discussed, problem, the treatment of thermal burns. The final answer is not yet—but much excellent work is being done in an attempt to find it. Certainly the troubles resulting from the tannic acid treatment of burns in the Battle of Britain have caused a great deal of work, and worry. Out of it all has come new methods which are even now going through the acid test of actual use.

Vancouver General Hospital Section

CASE REPORT — THIOURACIL

Foreword by G. F. Strong, M.D.

In 1944 Dr. Warren Bell and I submitted a preliminary report on the use of this substance in the treatment of hyperthyroidism in three cases. Since then over 30 cases have been treated at the Vancouver General Hospital and in private practice with very satisfactory results. Many of these patients are being maintained on small doses of thiouracil and have not had surgery. In a few cases the drug has had to be discontinued because of toxicity. So far the toxic results that we have encountered consist of two sorts: Skin rashes and neutropenia—an example of the latter is shown by the following case report:

THIOURACIL TOXICITY

G. M. Wilson, M.D.

Senior Interne in Medicine, Vancouver General Hospital.

Case Report:

Mrs. G. D. Age 28.

March 21, 1940: The patient was investigated in the out-patient department because of complaints of weakness, fainting attacks with sweating, poor appetite and loss of 4 lbs. weight in the past 3 weeks, and excitability. On examination she appeared dull and lethargic, with some exophthalmos and a palpable thyroid. There was tremor of the

closed eyelids and tremor of the tongue. Blood pressure 140/80, pulse 76. A tentative diagnosis of hyperthyroidism was made but as the blood cholesterol was 200 mgm. per cent and the basal metabolism rate was minus 5 per cent she was discharged.

April 5, 1945: Patient was again seen in out-patient department with complaints of several spells of tiredness and irritability since 1940, worse in the past month. She was short of breath when hurrying on the level or when climbing stairs. She felt that her mind was in a muddle and she could not control her temper. She was intolerant to heat and had stiffness, soreness and weakness of legs when climbing stairs. She had had occasional weakness for 4 weeks but recovered and was well until July, 1944. At this time, because of a loss of weight from 104 to 89 lbs., an outside doctor prescribed iodine drops which she took until about December, 1944. She regained her weight and was well until February, 1945, when she developed flushing, perspiration, nervousness, shaking, dyspnœa and palpitation. Since October, 1944, the duration of her menstrual flow, which normally was 5 days, has been ½ to 1 day.

Physical examination revealed a small female of 28 years with flushed face and moist skin. She had moderate exophthalmos, slight lid lag, and a slightly enlarged, soft, smooth thyroid. Pulse 80/min. apex beat 80/., regular, sounds normal. Blood pressure 130/80. Biceps, triceps, knees and ankles reflexes hyperactive and equal. Babinski bilateral plantar flexion. Fine and coarse tremors to extended fingers. A tentative diagnosis was made of Hyperthyroidism.

X-ray of the chest was negative.

Electrocardiogram showed a rate of 86 with P_2 notched. Probably within normal limits.

Basal Metabolism rate was plus 67 per cent.

The patient was placed on thiouracil 0.6 grams daily and her progress is recorded on the following chart.

Date of O.P.D. visit	Thiouracil Daily Dose	Pulse	Blood Pressure	Weight	B.M.R.	Cholest. mgms.%	White Blood cell count*
April 25, 1945	0.6 gms.	96	150/90	98	67% 55%	174	4,700
May 2, 1945	0.4 gms.	80	136/80	99			5,000 P. 47%, L. 46%
May 9, 1945	0.4 gms.	72	130/70	98	34%	196	5,200 P. 61%, L. 36%
May 16, 1945	0.3 gms.	72	128/80	99			4,750 P. 64%, L. 31%
May 23, 1945	0.2 gms.	60	120/70	99½	17%	220	7,300 P. 51%, L. 42%
May 30, 1945	0.2 gms.	66	110/60	100½			4,300 P. 61%, L. 27%
June 6, 1945	0.2 gms.	60	120/80	99	2%	300	3,900 P. 41%, L. 48%
June 13, 1945	discontinued	72	120/80	101			3,250 P. 21%, L. 72%
June 20, 1945	discontinued	90	100/60	96½			1,700 P. 1%, L. 95%

*P.—Polymorphonuclear cells, L—Lymphocytes.

B.M.R.—Basal Metabolism rate. Percentages are all plus.

Because of the depression of the total white blood cell count and particularly the polymorphonuclear cells, the patient was advised to enter hospital on June 20th, 1945.

On admission she complained of non-healing scratches on her legs and arms for 2 weeks, sore throat, sore eyes, headache, lethargy and anorexia for 3 days. During the preceding two weeks, several superficial scratches and excoriations which she had received while doing housework had refused to heal and had become inflamed, raised and sore. On June 17th she noticed burning sensations behind her eyeballs and smarting and stinging under her eyelids. On stooping she would develop a moderately severe occipital headache. She was very tired and drowsy in spite of sleeping 12 to 15 hours daily, and was unable to keep her eyes open when she was awake. She lost her desire for food. She began to have frequent urination at night and had nocturnal warm and shivering sensations. Her ears felt as if they were plugged up.

The most striking feature, on physical examination, was a fiery flush to the skin of her face and a diffuse erythema of the skin of the trunk and limbs. The skin was dry and did not feel hot. There were several small raised inflamed discrete non-healing areas of excoriation on the forearms, wrists and anterior surfaces of the legs. There was a small excoriation below the lower lip. There was a minor degree of exophthalmos and slight lid lag. The mucosa of the pharynx was injected. Thyroid was enlarged. Lungs normal. Heart rate 84/min., regular, no murmurs. Blood pressure 130/80. Temperature 102.3.

Penicillin units 15,000 every 3 hours intra-muscularly was started immediately. Pyridoxine 100 mgm. twice daily intravenously was started, and was continued until July 3rd, 1945. The temperature fell to normal by June 24th, and the Penicillin was discontinued. Coincident with the fall in temperature the skin flush disappeared. The leucocytic response to the administration of the pyridoxine and the discontinuation of the Thiouracil is recorded as follows:

Date	Total White cell	Polys %	Lymphocytes %	Myelocytes	Sed. rate*
June 20, 1945	1,700	1	95		25/85
21	1,150	2	89		
22	1,700	2	89		
23	1,950	0	91		
24					
25	4,750	4	85		
26	3,000	12	78		
27	4,600	19	69	3	4/43
28	4,700	28	58	7	
30	6,250	53	42	1	
July 3, 1945	7,150	46	47	Pyridoxine discontinued	
4	7,600	45	51		1/6

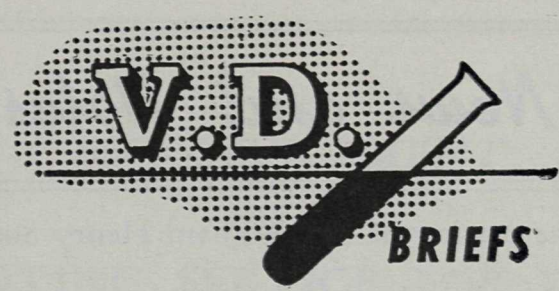
*Sedimentation Rate—Fall in 15 minutes/fall in 45 minutes.

July 3, 1945—Basal Metabolism Rates 0%. Cholesterol 220 mgms.%.

July 3, 1945: Patient was placed on Lugol's solution mins. 10 three times daily and was prepared for thyroidectomy on July 10, 1945. The operation was uneventful. Fifteen grams of the thyroid gland were resected and on section presented a homogeneous, beefy, non-adenomatous appearance. Microscopic and gross diagnosis—subinvolution stage in a previously hyperplastic thyroid.

Postoperative course was exceptionally good except for a persistent seropurulent drainage. The patient was discharged July 26, 1945.

Conclusion.—The pyridoxine was used at the suggestion of Dr. J. W. Scott of Edmonton. It is of course impossible to say that the pyridoxine was entirely responsible for the cure. It may have been that withdrawal of the drug would have led to a prompt recovery. In view of the case reports of fatal agranulocytosis following thiouracil, however, it seemed safer to use the pyridoxine as well as to discontinue the toxic medication. Whether the fever was in itself toxic reaction of the thiouracil or an evidence of an associated infection is also not certain. The patient appeared to be acutely and seriously ill and we feel justified in using both Penicillin and Pyridoxine.



STANDARD 18-MONTH TREATMENT OF SYPHILIS

The *standard treatment* of early acquired syphilis consists of *at least forty* injections of a trivalent arsenical and *at least forty* injections of a bismuth preparation given over a period of eighteen months.

The *most important* requirement of this treatment is that it be *continuous*. The patient must receive at least one injection every week. He should never be allowed to go more than ten days without treatment especially during the first six months.

* * * *

EPIDEMIOLOGY

Every case of venereal disease has acquired his or her infection from another case. Moreover, every case may have transmitted his or her infection to others before coming to the physician for treatment. The patient is the only person who has information about these contacts to his or her infection. It is the responsibility of the physician to tactfully obtain this information so that it may be transmitted to the provincial health department for confidential epidemiological investigation.

* * * *

TREATMENT OF NON-SPECIFIC URETHRITIS IN THE MALE

Experience shows that the majority of cases of urethritis in men are caused by the gonococcus, even though this organization cannot be readily demonstrated at the first examination of the patient. Therefore, every man presenting himself with an urethral discharge should have immediate treatment for gonorrhœa in order to protect the patient himself from the danger of possible complications of this disease and to protect the public from a potential source from which gonorrhœa might spread to other persons in the community.

* * * *

GONORRHEAL VAGINITIS OF IMMATURE GIRLS

"In most instances, vaginitis of immature girls is not due to gonorrheal infection. An accurate diagnosis depends on securing positive cultures from discharge which is best obtained from the neighbourhood of the cervix. A diagnosis which depends on an examination of spreads is not to be relied upon. *Too many other Gram-negative organisms in the vaginae of children resemble gonococci.* Ordinarily a gonorrheal infection is limited to the vaginal mucosa. Salpingitis occurs very rarely.

Girls with gonorrheal infections need be kept from school only while the discharge is profuse. If properly treated, this period should be a matter of only a few days. *The spread of infections on toilet seats is not to be feared.* The danger of institutional contacts has been grossly exaggerated. Ordinary isolation technique in well conducted hospitals is sufficient to prevent the transmission of infection to other patients. More intimate direct contacts in the family or with playmates constitute the most frequent modes of spread of the disease in immature girls."

News and Notes

We regret to record the passing of Dr. William Henry Sutherland of Vancouver on September 3rd.

* * * *

Sympathy is extended to Surgeon Lieutenant H. G. Farish and Mrs. Farish of Vancouver in the loss of their infant son.

* * * *

Dr. G. A. Lamont of Vancouver was married in Ottawa to Mrs. H. G. Houston of Toronto.

* * * *

Dr. D. A. Hewitt and Miss Joan Straith, younger daughter of Dr. and Mrs. P. L. Straith of Courtenay, were married on August 18th.

* * * *

Congratulations are extended to Dr. and Mrs. G. A. McLaughlin of North Vancouver on the birth of a son and daughter.

* * * *

Dr. and Mrs. A. T. Karsgaard of Tofino are receiving congratulations on the birth of a son.

* * * *

Surgeon Commander W. M. Paton of Vancouver, well-known eye, ear, nose and throat specialist, has received his honourable discharge from the Naval Services.

* * * *

The following Medical Officers have returned from service overseas and are now on leave: Colonel M. McC. Baird of Vancouver and Lieut.-Colonel Roy Huggard of Vancouver.

* * * *

Colonel C. A. Watson, Major J. Moscovich and Major Henry Scott, who recently returned from service overseas, have been posted for duty in the Pacific Command.

* * * *

Major Brock M. Fahrni, who suffered an injury from an accident overseas, is at Shaughnessy Hospital.

* * * *

Major Andrew Turnbull, R.C.A.M.C., has retired from the Army, and is with the Department of Veterans Affairs in Vancouver.

* * * *

Major J. A. Ganshorn, recently returned from service overseas, has received his honourable discharge from the Services, and is now occupying his former office in the Medical-Dental Building.

* * * *

Major A. C. Gardner Frost has returned to his civilian practice, specializing in Obstetrics and Gynæcology.

* * * *

Major F. H. Bonnell, R.C.A.M.C., is now out of the Services, and is associated with Drs. Whitelaw and McIntosh.

* * * *

At the annual meeting of the North Shore Medical Society the following officers were elected: President—Dr. K. A. Peacock; Vice-President—Dr. H. Dyer; Secretary-Treasurer—Dr. C. A. Fraser.

The following Chairmen of Committees were appointed: Health Insurance—Dr. H. Carson Graham; Maternal Welfare—Dr. E. Peacock; Economics—Dr. G. A. McLaughlin; Cancer—Dr. C. A. Fraser.

ANNOUNCEMENT

ACCOUNTING SERVICE FOR DOCTORS

A new Accounting Service, especially adapted to Doctors' needs, has recently been established, which will be of great assistance to Busy Professional Men.

Supervision to meet individual needs.

Supervised Office Detail—Government and Income Tax Returns
General Accounting

SPECIALIZED SERVICES

16—675 Davie Street, Vancouver. MArine 7729

VANZANT & COMPANY

Announces

the return to civilian life, in the capacity of their Western Canadian Manager, of

F/LT. T. M. MATHESON

after service as Senior Pharmacist Officer of the R.C.A.F.

Sole Canadian Distributors for:
HERTS PHARMACEUTICALS LIMITED,
Welwyn Garden City, England.
OPPENHEIMER, SON & CO. LTD., London, England.

One to One . .

is the S.M.A. rule: one measure* of S.M.A. Powder to one ounce of warm (previously boiled) water, whatever the quantity desired. It is easy to prepare S.M.A. and it is easy for doctors to tell mothers how to do so.

Because S.M.A. so closely resembles breast milk babies relish it . . . digest it easily . . . thrive on it. Like breast milk the S.M.A. formula remains constant. Only the quantity need ever be changed. S.M.A. babies are such comfortable babies . . . doctors as well as mothers are grateful for S.M.A.

IT'S EASY TO MIX . . . SMA

Trademark Reg. in Canada

S.M.A. is derived from tuberculin-tested cows' milk in which part of the fat is replaced by animal and vegetable fats including biologically assayed cod liver oil; with the addition of milk sugar, vitamins and minerals; altogether forming an antirachitic food. When diluted according to directions, it is essentially the same as human milk in percentages of protein, fat, carbohydrates and ash, in chemical constants of the fat and in physical properties.

**One S.M.A. measuring cup enclosed in each 16 oz. can of S.M.A. Powder.*

EVERYBODY'S HAPPY IF IT'S AN S.M.A. BABY

JOHN WYETH & BROTHER (CANADA) LIMITED, WALKERVILLE, ONTARIO
Nutritional Division

TABLETS FOR *Oral* USE—
AMPULS FOR *Injection*

There has long been a real need for a potent, mercurial diuretic compound which would be effective by mouth. Such a preparation serves not only as an adjunct to parenteral therapy but is very useful when injections can not be given.

After the oral administration of Salyrgan-Theophylline tablets a satisfactory diuretic response is obtained in a high percentage of cases. However, the results after intravenous or intramuscular injection of Salyrgan-Theophylline solution are more consistent.

Salyrgan-Theophylline is supplied in two forms:

TABLETS (enteric coated) in bottles of 25, 100 and 500.
Each tablet contains 0.08 Gm. Salyrgan and 0.04 Gm. theophylline.

SOLUTION in ampuls of 1 cc., boxes of 5, 25 and 100; ampuls of 2 cc., boxes of 10, 25 and 100.

ACCEPTED AMERICAN MEDICAL ASSN. Council on Pharmacy and Chemistry

Write for literature

SALYRGAN-THEOPHYLLINE

"Salyrgan," Trademark Reg. U. S. Pat. Off. & Canada

Brand of MERSALYL and THEOPHYLLINE

WINTHROP

WINTHROP CHEMICAL COMPANY, INC.

Pharmaceuticals of merit for the phyiscian

GENERAL OFFICES: WINDSOR, ONTARIO

Quebec Professional Service Office: Dominion Square Building Montreal, Quebec

Thou better name than all the family of fame!"

FORTUNATELY, today, medical provision of "tranquility" for climacteric cases is more practicable than ever—with Hexital . . . a preparation assuring more complete control of psycho-physical disturbances through ample hormonal compensation and safe sedation.

¶ Hexestrol (significantly less toxic than stilbesterol) is the estrogenic factor in Hexital—3 mg. in each tablet; phenobarbital, the sedative component—20 mg. to the tablet. As combined in Hexital, unpleasant side-effects of synthetic estrin medication are reduced to a minimum.

¶ Average daily dose (preferably upon retiring) is one tablet. Supplied 100 and 1000 to the bottle, in scored tablets—inexpensively priced. ORTHO PRODUCTS OF CANADA, LIMITED, TORONTO.

hexital - A STEP FORWARD IN MENOPAUSAL THERAPY

ANNOUNCING

A NEW
SYNTHETIC OESTROGEN

DIENOESTROL B.D.H.

POSSESSES ALL THE VALUABLE QUALITIES OF STILBOESTROL AND NONE OF ITS UNDESIRABLE PROPERTIES

NON-TOXIC. No case of toxicity has been reported in any series of cases under treatment with Dienoestrol B.D.H. It may be prescribed freely, therefore, without risk of incurring nausea even in patients who have previously shown intolerance to stilboestrol.

HIGHLY ACTIVE. Dienoestrol B.D.H. is approximately three times more potent than stilboestrol and is therefore the most potent oestrogenic substance known. In changing from stilboestrol to Dienoestrol B.D.H. it may be assumed that 0.3 mg. of Dienoestrol B.D.H. is equivalent to approximately 1 mg. stilboestrol

This new oestrogen, B:E-Dehydrostilboestrol, on the recommendation of the Pharmacopoeia Commission and with the approval of the General Medical Council of Great Britain has been named Dienoestrol. It therefore should not become confused with stilboestrol or any other oestrogenic substance issued under a name which bears any similarity to this official name.

Dienoestrol B.D.H. is issued in tablets of 0.1 mg. and 0.3 mg. in bottles of 100, 500 and 1000 tablets.

THE BRITISH DRUG HOUSES (CANADA) LTD.

TORONTO **CANADA**

HAY FEVER

CORYPHEDRINE

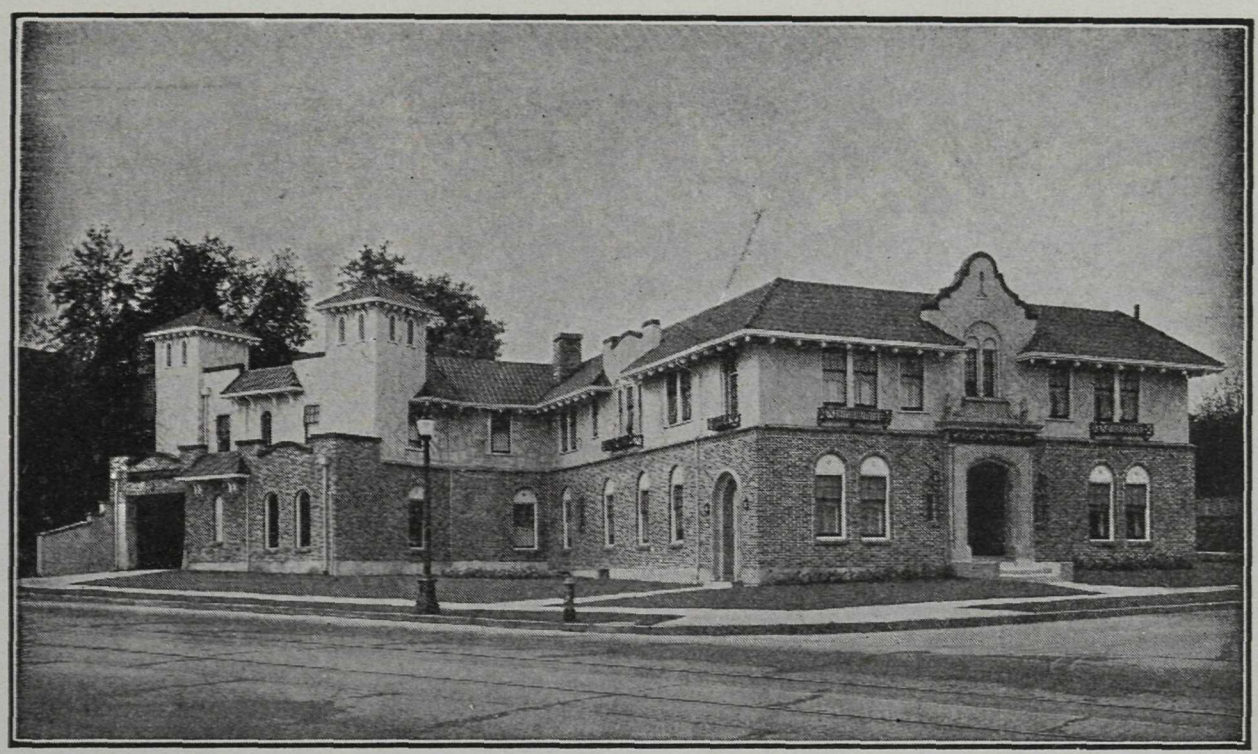
Again this summer, thousands of individuals are exposed to the miserable effects of pollen sensitivity. Symptomatic relief of hay fever may be obtained promptly by the use of one tablet of CORYPHEDRINE every three hours.

Supplied in containers of 20, 100, 500 and 1000 tablets. Each tablet contains 7½ grains acetylsalicylic acid and ¼ grain ephedrine hydrochloride.

Clinical sample available to physicians on request.

Laboratory Poulenc Frères

OF CANADA LIMITED — MONTREAL



Mount Pleasant Undertaking Co. Ltd.

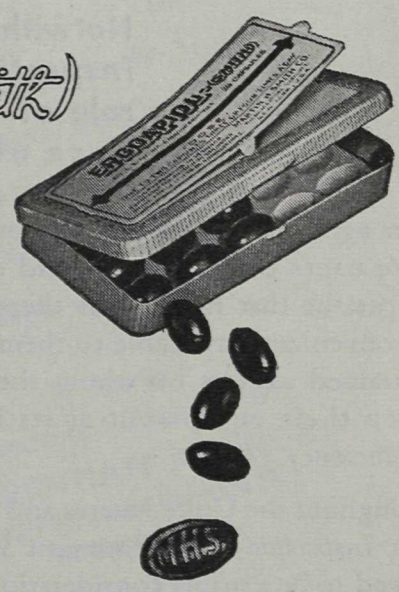
KINGSWAY *at* 11th AVE. Telephone FAirmont 0058 VANCOUVER, B. C.

R. F. HARRISON W. E. REYNOLDS

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.

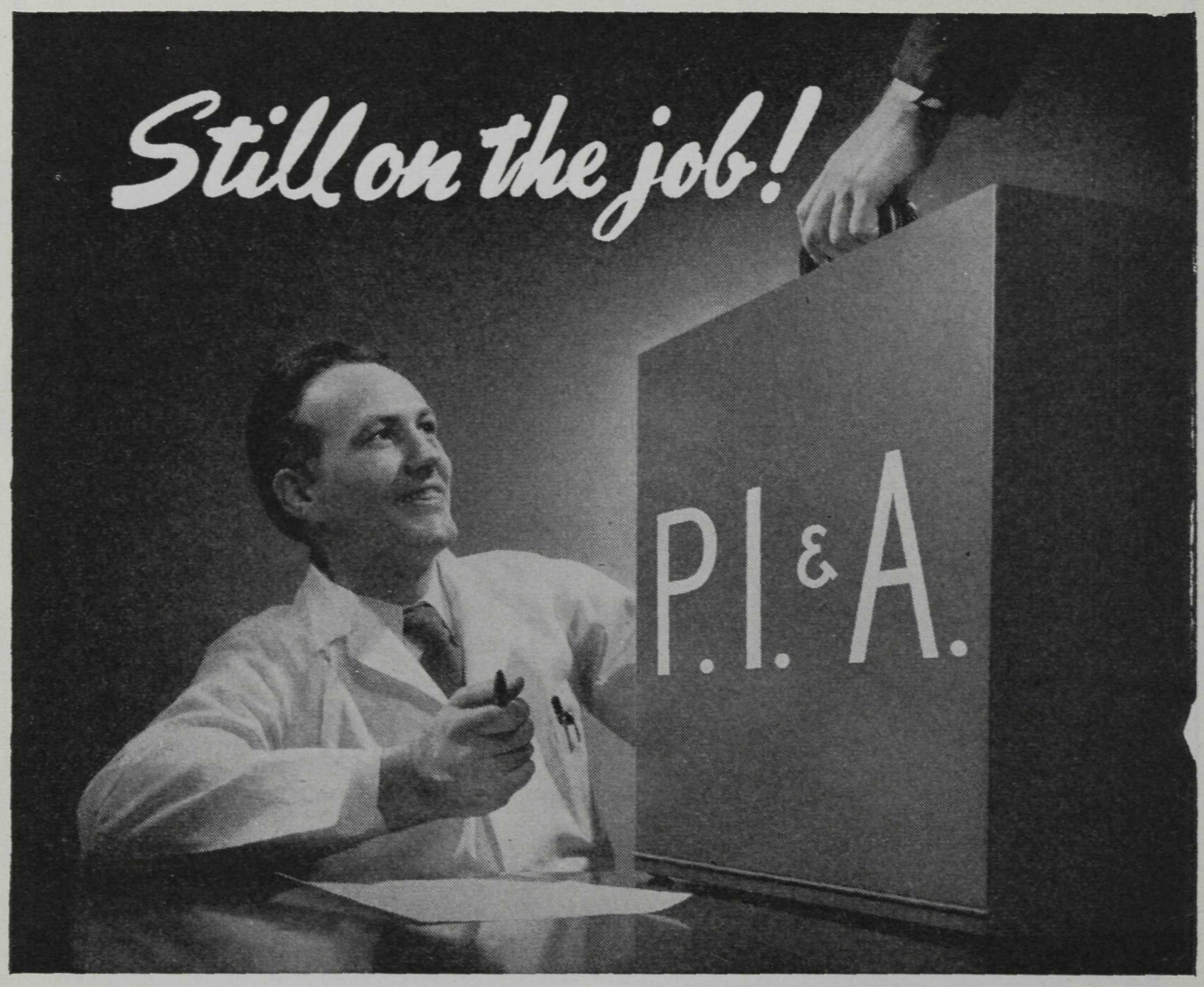
MARTIN H. SMITH COMPANY
150 LAFAYETTE STREET, NEW YORK, N. Y.



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



Notwithstanding wartime handicaps, G.E.'s *Periodic Inspection and Adjustment Service* continues its role of expert electrical and mechanical maintenance of x-ray and electomedical equipment.

Fifteen years ago, we announced to all users and prospective users of G-E x-ray and electromedical apparatus that henceforth there would always be conveniently available to them a corps of factory-trained experts on whom they could rely to keep their equipment at its highest operating efficiency.

Today, throughout the United States and Canada, this *Periodic Inspection and Adjustment Service* is acknowledged to be a prime consideration in any evaluation of G-E equipment—a consensus which obviously is based on gratifying experiences.

Thus P. I. and A. *has stood the test of time—yes, even through these war years, when pre-war promises have at times seemed impossible of fulfillment.*

The long established high standard of efficiency of *P. I. and A.* service is still adhered to, and while the cost of providing it has obviously increased, those who contract for it are enjoying the same rates as prevailed before the war.

It is facilities such as this, readily available through our nationwide field organization, which justify and enhance every investment in G-E equipment.

For helpful information and suggestions, you can rely on your nearby G-E representative. Write today for his address.

1895 OUR FIFTIETH YEAR OF SERVICE 1945

VICTOR X-RAY CORPORATION of CANADA, Ltd.

DISTRIBUTORS FOR GENERAL ELECTRIC X-RAY CORPORATION

TORONTO: 30 Bloor St., W. • VANCOUVER: Motor Trans. Bldg., 570 Dunsmuir St.
MONTREAL: 600 Medical Arts Building • WINNIPEG: Medical Arts Building

Estivin

Prompt Relief of Hay Fever Symptoms

Regardless of the causative pollen, Estivin is prompt in action. A single application usually alleviates the distressing ocular and nasal symptoms of hay fever—lacrimation, itching eyes, spasmodic sneezing and excessive nasal discharge.

One drop in each eye 2 or 3 times daily is generally sufficient to keep the average patient comfortable during the entire hay fever season. In more severe cases, additional applications whenever the symptoms recur will assure relief throughout the day.

Literature and Sample on Request

Write our
Canadian Distributors
LAURENTIAN AGENCIES
429 St. Jean Baptiste St.
Montreal, Que.

Estivin *is available at all drug stores*

Schieffelin & Co.
Pharmaceutical and Research Laboratories
20 COOPER SQUARE • NEW YORK 3, N.Y.

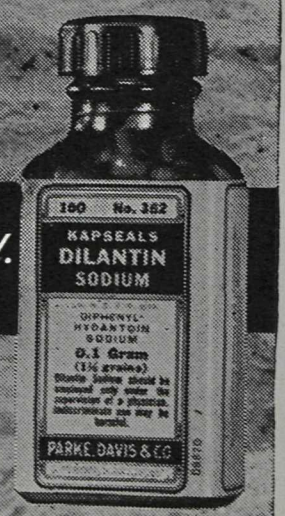
TRIUMPH OF CONTROL

Just as the modern dam keeps a raging river within bounds and prevents floods . . . harnessing the forces of nature to productive activity . . . so modern epileptic therapy with DILANTIN SODIUM assists the body to control floods of nervous and mental excitement, reduces the number or severity of convulsive seizures, and enables the individual to lead a more normal, productive life.

DILANTIN SODIUM (Diphenylhydantoin Sodium) is a modern approach to epileptic therapy . . . a superior anticonvulsant free from the undesirable effects of the bromides and barbiturates. It is relatively free from hypnotic action and effective in many cases which fail to respond to other anticonvulsants. With DILANTIN SODIUM the physician can secure complete control over seizures in a substantial number of cases and lengthen the intervals between seizures in others.

DILANTIN SODIUM

Parke, Davis & Company, Ltd.
WALKERVILLE, ONTARIO



1930 Tisdall, F. F., Drake, T. G. H., and Brown, A.: A new cereal mixture containing vitamins and mineral elements, Am. J. Dis. Child. 40:791-799, Oct. 1930.

1931 Tisdall, F. F.: Dietary factors and health, Soc. Tr., Am. J. Dis. Child. 42:1490, Dec. 1931.

1932 Summerfeldt, P.: The value of an increased supply of vitamin B_1 and iron in the diet of children, Am. J. Dis. Child. 43:284-290, Feb. 1932. Morse, J. L.: Fads and fancies in present day pediatrics, Pennsylvania M. J. 35:280-285, Feb. 1932. Henricke, S. G.: The vitamin B complex: Its role in infant feeding in the light of our present knowledge, Northwest Med. 31.165-169, April 1932. Langhorst, H. F.: Vitamins: Their role in the prevention and treatment of disease, M. J. & Rec. 135:326-329, April 6, 1932. Crimm, P. D.: Dietary of Childhood Tuberculosis: Cereal as a source of added mineral and vitamin elements; preliminary report, J. Indiana M. A. 25:205-206, May 1932. Troutt, L.: Quality studies of therapeutic diets: I. The ulcer diet; a committee report, J. Am. Dietet. A. 8:25-32, May 1932. Summerfeldt, P., Tisdall, F. F., and Brown, A.: The curative effects of cereals and biscuits on experimental anaemias, Canad. M.A.J. 26:666-669, June 1932. Sneed, W.: Ununited and delayed union of fractures, Kentucky M. J. 30:363-370, July 1932. Silverman, A. C.: Celiac disease, New York State J. Med. 32:1055-1061, Sept. 15, 1932. von Meysenbug, L.: Infant feeding with especial reference to some of its problems during the first year, Texas State J. Med. 28:543-547, Dec. 1932.

1933 Wampler, F. J., and Forbes, J. C.: Calcium and phosphorus metabolism in a case of celiac disease, South. M. J 26:555-558, June 1933. Brown, A., and Tisdall, F. F.: The role of minerals and vitamins in growth and resistance to infection, Brit. M. J. 1:55-57, Jan. 14, 1933; Effect of vitamins and the inorganic elements on growth and resistance to disease in children, Ann. Int. Med. 7:342-352, Sept. 1933. Crimm, P. D., Raphael, I. J., and Schnute, L. F.: Diet of tuberculous and non-tuberculous children: Effect of increased supply of vitamin B concentrate and minerals, Am. J. Dis. Child. 46:751-756, Oct. 1933. Smith, A. D.: Consideration of various infants' foods, Pacific Coast J. Homeop. 44:463-465, Sept.-Dec. 1933.

1934 Somers, R., Rotton, G. C., and Rowntree, J. I.: Possibilities of improving dental structures, Soc. Tr., Bull. King Co. M. Soc. 13:6, Jan. 15, 1934. Blatt, M. L.: Development of infants on a diet of a special cereal mixture, Soc. Tr., Am. J. Dis. Child. 47:918, April 1934. Rice, C. V.: Anemia of infancy and early childhood, J. Oklahoma M. A. 27:125-129, April 1934. Hawk, W. A.: A few of the commoner feeding problems in infancy, Univ. Toronto M. J. 11:218-229, May 1934. Ross, J. R., and Burrill, L. M.: The effect of cooking on the digestibility of cereals, J. Pediat. 4:654-659, May 1934. Rice, C. V.: Sauerkraut juice for the acidification of evaporated milk in infant feeding, Arch. Pediat. 51:390-395, June 1934. Eder, H. L.: Iron therapy: A routine procedure during infancy, Arch. Pediat. 51:701-713, Nov. 1934. Lynch, H. D.: Fundamentals of infant feeding, J. Indiana M. A. 27:571-574, Dec. 1934. Chaney, M. S., and Ahlborn, M.: Nutrition, Houghton Mifflin Co., Boston, 1934, p. 323.

1935 Bailey, C. W.: Anemia in infants and young children, J. South Carolina M. A. 31:54-58, March 1935. Kugelmass, I. N.: The recent advances in treatment of nutritional disturbances in infancy and childhood, M. Comment 17:5-13, March 1, 1935. Ross, J. R., and Summerfeldt, P.: Value of increased supply of vitamin B_1 and iron in the diet of children; Paper II, Am. J. Dis. Child, 49:1185-1188, May 1935. von Meysenbug, L.: Breast feeding with especial reference to some of its problems, New Orleans M. & S. J. 87:738-743, May 1935. Tarr, E. M., and McNeile, O.: Relation of vitamin B deficiency to metabolic disturbances during pregnancy and lactation, Am. J. Obst. & Gynec, 29:811-818, June 1935. Blatt, M. L., and Schapiro, I. E.: Influence of a special cereal mixture on infant development, Am. J. Dis. Child. 50:324-336, Aug. 1935. Coward, N. B.: Infant feeding, Nova Scotia M. Bull. 14:525-532, Oct. 1935. Tisdall, F. F.: Inadequacy of present dietary standards, Tr. Sect. Pediat., A.M.A., 1935: Canad. M. A. J. 33:624-628, Dec. 1935. Marriott, W. McK.: Infant Nutrition, second edition, C. V. Mosby Co., St. Louis, 1935, p. 202. Summerfeldt, P.: Iron and its availability in foods, Tr. Sect. Pediat., A. M. A. 1935, pp. 214-220.

1936 Dafoe, A. R.: Further history of the care and feeding of the Dionne quintuplets, Canad. M. A. J. 34:26-32, Jan. 1936. Conn, L. C., Vant, J. R., and Malone, M. M.: Some aspects of maternal nutrition, Surg., Gynec. & Obst. 62:377-383, Feb. 15, 1936. Ross, J. R., and Summerfeldt, P.: Haemoglobin of normal children and certain factors influencing its formation, Canad. M. A. J. 34:155-158, Feb. 1936. Smyth, F. S.: Allergic diseases, J. Pediat. 8:500-515, April 1936. Lemmon, J. R.: Problems of the crying infant, Southwestern Med. 20:248-250, July 1936. Rice, C. V.: The success of treating celiac disease from a standpoint of vitamin deficiency, Arch. Pediat. 53:626-629, Sept. 1936. Smith, C. H.: Management of nutritional anemia in infancy, M. Clin. North America 20:933-950, Nov. 1936. Strong, R. A., editor: Nutritional anemia of infants, Orleans Parish M. Soc. Bull., pp. 6-9, Nov. 9, 1936. Jeans, P. C.: Specific factors in nutrition. Round Table discussion, J. Pediat. 9:693-698, Nov. 1936. Young, J. G.: Meeting the requirements for proper nutrition in infancy, Texas State J. Med. 32:531-533, Dec. 1936.

1937 Stearns, G., and Stinger, D.: Iron retention in infancy, J. Nutrition 13:127-141, Feb. 1937. Strong, R. A.: Nutritional anemia, Mississippi Doctor 15:13-16, Aug. 1937. Smith, C. H.: Prevention and treatment of nutritional anemia in infancy, Preventive Med. 7:115-124, Aug. 1937. Saxl, N. T.: Pediatrics, in Dietetics for the Clinician, edited by M. A. Bridges, third edition, Lea & Febiger, Philadelphia, 1937, pp. 637-639. Boyd, J. D.: Nutrition of the Infant and Child, National Medical Book Co., Inc., New York, 1937, p. 110. Brennemann, J.: Practice of Pediatrics, W. F. Prior Co., Inc., Hagerstown, Md., 1937, Vol. 1, Ch. 25, p. 19. Griffith, J. P. C., and Mitchell, A. G.: The Diseases of Infants and Children, second edition, W. B. Saunders Co., Philadelphia, 1937, pp. 106, 111. Saxl, N. T.: Pediatric Dietetics, Lea & Febiger, Philadelphia, 1937, pp. 131-133.

1938 Hoffman, S. J., Greenhill, J. P., and Lundeen, E. C.: A premature infant weighing 735 grams and surviving, J.A.M.A. 110:283-285, Jan. 22, 1938. Krasnow, F.: Nutritional influence on teeth, Am. J. Pub. Health 28:325-333, March 1938. Ratner, B.: Round Table discussion on asthma and hay fever in children, J. Pediat. 12:399-413, March 1938. Ratner, B.: Panel discussion on the role of allergy in pediatric practice, J. Pediat. 13:582-604, Oct. 1938. Snelling, C. E.: Nutritional anaemia, Bull. Acad. Med. Toronto 12:710, Oct. 1938. Dauphinee, J. A.: The iron requirement in normal nutrition, Canad. M.A.J. 39:483-486, Nov. 1938. Summerfeldt, P., and Ross, J. R.: Value of an increased supply of vitamin B_1 and iron in the diet of children, Paper III, Am. J. Dis. Child. 56:985-988, Nov. 1938. Tisdall, F. F., and Drake, T. G. H.: The utilization of calcium, J. Nutrition 16:613-620, Dec. 1938. Drake, T. G. H.: Introduction of solid foods into the diets of children. Canad. M. A. J. 39:578-580, Dec. 1938.

1939 Strong, R. A.: The most frequent causes of vomiting in infancy, Texas State J. Med. 34:665-676, Feb. 1939. Ratner, B., and Gruehl, H. L.: Anaphylactogenic properties of certain cereal foods and breadstuffs; Am. J. Dis. Child. 57:739-758, April 1939. Monypenny, D.: Early introduction of solid foods in the infant diet, Soc. Tr., Am. J. Dis. Child. 58:1144-1145, Nov. 1939. Brown, A., and Tisdall, F. F. Common Procedures in the practice of paediatrics, third edition, McClelland & Stewart. Ltd., Toronto, 1939, pp. 77-79.

1940 McDougal, L. L., Jr.: Feeding a normal infant, Mississippi Doctor 17:437-442, Jan. 1940. Monypenny, D.: The early introduction of solid foods in the infant diet, Canad. M. A. J. 42:137-140, Feb. 1940. Robinson, E. C.: A study of two hundred and forty breast-fed and artificially fed infants in the St. Louis area, Am. J. Dis. Child. 58:816-827, April 1940. Ratner, B.: Round Table discussion on food allergy, J. Pediat. 16:653-672, May 1940. Rosenbaum, I., Jr.; The management of the allergic child, Kentucky M. J. 38:199-203, May 1940. Barondes, R. de R.: Report of a case of pellagroid, M. Rec. 151:376-380, June 5, 1940. Brown, A.: The fourth Blackader lecture on a decade of paediatric progress, Canad. M. A. J. 43:305-313, Oct. 1940. Drueck, C. J., Vitamin therapy in colon and rectal disease, Illinois M. J. 78:337-341, Oct. 1940. Swift, F. L.: Infant feeding, Lackawanna Co. M. Soc. Reporter. 33:16-18, Nov. 1940. Bogert, L. J., and Porter, M. T.: Dietetics Simplified, ed. 2, Macmillan Co., New York, 1940, p. 181. Davison, W. C.: The Compleat Pediatrician, third edition, Duke University Press, Durham, N. C., 1940, No. 216. Hawley, E. E., and Maurer-Mast, E. E.: The Fundamentals of Nutrition, C. C. Thomas, Springfield, Ill., 1940, pp. 296, 456. Kugelmass, I. N.: The Newer Nutrition in Pediatric Practice, J. B. Lippincott Co., Philadelphia, 1940, p. 372. Leaman, W. G., Jr.: Management of the Cardiac Patient, J. B. Lippincott Co., Phila., 1940, p. 549. Paterson, D., in Index of Treatment, edited by R. Hutchison, ed. 12, revised, Williams & Wilkins Co., Baltimore, 1940, p. 491. Thomas, G. I.: Dietary of Health and Disease, ed. 3, revised, Lea & Febiger, Phila., 1940, p. 171.

1941 Gipson, A. C.: The role of allergy in pediatric practice, J. M. A. Alabama 10:272-274, Feb. 1941. Ross, J. R., Monypenny, D., and Jackson, S. H.: II. The effect of cooking on the digestibility of cereals, J. Pediat. 18:395-398, March 1941. Kennedy, A. S., Snider, O., Hazen, J. S., and McLean, C.: The dietary management of intestinal tuberculosis, Canad. M. A. J. 44:380-385, April 1941. McAlpine, K. L.: Management of the nutritional anaemia of infancy, Canad. M. A. J. 44:386-390, April 1941. Patek, A. J., Jr., and Post, J.: Treatment of cirrhosis of the liver by a nutritious diet and supplements rich in vitamin B complex, J. Clin. Investigation 20:481-505, Sept. 1941. Bercovitz, Z., and Johnson, H. J.: Ulcerative Colitis, in Dietetics for the Clinician, by M. A. Bridges, fourth edition, revised, Lea & Febiger, Phila., 1941, p. 295. Bridges, M. A.: Dietetics for the Clinician, fourth edition, revised, Lea & Febiger, Phila., 1941, pp. 727, 751, 809. Griffith, J. P. C., and Mitchell, A. G.: Textbook of Pediatrics, ed. 3, revised, W. B. Saunders Co., Phila., 1941, pp. 87, 91. Rowe, A. H.: Elimination Diets and the Patient's Allergies, Lea & Febiger, Phila., 1941, p. 230. Twiss, J. R.: Gall-bladder Disease, in Dietetics for the Clinician, by M. A. Bridges, fourth edition, revised, Lea & Febiger, Phila., 1941, p. 401.

1942 Gleich, M.: The premature infant, Part II, Arch. Pediat. 59:99-135, Feb. 1942. Part IV, Arch. Pediat.59:241-263, April 1942. Brown, A., and Robertson, E. C.: Factors to be considered in the construction of the diet of the older child, J. Kansas M. Soc. 43:237-244, June 1942. Porter, L., and Carter, W. E.: Management of the Sick Infant and Child, ed. 6, C. V. Mosby Co., St. Louis, 1942, p. 125. Proudfit, F. T.: Nutrition and Diet Therapy, ed. 8, Macmillan Co., New York, 1942, p. 515. Willard, J. H.: Digestive Diseases in General Practice, F. A. Davis Co., Phila., 1942, p. 147.

1943 Adair, F. L., Dieckmann, W. J., Michel, H., Dunkle, F., Kramer, S., and Lorang, E.: The effect of complementing the diet in pregnancy with calcium, phosphorus, iron, and vitamins A and B, Am. J. Obst. & Gynec. 46:116-121, July 1943. Byrum, J. M.: The premature infant, with a case report, Bull. Pottawatomie Co. M. Soc. 6:9-12, March 1943. Davison, W. C.: The Compleat Pediatrician, ed. 4, Duke University Press, Durham, N.C., 1943, No. 216, 222. Zahorsky, J., and Zahorsky, T. S.: Synopsis of Pediatrics, ed. 4, C. V. Mosby Co., St. Louis, 1943, p. 60.

SCIENTIFIC BACKGROUND

Mead's Cereal was introduced in 1930, and Pablum in 1932, by Mead Johnson & Company. Since then, the growing literature indicates early recognition and continued acceptance of these products and the important pioneer principles they represent.★

Compare

THE SPEED AND EFFECTIVENESS OF 10 ANTISEPTICS IN COMMON USE

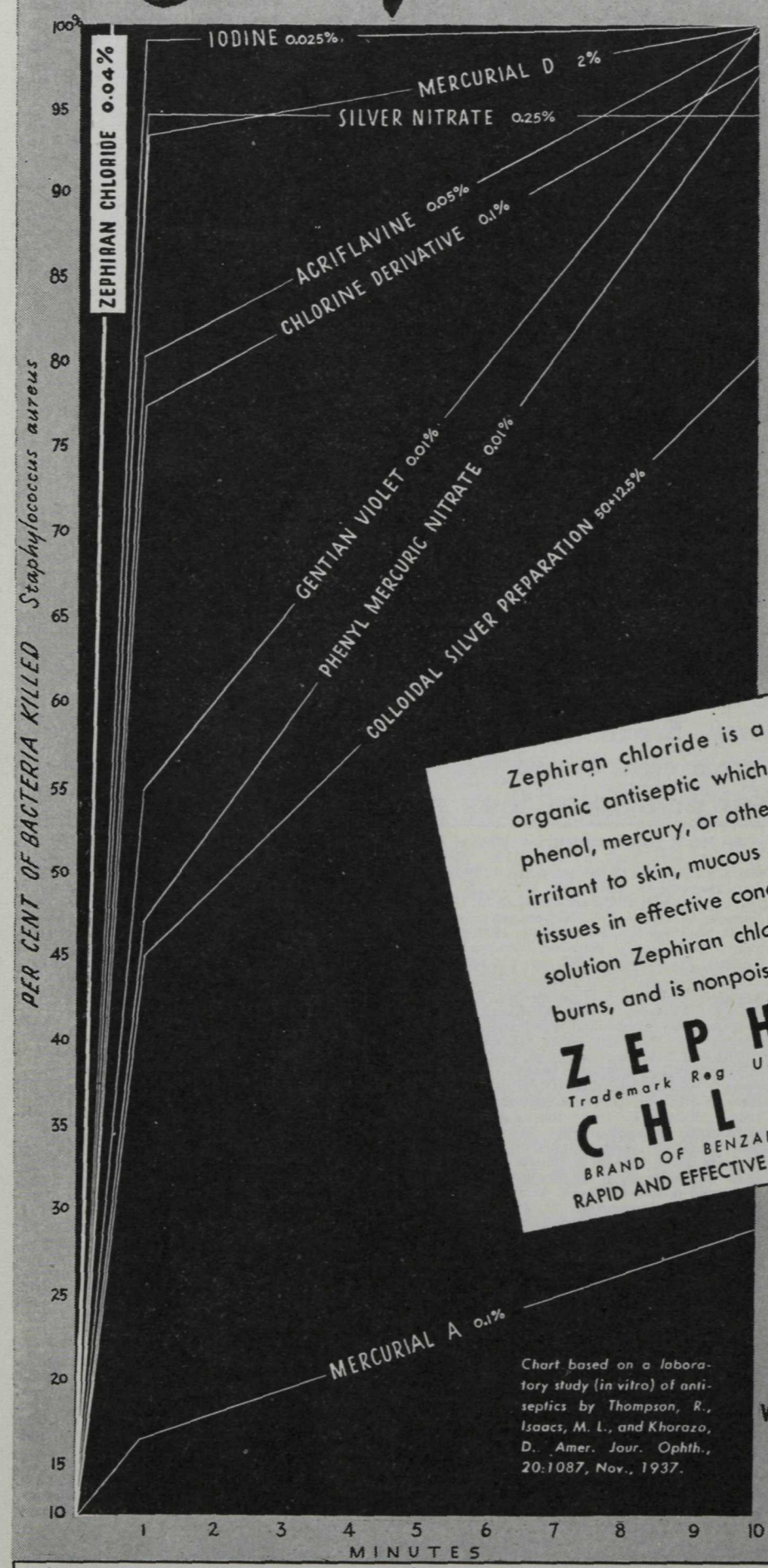


Chart based on a laboratory study (in vitro) of antiseptics by Thompson, R., Isaacs, M. L., and Khorazo, D. Amer. Jour. Ophth., 20:1087, Nov., 1937.

Zephiran chloride is a powerful, stable, organic antiseptic which contains no iodine, phenol, mercury, or other corrosives. It is non-irritant to skin, mucous membranes or wound tissues in effective concentrations. In aqueous solution Zephiran chloride neither stings nor burns, and is nonpoisonous.

ZEPHIRAN CHLORIDE

Trademark Reg. U.S. Pat. Off. & Canada

BRAND OF BENZALKONIUM CHLORIDE REFINED

RAPID AND EFFECTIVE ANTISEPSIS WITHOUT IRRITATION

AQUEOUS SOLUTION 1:1000, BOTTLES OF 8 OZ. AND 1 GALLON. STAINLESS TINCTURE 1:1000, BOTTLES OF 8 OZ. AND 1 GALLON. TINTED TINCTURE 1:1000, BOTTLES OF 8 OZ. AND 1 GALLON.

WRITE FOR DETAILED LITERATURE

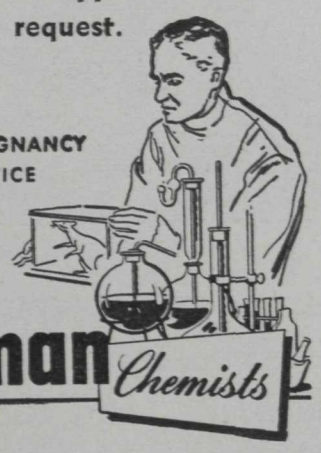
ACCEPTED AMERICAN MEDICAL ASSN Council on Pharmacy and Chemistry

WINTHROP CHEMICAL COMPANY, INC., ***Pharmaceuticals of merit for the physician,*** **NEW YORK 13, N. Y., WINDSOR, ONT.**

STARKMAN'S
LAB. SERVICE

A complete blood and urine laboratory service that is fast and reliable.

ASCHIEM — ZONDEK and blood containers supplied free of charge on request.



48 HOUR PREGNANCY TEST SERVICE
$3.50

Starkman Chemists
TORONTO 4
Dept. 9

Colonic and Physiotherapy Centre

Up-to-date Scientific Treatments

COLONIC IRRIGATIONS, SHORTWAVE DIATHERMY, SINNEWAVE GALVINISM, IONIZATION, ULTRA VIOLET RAY, STEAM BATHS AND SHOWERS

Medical and Swedish Massage
Physical Culture Exercises

STAFF OF GRADUATE NURSES

Superintendent:
E. M. LEONARD, R.N.
Post Graduate Mayo Bros.

1119 Vancouver Block
MArine 3723 Vancouver, B.C.

Nunn & Thomson

2559 Cambie Street
Vancouver, B.C.

IS THERE AN ARTHRITIS-ECZEMA SYNDROME?

Both are claimed to be allergic. Both suggest mineral deficiency and impaired elimination. Clinically, each is symptomatically improved by the oral use of

LYXANTHINE ASTIER

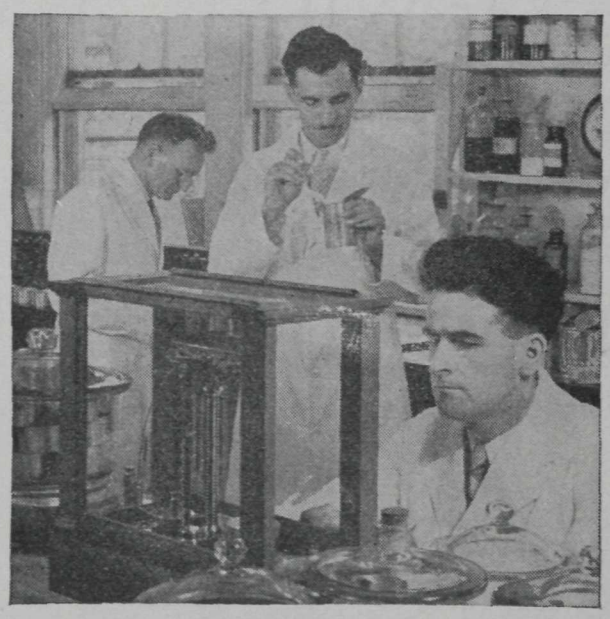
which combines the therapeutic actions of iodine, calcium, sulphur, and lysidin bitartrate — a potent eliminator of endogenous toxic waste.

Write for Information.

L-16

Canadian Distributors
ROUGIER FRERES
350 Le Moyne Street, Montreal

Taking *nothing* for granted



GOOD MILK comes to Carnation's evaporating plants. Scientific processing conserves its goodness—as Carnation Evaporated Milk. And then we go on from there.

1. Each plant makes daily laboratory tests of color, curd, viscosity, weight, and fat and total solids content.

2. A *central* laboratory repeats these tests on samples regularly submitted by all plants.

3. The central laboratory also makes frequent bio-assays to verify the vitamin D potency of the milk.

And this is only part of the care we take to make Carnation Milk a product in whose uniform high quality the physician may repose the utmost confidence.

CARNATION CO. LIMITED, TORONTO, ONTARIO

Carnation

Milk

ACCEPTED AMERICAN MEDICAL ASSN.

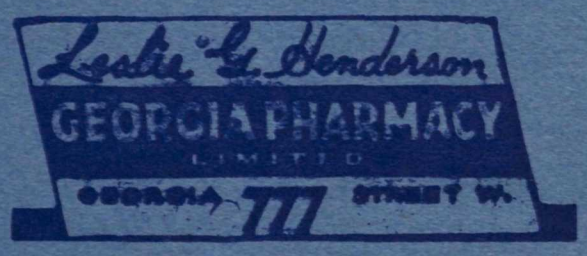
"FROM CONTENTED COWS"

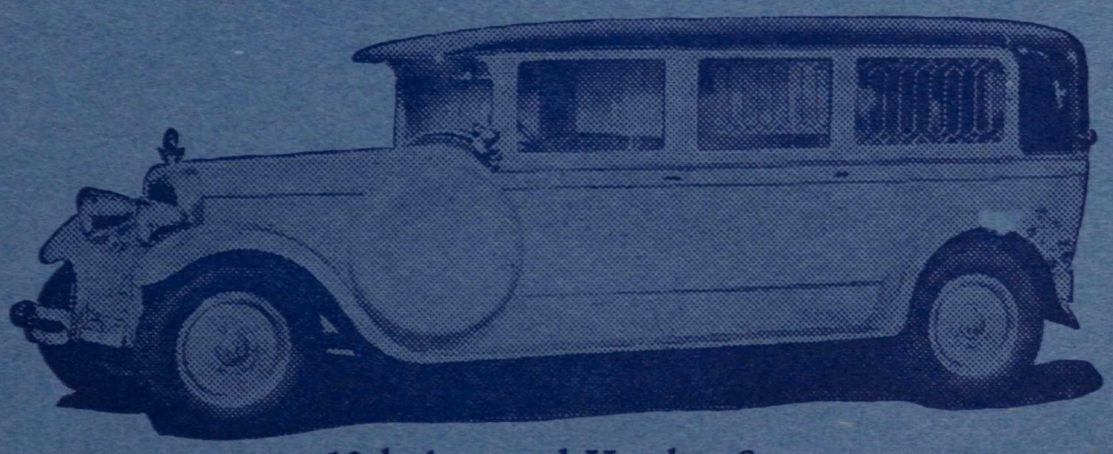
A Canadian Product

Continual Improvement

For thirty odd years Georgia Pharmacy has striven day by day for more perfect service, accuracy, speed, and overall reliability. The confidence in us by the Medical Profession is our reward.

Phone
MArine 4161





13th Ave. and Heather St.

Exclusive Ambulance Service

FAirmont 0080

PRIVATE AMBULANCES AND INVALID COACHES

WE SPECIALIZE IN AMBULANCE SERVICE ONLY

J. H. CRELLIN W. L. BERTRAND

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