The . . .

BULLETIN

of the . . .

VANCOUVER MEDICAL ASSOCIATION

With Which Is Incorporated
Transactions of the

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

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1947
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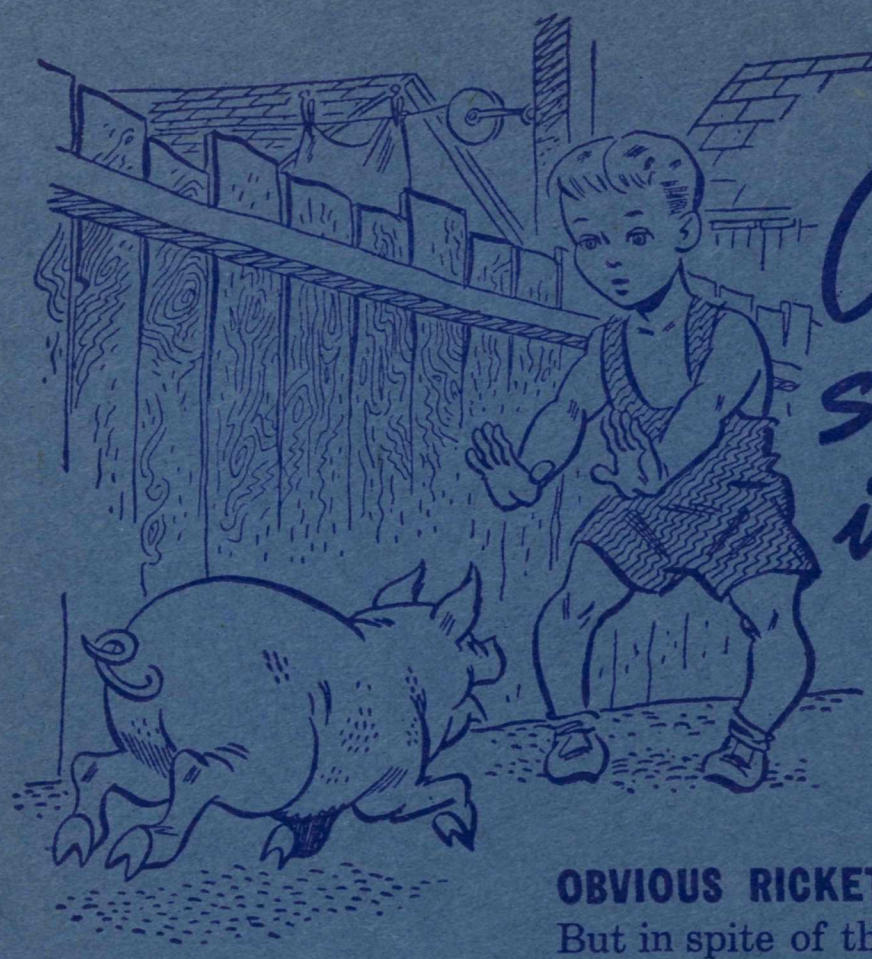

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BULLETIN

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

VOL. XXIII DECEMBER, 1946 No. 3

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

CLINICAL MEETINGS will be held on the third Tuesday of each month at 8:00 p.m.

December 3 GENERAL MEETING. Symposium on Gynecology.
Doctors Leigh Hunt and Gardiner Frost.

December 10 CLINICAL MEETING—Shaughnessy Hospital.

January 7 GENERAL MEETING—Speaker and title to be announced.

January 21 CLINICAL MEETING—Vancouver General Hospital.

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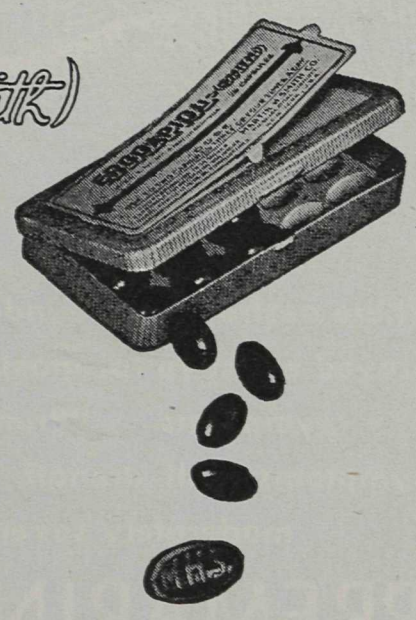

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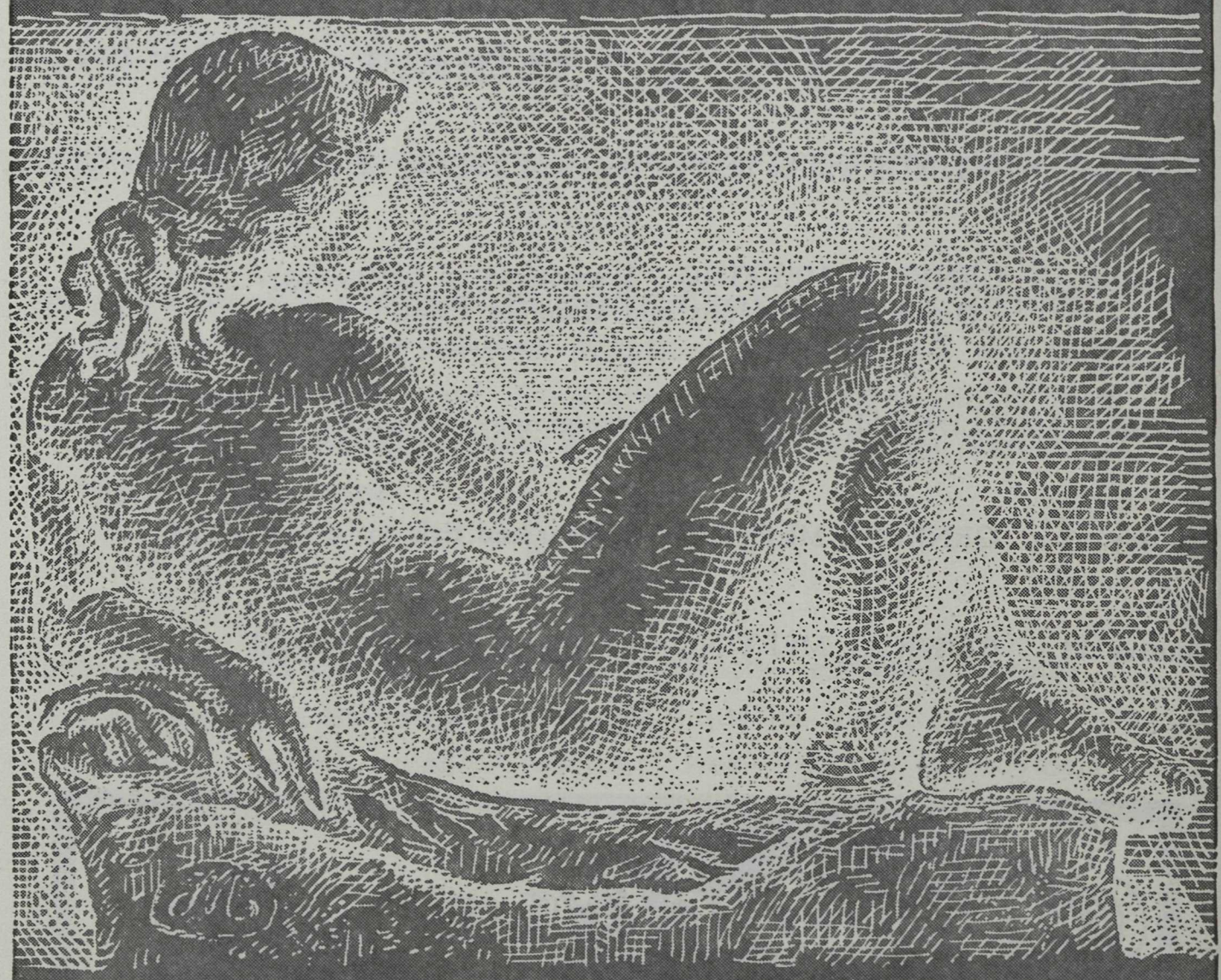

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VANCOUVER HEALTH DEPARTMENT

STATISTICS—OCTOBER, 1946

Total Population—estimated	323,850
Chinese Population—estimated	6,566
Hindu Population—estimated	361

	Number	Rate per 1,000 Population
Total deaths	307	11.2
Chinese deaths	22	39.5
Deaths, residents only	259	9.4

BIRTH REGISTRATIONS:

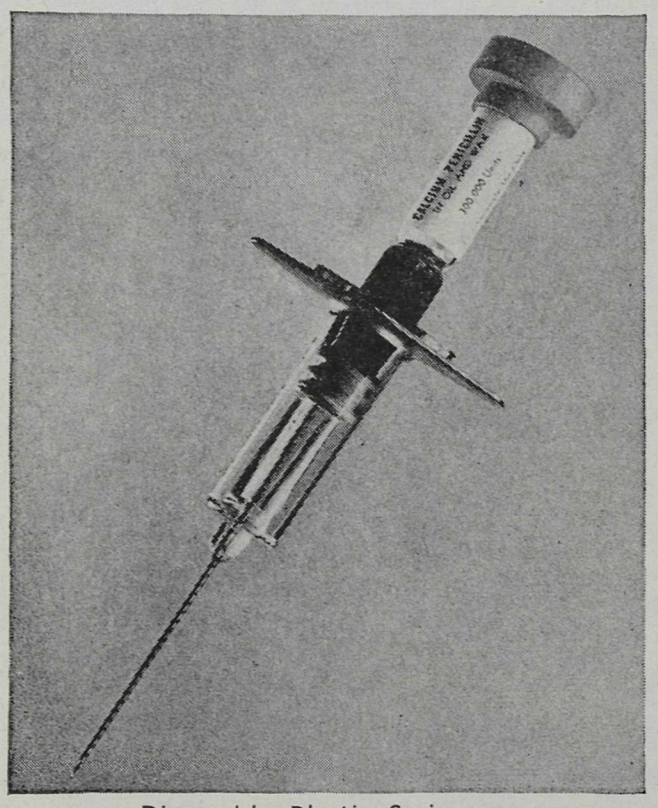
Male	400	
Female	397	
	797	29.0

INFANT MORTALITY:	October, 1946	October, 1945
Deaths under 1 year of age	25	21
Death rate—per 1,000 live births	31.4	30.5
Stillbirths (not included above)	10	8

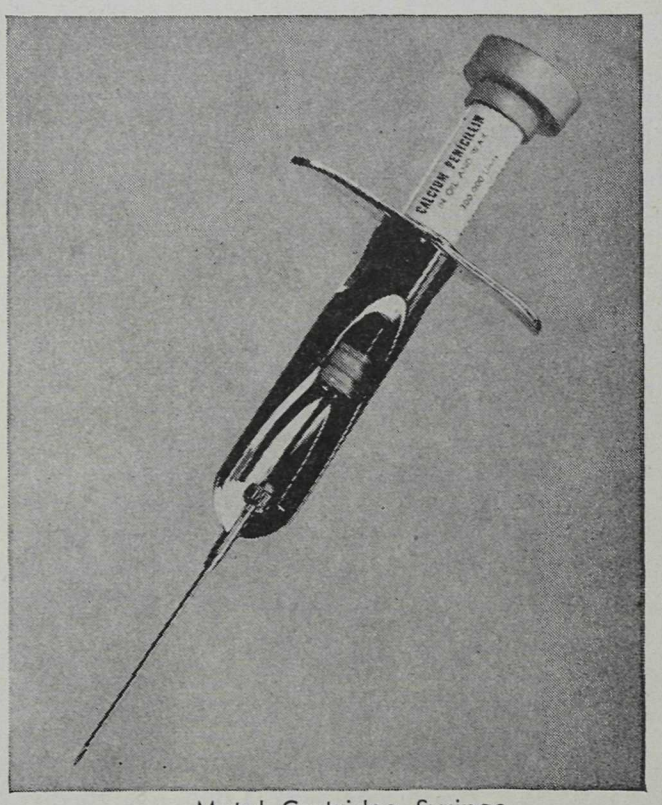
CASES OF COMMUNICABLE DISEASE REPORTED IN THE CITY

	September, 1946		October, 1946		November, 1946	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Scarlet Fever	6	0	10	0	12	0
Diphtheria	1	1	2	1	3	0
Diphtheria Carrier	0	0	5	0	7	0
Chicken Pox	30	0	43	0	73	0
Measles	3	0	11	0	40	0
Rubella	1	0	4	0	3	0
Mumps	62	0	100	0	145	0
Whooping Cough	8	0	0	0	12	0
Typhoid Fever	0	0	0	0	0	0
Typhoid Fever Carrier	0	0	0	0	0	0
Undulant Fever	2	0	0	0	0	0
Poliomyelitis	1	0	1	0	0	0
Tuberculosis	55	7	60	17	53	0
Erysipelas	7	0	1	0	3	0
Meningococcus (Meningitis)	0	0	2	1	2	0
Infectious Jaundice	1	0	0	0	0	0
Salmonellosis	16	0	0	0	1	0
Salmonellosis (Carrier)	0	0	0	0	1	0
Dysentery	0	0	0	0	5	0
Syphilis	104	1	108	2	0	0
Tetanus	1	1	0	0	0	0
Gonorrhoea	210	0	219	0	0	0
Cancer (Reportabl):						
Resident	60	0	81	0	77	0
Non-Resident	29	0	45	0	39	0

TWO CONVENIENT METHODS OF ADMINISTERING PENICILLIN IN OIL AND WAX



Disposable Plastic Syringe



Metal Cartridge Syringe

CALCIUM PENICILLIN IN OIL AND WAX

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DISPOSABLE PLASTIC SYRINGE PACKAGE

Included in this package is a sterile B-D* Disposable Cartridge Syringe, ready for immediate use with a special cartridge containing 300,000 International Units of calcium penicillin in 1 cc. of peanut oil and beeswax. The plastic syringe is discarded after use.

METAL CARTRIDGE SYRINGE PACKAGE

This package includes a B-D* Metal Cartridge Syringe, two sterile 20-gauge needles, and a cartridge containing 300,000 International Units of calcium penicillin in 1 cc. of peanut oil and beeswax. The metal syringe is designed for repeated use with readily changeable needles and cartridges. Replacement cartridges of calcium penicillin in oil and wax may be obtained separately from the Laboratories.

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The Editor's Page

To all its readers throughout British Columbia elsewhere, the Editorial Board of the Bulletin extends wishes for a Merry Christmas and a Happy New Year. The past year has, in some ways, been a difficult one, full of all sorts of strains and stresses, but slowly the skies seem to be clearing, and though we seem to be still very far from the peace we all so earnestly long for, it would seem as if humanity is gradually beginning to see a clearer way to a happier future. Where even a few months ago, there seemed to be nothing but strife and recrimination, a more conciliatory and constructive spirit begins to emerge, and this will ultimately solve the terrible problems left us by the war. May 1947 mark the end of the ebb, and the beginning of the turn of the tide in the affairs of men, which will ultimately, under the Providence of God, lead on to a fortune and happiness we have never known before.

The Bulletin looks forward, in its turn, to better things. We have been fortunate in the past few years, merely to have been able to carry on—but that stage would appear to be definitely past. We have increased in stature, if not necessarily, so far, in grace. Our monthly printing now is some eleven to twelve hundred copies—a considerable advance over the six to eight hundred of some years ago. The number of medical men practicing in British Columbia increases steadily and indeed rapidly—and we have a great number of exchanges.

Hardly a month passes but we receive requests for exchanges from medical publications whose home is a very long way from Vancouver or B. C. Belgium, Sweden, and South America are the latest, and it is with great pleasure that we arrange exchanges with these places. One excellent exchange recently acquired has been with the Mayo Clinic, who send us their Clinical Reports monthly in return for "The Bulletin", at their own request. These reports are well worth reading each month, and are to be found in the Library.

Material for publication comes in at a satisfactory rate—and we are well ahead in this regard. We have been very fortunate in this matter—and the department of Providence that looks after medical journals has looked after us well. We have never quite reached the last drop of oil in the cruise—though at times we have come pretty near it.

Our increased circulation, and the progress of the times, have made our financial problems much easier to solve. We have been getting a steadily increasing amount of the better type of advertising, and the rates have gone up, so that it looks as if our next annual report will be a very good one. Recently the Board has reviewed the advertising columns very carefully, and has cut out certain advertisements that do not seem to be tending to edification.

But our greater prosperity does not mean that we propose merely to sit back and accumulate a large balance—nor do we think the Association, whose publication this is, would want us to do this. We have in prospect certain improvements which would, we think, add to the interest and value of the journal, as well as to its personal appearance. Illustrations, for instance, greatly enhance the general appearance of an article and make things clearer and easier to grasp and remember. Hitherto the cost of these has been rather beyond our means—but now it begins to look as if we could afford them—in a modest way to begin with, but gradually developing as we find ourselves able to use them.

Other ways come to our minds, in which improvements can be made—and the Bulletin be of more use and general interest. If it does not steadily grow in these directions, we shall not have succeeded completely. But it is better, we have found,

to go slowly, and let change become a little overdue, rather than be too eager to anticipate its maturity. Perhaps this is making rather a virtue of the necessity which has hitherto restrained any over-ambitious tendencies we may have had—but we believe that it has been best in our case.

Meantime, once again, best wishes for all happiness and prosperity in the coming year.

THE LIBRARY

LIBRARY HOURS: (Same as last month).

RECENT ACCESSIONS TO LIBRARY—

Surgical Clinics of North America, Symposium on Aseptic Surgical Technique, Gastro-intestinal Surgery, Genito-Urinary Surgery, Thoracic Surgery, October, 1946.

The Medical Annual, 1946.

Penicillin—Its Practical Application, 1946. Edited by Sir Alexander Fleming.

JOURNALS—

Because of wartime restriction the *Journal of the Missouri State Medical Association* and the *Cleveland Clinic Quarterly* have not been received in the Library for the past few years. The Library Committee is happy to announce that these two worthwhile publications have now been resumed on an exchange basis and that arrangements have been made to fill in the missing numbers, so that there will be lapse in the series.

The following new journals are being added, as an "exchange" feature:
Annales Medicinae Internae Fenniae, published in Helsinki, Finland.
Annales de la Facultad de Medicina de Montevideo.
Gaceta Medica de Limà.

UPPER VANCOUVER ISLAND MEDICAL ASSOCIATION ANNUAL MEETING

The 1946 Annual Meeting of the Upper Island Medical Association was held at Parksville on Thursday, November 20th, 1946.

There was an excellent attendance from all parts of the District despite the inclement weather.

Following a very excellent dinner the meeting opened with Dr. G. B. Helem of Port Alberni in the Chair. Scientific papers were given by Dr. H. H. Pitts and Dr. J. C. Thomas of Vancouver. Dr. D. W. Johnstone of the Department of Veterans Affairs and Dr. M. R. Caverhill, Executive Secretary of the British Columbia Medical Association also addressed the meeting.

Elections placed the following in office for 1946-47: president, Dr. H. A. Mooney, Courtenay; vice-president, Dr. P. L. Straith, Courtenay; secretary-treasurer, Dr. E. R. Hicks, Cumberland. Representative to Board of Directors, B.C. Medical Association, Dr. A. P. Miller, Port Alberni.

THE GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE

The George Washington University Department of Ophthalmology is planning the resumption of the Wm. Thornwall Davis Intensive Post-Graduate Course in Ophthalmology, February 3rd-8th, 1947. These courses have been given annually except during the war, when they were temporarily discontinued.

Many teachers of international fame will participate.

The Tenth Annual Post-Graduate Course in Ocular Surgery, Pathology and Orthoptics will be given during the week of January 27th-February 1st, 1947. The Army Institute of Pathology will give the instruction in Pathology under the direction of Colonel J. E. Ash, Medical Corps, U.S.A., Scientific Director of the American Registry of Pathology National Research Council, Army Institute of Pathology.

The Surgery demonstrations will be given by the resident staff under the direction of Dr. Ernest Sheppard, Professor of Ophthalmology. This is a practical course with demonstrations on animal eyes.

For further details of the Post-Graduate Course in Ophthalmology, write to the Secretary, Suite 34, 1801 K Street, N.W. Washington 6, D.C.

We are glad to publish the following letter from the Pharmaceutical Association of B. C. and urge its careful perusal.—ED.

Dr. A. J. MacLachlan,
Registrar,
College of Physicians and Surgeons,
925 West Georgia,
Vancouver, B. C.

Dear Dr. MacLachlan:

During sessions of the Council of this association recently, attention was directed to the fact that a few members of the medical profession in British Columbia are prescribing benzedrine inhalers to alleged known drug addicts.

While some individual cases were mentioned, no final concrete evidence was presented to the Council. It was felt, however, that if a little publicity were given to this situation in the MEDICAL BULLETIN, or if it were brought to the attention of members of your College in some other way that the situation might be corrected.

Anything you can do in this regard will be much appreciated.

Yours sincerely,

PHARMACEUTICAL ASSOCIATION OF THE PROVINCE OF BRITISH COLUMBIA.

FREDERICK H. FULLERTON,
Manager.

FHF:ve

NOTICE

According to the New Medical Act, Section 46 (5), any member who fails to pay his annual dues on or before the 1st of February shall cease to be in good standing.

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Endicott, W. J. (Trail).
McConkey, A. S.
Millar, R. D.

SYMPOSIUM ON RECENT ADVANCES IN PAEDIATRICS

A MODERN RE-EMPHASIS OF THE ROLE OF INFECTION IN PAEDIATRIC DISEASE

By DR. R. A. WILSON

The invitation to share in tonight's symposium, made me suddenly aware that the war had prevented my gaining experience with some of the recent advances in my specialty. However, there are compensations, for in my case it did provide an excellent opportunity to observe the practice of paediatrics under unusual conditions. In Europe, I watched the methods of the French, Belgian and Dutch physicians as much as possible. When I began to think over what the experience had taught me, I realized that I had a subject for tonight's discussion. It had re-emphasized for me the important role of infection in paediatric disease.

The German occupation deprived the European physicians of many of the adjuncts of practice. Serums and hormones and many special drugs were in short supply. Only sulpha drugs were relatively plentiful. Under these conditions, treatment was mostly directed towards the elimination of infection. This emphasized the number of diseases in which infection is either a contributory or sole cause. It was apparent that infection was a prominent factor in most of the common ills of childhood. I came to the conclusion that the role of infection was fundamental, that it was often overlooked and that it required re-emphasis. This is even more important in view of the new weapons we have for the control of infection.

Since my return to civilian life, I have tried to observe what role infection plays in my practice. Here are some figures taken from office, home and hospital cases. I have analyzed 300 new cases. Of these, 74 were normal and 266 were sick children.

300 PATIENTS IN PAEDIATRIC PRACTICE

RESPIRATORY SYSTEM

Acute Tonsillitis	21
Chronic Tonsillitis	20
Pharyngitis	7
Otitis Media	7
Asthma	5
Sinusitis	3
Bronchitis	3
Pneumonia	3
Pneumonitis	1
Primary Tuberculosis	1
Posterior Pharyngeal Abcess	1
	78

CARDIO-VASCULAR SYSTEM

Hypochromic Anaemia	5
Haemorragic Diathesis	3
Erythroblastosis	2
Rheumatic Carditis	1
	11

GENITO-URINARY SYSTEM

Pyelitis	4
Acute Nephritis	3
Chronic Nephritis	3
Circumcision	2
	12

SURGICAL CONDITIONS

Wounds	4
Pes Planus	3
Fracture	2
Torticollis	1
Inguinal Hernia	1
Appendicitis	1
	12

MISCELLANEOUS

Prematurity	10
Debility (cause unknown)	9
Diabetes	1
Parasites	2
	22

GASTRO-INTESTINAL SYSTEM

Gastro-enterospasm	15
Parenteral Diarrhea	14
Gastro-enteritis	6
Mesenteric Lymphadenitis	3
Thrush	3
Constipation	2
Fat Indigestion	2
Pylorospasm	1
	46

NERVOUS SYSTEM

Eneuresis	5
Epilepsy	2
Spastic Paraplegia	4
Tic	1
Breath-holding	1
Anxiety state	1
Vasomotor Instability	1
Chorea	1
	16

SKIN

Ammonia Dermatitis	5
Urticaria	4
Impetigo	3
Eczema	3
Haemangioma	2
Scabies	1
Exfoliative Dermatitis	1
Sclerema Neonatorum	1
	20

INFECTIOUS DISEASE

Chicken Pox	5
Acute Rheumatic Fever	1
Scarlet Fever	1
Infectious Monoucleosis	1
Mumps	1
	9

SUMMARY

Due to Infection	58%

NOTE—During this time, 74 new patients were seen for routine physical examination and diet advice.

It is apparent that the detection and eradication of infection takes up almost 60% of our time. In my opinion, therefore, it should receive a more prominent place in our discussions and should not yield place to the hormones or allergens, vitamins, or the psychosomatic factors.

To illustrate, I will discuss some practical points regarding the detection and management of infection.

(1) Acute pharyngitis accounts for 80% of all the diagnoses made in my house calls. Its symptomatology is very variable for it simulates almost every disease in the book. Sometimes its presence is not readily apparent from the appearance of the throat. In these cases, an injected ear drum or tender posterior cervical gland, may suggest the real diagnosis. It is most frequently confused with teething, Meningitis, Appendicitis, Pneumonia or one of the exanthemata.

(2) Tonsillitis, Otitis or Pyelitis are the common aggravating factors in other diseases such as Asthma, Epilepsy, Fits with fever, Gastro-enteritis, Recurrent vomiting, Rheumatic fever, Purpura, Coeliac diseases, etc.

The detection and control of infection in these cases is of paramount importance. Often the factor of infection is overlooked. When this is done at least half the therapeutic efficiency of the so-called specific remedy is lost. For example, twice the usual amount of insulin may be required to control a childhood diabetic in whom there is a chronic infection. I might further illustrate my point by some case reports.

1. In a recent Epidemic of Gastro-enteritis at the Infants Hospital, of twenty-one cases of severe diarrhea, fifteen were considered to be of parenteral origin and six were thought to have primary bowel infections.

2. In six consecutive recent admissions with a diagnosis of asthma, it was found that an acute pharyngitis and otitis was present in every case. The use of adrenalin and other antispasmodics was useless unless measures were taken to counteract the infection.

3. In some cases, infection may be a factor and yet it is unwise to treat the infection before its location is determined. For example, a fourteen-year-old girl was admitted with fever and abdominal pain. The diagnosis of appendicitis was considered, but since a voided specimen of urine showed some pus cells, the condition was diagnosed as pyelitis and treated with penicillin. The next morning a catheter specimen was clear and it was doubted that she ever had pyelitis. Her subsequent course was rather stormy and the true diagnosis was in doubt. The fact of her having had penicillin before examination of the catheter specimen, complicated the problem unnecessarily.

In conclusion I wish to say that it is not my intention to revive the old theory of Focal Infection. Too many tonsils, teeth and appendices have been sacrificed at this altar already. Rather, I wish to emphasize that infection must be sought vigilantly and eradicated thoroughly before specific measures will be successful. As a clinician I see daily evidence that this point is overlooked and therefore, I am justified in drawing it again to the attention of my colleagues.

As Osler said—"The commonplace is most frequently neglected."

RECENT ADVANCES IN NEO-NATAL PAEDIATRICS

By DR. HAROLD STOCKTON

The welfare of the new generation has been made more secure during the past few years.

Re-emphasis on ante-natal factors is apparent in reviewing recent literature. Certain diseases acquired by the mother will lead to congenital defects in the offspring. Rubella in the early months of pregnancy has led to congenital cataracts in the baby, as shown by observers in Australia and on this continent. Other infectious diseases including influenza and pneumonia have been incriminated as factors in producing cataract, congenital heart disease and even deaf-mutism. This has suggested the use of convalescent serum, or gamma globulin in the case of pregnant contacts or during an epidemic.

Among the more controllable factors which influence the welfare of the child is the anaesthetic used. Caudal anaesthesia has been shown to be the easiest on the child, with ether as a very good second choice.

Morphia seems to have been exonerated from some of the censure that it had been getting. When properly used and not too near the end of labour it is much better than other more dangerous drugs of dubious value. It will cause simple apnoea, but that is all.

The child, having embarked on its extra-uterine career, may find many hazards which threaten it. The first may be *asphyxia neonatorum*. This is a disturbance of the respiratory mechanism which develops during or shortly after birth, in which there are absent or infrequent respirations. A better term is apnoea neonatorum, and the older terms, asphyxia livida and asphyxia pallida are merely gradations of it. Both of these are inherently associated with anoxia. In asphyxia pallida, anoxia may be the cause and the centre is depressed from the lack of it; or anoxia may be an effect when the centre is concussed, damaged or immature as in the case of a premature infant. Under these conditions the child is pale and shocked. In asphyxia livida the child is anoxic from an obstruction in its airway—but it is warm and has a good pulse. The treatment in either case is pure oxygen, not carbon dioxide and oxygen. In the livid child there is already a high carbon dioxide tension, and in the pallid child the centre is injured and should be literally bathed in a high concentration of oxygen. Further treatment should include a warm bath, *not cold and warm baths alternately,* and effective aspiration of mucus from the throat and trachea; wiping out mucus from the mouth with gauze is ineffective and harmful. Stimulants such as lobelin and coramine which we have all used are of rather questionable value. If they are used in large enough doses to do any real good, they may do harm. Experimentally in animals they have been shown to have a very narrow therapeutic safety zone.

Intrauterine breathing has been observed for over a hundred years, but a few years ago the theory was brought forward that extra-uterine breathing was merely a continuation of this and that asphyxia or apnoea neonatorum was not a failure on the part of the baby to take its first breath but an interruption in a pre-ordained plan.

More recently Snider, the original proponent of this theory, has re-emphasized this concept, and by further experimental work shown that some aspiration of amniotic fluid into the terminal alveoli may be a physiological event.

The best way to supply oxygen to the baby is by direct intra-tracheal insufflation, e.g. by the Flagg technique. This should be done by someone skilled in this method.

Subdural haematomata are being recognized more often now. Important symptoms are (1) Failure to gain in weight; (2) Irregular temperature; (3) Irritability, convulsions and paralysis, and (4) Enlargement of the bi-parietal diameter of the skull. Finally, an encephalogram may help, but the demonstration of the clot by puncture of the subdural space is the final step in the diagnosis. This is also the preliminary step in therapy, and is repeated until a more adequate removal of the organised clot is possible.

Haemorrhagic disease of the newborn is a condition in which there is spontaneous or prolonged bleeding. It occurs from the second to the fifth day, and is associated with a period of low available prothrombin. Typically bleeding occurs spontaneously or from very insignificant trauma from the skin, the mucous membranes and into the viscera. In the early days of Vitamin K therapy large doses were given to the mother early and often. More recently it has been found that an adequate dose after the onset of labour would prevent this condition.

If primary trauma and infection are excluded the incidence rate is only about 0.5%.

There is not a complete consistency between the tendency to bleed and the prothrombin level of the blood and Anderson insists that there must be still another factor as yet unexplained. Vitamin K should be given (1) In any bleeding state of the newborn. (2) To a baby after a long and difficult delivery or (3) To a premature. In active treatment of the disease Vitamin K should be given intravenously or intramuscularly. The aqueous synthetic preparations are the best. Intravenous whole fresh blood will

control the bleeding in the two to four hour interval before Vitamin K effects the prothrombin level. Intravenous blood is preferable to intramuscular blood and Anderson insists it is the only effective way of giving it.

We cannot leave this part of the work without at least a passing reference to the Rh factor and erythroblastosis foetalis. In spite of the fact that 13% of all marriages unite Rh positive men with Rh negative women, erythroblastosis foetalis occurs only in about .01 to .02% of all births.

The reasons for this discrepancy are (1) There are variations in the permeability of the placenta, (2) It may take more than one pregnancy to work up an adequate degree of sensitization in the maternal plasma, (3) A significant number of cases may be so mild as to escape recognition, (4) Men who have inherited the Rh factor from only one parent transmit it according to the Mendelian law and many babies escape, (5) The age of the foetus when the Rh antibodies act on it may be important, and (6) The active potency of the Rh antibodies. The incidence of erythroblastosis foetalis and the degree of the antigenic titre in the maternal plasma are not necessarily parallel.

The signs are well known. Severe jaundice at, or shortly after birth. The placenta may be of normal size or enlarged. There is profound anaemia. Generalized oedema develops only in those who are stillborn or die shortly after birth. The blood, instead of containing but a few nucleated blood cells may contain ten thousand to a hundred thousand during the first twenty-four hours, which have been feverishly pushed into the circulation. If the jaundice is intense a deep staining of the nuclei of the brain may result. This is known as kernicterus. The basal nuclei is the chief site of involvement but also other nuclei and even the cerebral cortex or the anterior horn cells. This may give rise to symptoms after birth, such as tonic or clonic convulsions. Fortunately few survive this stage. Those who do become mentally retarded, are subject to convulsions, and have generalized chorea-athetoid movements. Treatment of erythroblastosis foetalis scarcely needs a word. It is conceded that the quickest and most satisfactory results are obtained with Rh negative blood other than the mother's. Recently red blood cells from the mother have been used after washing in saline and being re-suspended in saline. The baby, of course, should not nurse because anti-Rh agglutinins may be transferred in the breast milk.

In conclusion I would like to refer to the work done by Loehle and his associates. By a process of rather brilliant reasoning he concluded that human plasma by mouth would be a good nutrient for the neo-natal child. He recognized the fact that the newborn absorbes protein very well and thrives on a formula high in protein. He compared plasma to colostrum and showed that they were very similar except that the latter contains fat which is undesirable as a food for babies. Colostrum, not milk is the first food substance of predilection. In this way the human animal differs from all others. This must be by design and not by accident.

Plasma produces weight gains in the newborn and tends to prevent initial loss of weight. It decreases the tendency to vomit and seems to be non-irritating to the gastric mucosa. It may be used alone or with other types of feedings. It has been used for feedings in pyloric stenosis. It is very well suited to the premature and produces a steady gain in weight. It has been used in neo-natal shock and seems to be quite effective by mouth. It may supply hormones such as estrogen, vitamins and immune bodies to the infant.

Some of us have used it here with gratifying results although it is too early to arrive at any mature conclusions. Certainly, it seems like a very logical procedure.

AGRANULOCYTIC ANGINA TREATED WITH PYRIDOXINE HYDROCHLORIDE

By E. S. JAMES, M.D.

Agranulocytic angina is defined as an acute, often fulminating disease, characterized by extreme leukopenia, neutropenia, and accompanied by ulceration of skin and mucous membranes, and often by high fever, leading to death in a great majority of cases when untreated.

The etiology was at first thought to be due to an overwhelming sepsis, but it was noted by Kracke and others that the characteristic haematologic changes often preceded the sepsis by several days and that the latter was the result rather than the cause of the condition. Kracke in 1932 noted that most patients had a history of having taken various drugs containing the altered or modified benzene ring. Madison and Squier subsequently confirmed this clinically, and it was observed by various clinicians that the condition frequently followed the taking of amido-pyrine. Later many remedies used by the public and physician, including amytal compound, midol, allonal, cibalgin, etc., have been incriminated. Gold therapy has also resulted in agranulocytosis. More recently many reports have been made of the sulphonamides, and since its appearance two or three years ago, thiouracil, as etiological factors.

Various authors report that 80% of the cases occur in females. The disease is found to be rare in children, and the incidence rises rapidly after 25 years of age.

The pathologic changes in the bone marrow appear to cause a maturation arrest in the myeloblast stage. If death occurs after a longer illness, i.e. in the second week, a hypoplasiac of the myeloid tissue is found, with appearance of lymphocytes in abnormal numbers. The red cells and megakaryocytes are not materially affected.

The usual signs and symptoms are prostation, high fever, headache, chills, and malaise. The throat is usually ulcerated, often with enlargement of the cervical nodes. The temperature is often up to 103° and may be 106° F. The spleen is not usually enlarged, nor are the other superficial lymph-node groups.

The leukocyte count should be less than 3000 before the diagnosis can be made. The neutrophiles are greatly reduced in number or entirely absent.

In making the diagnosis, aplastic anaemia, sepsis, diphtheria, and aleukaemic leukaemia must be ruled out. The latter condition is the most difficult to distinguish, and I remember one case which was not diagnosed as aleukaemic Leukaemia until it reached postmortem. Leukemia is distinguished by thrombopenia, progressive anaemia, and immature white cells.

Treatment: Various remedies for agranulocytic angina have been described, including desiccated yellow bone marrow taken orally. Pentonucleotide has been used for the past fifteen years. Jackson reported a series of 390 cases treated with this drug, with a mortality rate of 35%, as compared with 76% in untreated cases. The same investigator states that blood transfusions are not indicated unless there is a coincident anaemia. Obviously, all drugs suspected of causing the disease should be withdrawn. Codeine may be used to afford symptomatic relief, if necessary.

Sebrell and his associates demonstrated that folic acid, which is a component of vitamin B complex, would prevent and cure neutropenia produced in rats by the administration of sulphonamides. Vilter and his co-workers gave pyridoxine intravenously to two cases of pernicious anaemia in relapse and three cases of pellagra. The rationale for this procedure was that pyridoxine is a constituent of liver and yeast, both of which are effective in these conditions. Improvement occurred in 48 hours, and although there was only a 5% reticulocyte response, there was a marked increase in the leukocyte count, especially the granulocytes.

This led Cantor and Scott to use this agent in treating three patients with agranulocytic angina, which had developed after the use of three different drugs, viz. sulpha-

thiazole, acetyl salicylic acid, and thiouracil. A 10% solution of pyridoxine hydrochloride (vitamin B6) in normal saline was used, and 150 to 200 mgm. of the drug was given intravenously daily. In each case the temperature began to fall within 48 hours and the granulocytes to increase at about the same time.

I have recently had the opportunity of using this drug on a small child with agranulocytic angina.

Judith L., aged 19 months, was admitted to the Infants Department of the Vancouver General Hospital on May 5, 1946, because of listlessness and anorexia of three days duration. On the evening of admission she had one watery stool. Shortly after this she had a chill followed by two convulsions. The family and past histories were irrelevant.

Examination revealed a well nourished child, who was drowsy and irritable, and appeared acutely ill. The temperature was 104° F. There was a mucopurulent nasal discharge present. The mucosa of the buccal surfaces was covered with a maculopapular eruption, which was also present on the skin of the face, trunk, and upper extermities. No adenopathy of the superficial lymph nodes was present. The chest, abdomen and nervous systems revealed no abnormalities.

The urine remained negative throughout the illness, except for showing 1+albumen from time to time. The blood revealed 4,230,000 R.B.C.; Hb. 81%; 4,100 W.B.C., of which 8% were neutrophiles, 72% staff forms, 10% myelocytes, 10% lymphocytes, and 5% monocytes.

The following day the temperature reached 106° and the child had ten loose stools. A blood culture taken on this date subsequently yielded gram-positive cocci in chains resembling streptococci.

The treatment from admission to May 11th consisted in aspirin, 8 gr. daily in divided doses. A transfusion of 100 cc. plasma was given. followed by interstitials of glucose and saline twice daily. The day the blood culture report was returned, sulphadiazine therapy was initiated, gr. 30 daily, in four divided doses, with 10,000 units of penicillin 9. 3h intramuscularly. The sulphadiazine was discontinued on May 13. Up to this date the temperature had risen daily to 105. Meanwhile stool cultures were returned positive for Salmonella Newport. For this reason she was removed to the Infectious disease Hospital.

There was no further diarrhoea after May 13, but between admission and August 5 she had 23 positive stool cultures. After the latter date they were consistently negative. Subsequent blood cultures taken after May 13 were repeatedly negative. In spite of this, the temperature rose to 105° and sometimes to 106° nearly every afternoon. During May the eruption on the face and trunk became pustular and some of the lesions had broken down completely and formed punched out ulcers. The pus yielded a staphylococcus aureus on culture, which was insensitive to penicillin. During this time the W.B.C. ranged between 4,000 and 7,000, but the red cells dropped to 3,000,000, with the Hb. 64%. The pallor however, was out of proportion to the blood picture. A transient improvement was noted following a blood transfusion of 300 cc., but the child's colour was unchanged. Sulphadiazine 30 gr. daily in divided doses was begun on June 9 because one of the ulcers on the trunk was enlarging, and was now the size of a fifty cent piece, and discharging a thin, glairy fluid. No improvement was noted, so the drug was stopped after two days. Because of the lack of pus in the skin lesions and their rapid extension, agranulocytosis was suspected. Five days after the sulphadiazine was stopped the W.B.C. was 3,000, and there were only 4% granulocytes present with no young forms. The Hb. was 62%.

The temperature now reached 106° every day, and the patient was becoming semi comatose, and her condition was desperate. 250 cc. of citrated blood were given on June 18 with no apparent effect. On June 21 the W.B.C. was 1050 with 3% granulocytes and no young forms. The blood culture was again negative.

100 mgm. of pyridoxine hydrochloride was given intravenously that day, and daily for eight days, and every second day thereafter for three more doses. The second day

of therapy the W.B.C. was 2850, with 1% granulocytes, 16% monocytes, and 82% lymphocytes. The following day the count was 3000, with 4% granulocytes, 3% of which were young forms. The white blood cells increased daily until after a week, on July 2, they numbered 16,000, with 30% granulocytes. During this period of therapy the patient's improvement was dramatic. She became afebrile on July 1, with no subsequent rise of temperature, and by this time was sitting up in bed playing. Her colour was improved and her appetite voracious. In all she received 1200 mgm. of pyridoxine. Frank pus appeared in areas of ulceration after about a week of therapy, and these began to heal rapidly. The largest area had lost too much epithelium to heal completely and Dr. Langston subsequently removed the ulcer surgically and sutured the edges.

The patient was discharged from hospital on September 1st in excellent condition.

Although one can claim little, if anything, for a therapeutic agent when apparent success is achieved in one case, it will be of interest to carry on this investigation, and to see whether pyridoxine will become important in the treatment of this serious condition, or whether it will prove useless and soon be forogtten.

RECENT ADVANCES IN THE ADMINISTRATION OF ELECTROLYTES

By DR. A. F. HARDYMENT, M.D.

To discuss, in a few short moments, the recent advances in administration of electrolytes to infants, is no easy task. It is a subject which has always been very confusing, especially to the average clinician, who finds himself lost in a morass of complicated biochemical and physiological facts. The biochemists and physiologists do not always agree, nor is everything known about the facts. Recently, Darrow[1,2] and his confreres at Yale have thrown new light on the problem, and it is probable that a definite step forward has been taken. Before telling you of his work, a brief review of our knowledge to date and of our present practices, would probably be useful. To keep this paper on a practical level is my aim, but, nevertheless, it is necessary to begin by reviewing some physiochemical points.

Electrolytes are substances whose molecules dissociate in solution into positive cations and negative anions, and our body fluids are made up of solutions of such electrolytes. The maintenance of the balance of these electrolytes and the resultant constant pH of body fluids is all-important, and any disease that upsets this balance, if the degree of upset is sufficient, is accompanied by symptoms and signs. Unless nature (or we helpers of nature) is able to restore the balance, the patient's internal environment becomes such that he can no longer survive.

This is specially true of the youngest age group, of which I wish to treat. This acid-base balance, as it is called, is maintained by various methods, among the most important being three which have been specially studied. First, the buffer system of the blood; secondly, the removal of carbon dioxide by the lungs; and thirdly, the elimination of fixed acids by the kidneys. Pathological swing of this balance to the acid side is commonly called acidosis, a term, by the way, which is now coming into disrepute but which we might as well use until a better one comes along. The causes of this condition, briefly, are these: 1. Ketosis, found in Diabetes Mellitus or starvation, in which ketone bodies are produced by faulty metabolism of fat. 2. Extensive pulmonary disease causing inability of the lungs to remove carbon dioxide. 3 Interference with kidney function, with inability of the kidney to wash out fixed acids. This interference with kidney function can be caused either by local kidney disease or by dehydration. 4. Excessive loss of base by the bowel in diarrhoea. The pathological swing of this balance to the alkaline side is similarly called alkalosis, and can be caused by (a)

over-ventilation of the lungs, such as in crying or certain central nervous system lesions, when an excess of carbon dioxide is removed from the circulation, and (b) in vomiting due to high obstruction, such as in pyloric stenosis, when large quantities of acid are lost from the stomach. We should note here the frequently repeated admonition, that acidosis and alkalosis are not primary diseases but, rather, symptoms of disease, and should beconsidered as such. How are we going to diagnose these conditions?

1. The physical appearance of the patient, where we try to recognize the already well-known appearances of either acidosis or alkalosis. 2. By study of the urine, and, without going into detail, it is now well recognized that this alone is not satisfactory, as urine findings are often very misleading. That is to say, there may be, for example, an excess of acids in the urine without acidosis being present; or renal infection may make the urine alkaline in the presence of acidosis. 3. By an estimation of the carbon dioxide combining power of the blood plasma, a test which is difficult in infants because of the amount of blood necessary to do the test. 4. By an estimation of the pH of the blood. This last test, again, is difficult to do in infants because of the amount of blood necessary.

From the practical standpoint, then, in treating our infants here, it would seem apparent that we must still base our diagnosis of acidosis (or alkalosis) in cases of diarrhoea and vomiting in infancy on our impression of the patient's physical appearance, and on our knowledge that acidosis always intervenes if the infant is seriously enough ill. We must remember, however, one confusing factor and that is that the infant with diarrhoea and vomiting has the factors present which can produce both acidosis and alkalosis simultaneously, and, therefore, we are faced with trying to decide which is present. Also, the factor of dehydration comes into play, which, of course, may produce acidosis itself. I would refer you to Butler's[4] article for his remarks on the clinical appraisal of dehydration.

So far, then, in this discussion, we have arrived at the obvious conclusion that in treating our infants we must replace water loss from dehydration and either base or acid loss as a result of the diarrhoea or vomiting. There is now another factor which makes Darrow's work, to which I earlier referred, so important. Just what salts are lost in these cases? We know that chlorides, sodium, potassium, magnesium and traces of other ions are lost. Hitherto, we have been replacing water loss by the use of either NaCl solutions or glucose solutions and have been depending upon the administration of NaCl solution to correct both acidosis and alkalosis because we have had the comforting knowledge that the functioning kidney is able to selectively excrete either basic sodium or avoid chloride, whichever is necessary to achieve balance.

An advance in treatment of acidotic dehydrated patients has been the recent use, in the first 24-48 hours, or until the kidneys are functioning well, of 2 parts of 85% NaCl with 1 part of 1/6 molar sodium lactate. This solution tends to correct acidosis and the Na and Cl concentrations in this mixture approximate those of normal plasma.

Since the turn of the century, we have had various articles written about the special importance of the loss of potassium, that ion which is so important to the life of the cell and which is the important ion present in intra-cellular fluid. Because of this work, various other solutions for parenteral use have been introduced, such as Ringer's solution and Hartmann's solution, which is Ringer's solution with sodium lactate added. These have been used to aid in the correction of imbalance by supplying not only NaCl but also potassium and magnesium and alkali. However, clinical experience almost universally has shown that the use of these solutions has not been any more effective than the use of ordinary physiological NaCl. Nevertheless, the use of Hartmann's solutions is recommended, as "this solution has the theoretical advantage that it does not require the kidney to remove excess of Cl which salt solution provides".[3] Note, in this connection, that Butler states that "Ringer's solution contains so few of the intracellular electrolytes that its administration accomplishes little more than giving an unwarranted feeling of satisfaction to the physician and causing expense to the hospital or patient."[4]

In Great Britain there has recently been the feeling that NaCl, or any of the other solutions named, should not be used at physiological strength for any more than 24 hours, and, if an infant is to be kept on continuous intravenous fluids for more than that period, half-strength physiological solution should be substituted. It is thought that, by the end of 24 hours, the kidneys will be overloaded in their work, and that too much electrolyte will be retained, with the result that oedema may occur. This may prove to be an advance in the administration of electrolytes to infants. At any rate it reminds us that it is easy to give the patient too much NaCl when attempting to replace water loss.

In spite of the advances in the treatment of infants by the intelligent use of the solutions which I have just discussed, there have always been those patients so seriously ill that they seem to be in what might be termed an irreversible state, and, although we cauld satisfactorily cure their dehydration and their acidosis or alkalosis to our clinical satisfaction and even to our laboratory satisfaction, they went on and died in spite of that satisfaction. Darrow[1 2] has proposed that this is due to loss of potassium, and he has suggested the use of what are relatively large doses of potassium chloride, by our previous standards, in an attempt to replace the loss. This has not been previously attempted for two reasons—1. It was known that the use of potassium intravenously was a dangerous proceeding because of its effect on the heart. 2. Because the cell membrane was supposed to be relatively impermeable to the passage of the potassium ion. Theoretically it was not considered to be wise or of any value to give potassium in large doses to the patient. Darrow feels that he has conclusively proven this second idea to be wrong and he also feels that he has demonstrated that, intelligently used and properly controlled potassium chloride can be used without deleterious effects on the heart. The solution is made by adding 2 grams of potassium chloride, 3 grams of sodium chloride, 250 cc. of 1/6 molar sodium lactate to 500 cc. of water. It has been used at the Massachusetts General, the Boston Children's, and the Montreal Children's Memorial Hospitals.[5] Darrow's cases have shown dramatic response[2]. To my knowledge, no more recent paper has been published on the subject, but I am sure we can look to finding, in the next few months, many papers in the paediatric literature on the use of this solution.

The following are the practical points in connection with its use: 1. It should never be used as the beginning treatment on admission in severe cases, until it is well established that the kidneys are functioning. 2. Blood, or blood plasma, together with an equal amount of physiological saline, should be started intravenously until urine is excreted. 3. Then, during the rst 24 hours, 80 to 150 cc. per kg. of body weight of this solution is given intravenously in from 8-12 hours. (It is suggested that "subcutaneous infusion is preferable. If given intravenously, a slow drip requiring 4-5 hours for 15 cc. per pound should be used"[3]). At the same time, enough 5% glucose is given to make the total water intake from 150-280 cc. per kg. body weight. 4. After the first 24 hours, the amount is decreased so that 20-50 cc. per kg. body weight is used with sufficient glucose to make a total of 100-150 cc. per kg. 5. As soon as food is introduced by mouth, 1-2 grams of potassium chloride are added to each day's feeding. 6. In the latest cases treated by Darrow, the solution was given intravenously for only 24 hours, and, subsequently, given by mouth, in the form of ⅓ of the solution to ⅔ glucose to 150 cc. per kg. body weight. The original cases were followed closely by repeated electrocardiagrams to establish the margin of safety in regard to the heart.

The solution is now used without routine electrocardiography. It is not claimed that the length of illness is decreased, but it is claimed that the patients look better quicker, and that many, who previously would have died, have been saved. About 10% of patients treated developed an intense erythema, followed by desquamation, which did not affect their course. The solution is easy to make and deserves clinical trial. It may be that we have one more weapon in our armamentarium in the fight against that sometimes dreadful disease, diarrhoea and vomiting in infancy.

In conclusion, the articles of Butler and Talbot[4] have been quoted freely, and they are recommended for close study to those interested in this subject. Also, it should be explained that reference to administration of amino-acids, vitamins, etc., has been intentionally omitted.

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Vancouver General Hospital Section

SOME OBSERVATIONS ON STREPTOMYCIN IN TUBERCULOSIS

By G. D. Saxton, M.D.

I have recently had the opportunity of observing some cases of tuberculosis under treatment with streptomycin. They were under the control of Dr. Herishaw of the Mayo Clinic and formed part of a series of 100 cases which were being treated at three different centres in the United States for the purpose of evaluating streptomycin in tuberculosis. The results in this small series were so promising that the treatment of a further group of 1000 cases was being planned. Funds were available for this purpose amounting to some millions of dollars. This in itself would suggest that the investigators had sufficient faith in the usefulness of the drug to warrant an expenditure of that magnitude, and observing some of these cases it is difficult not to become enthusiastic over the promise that streptomycin seems to give.

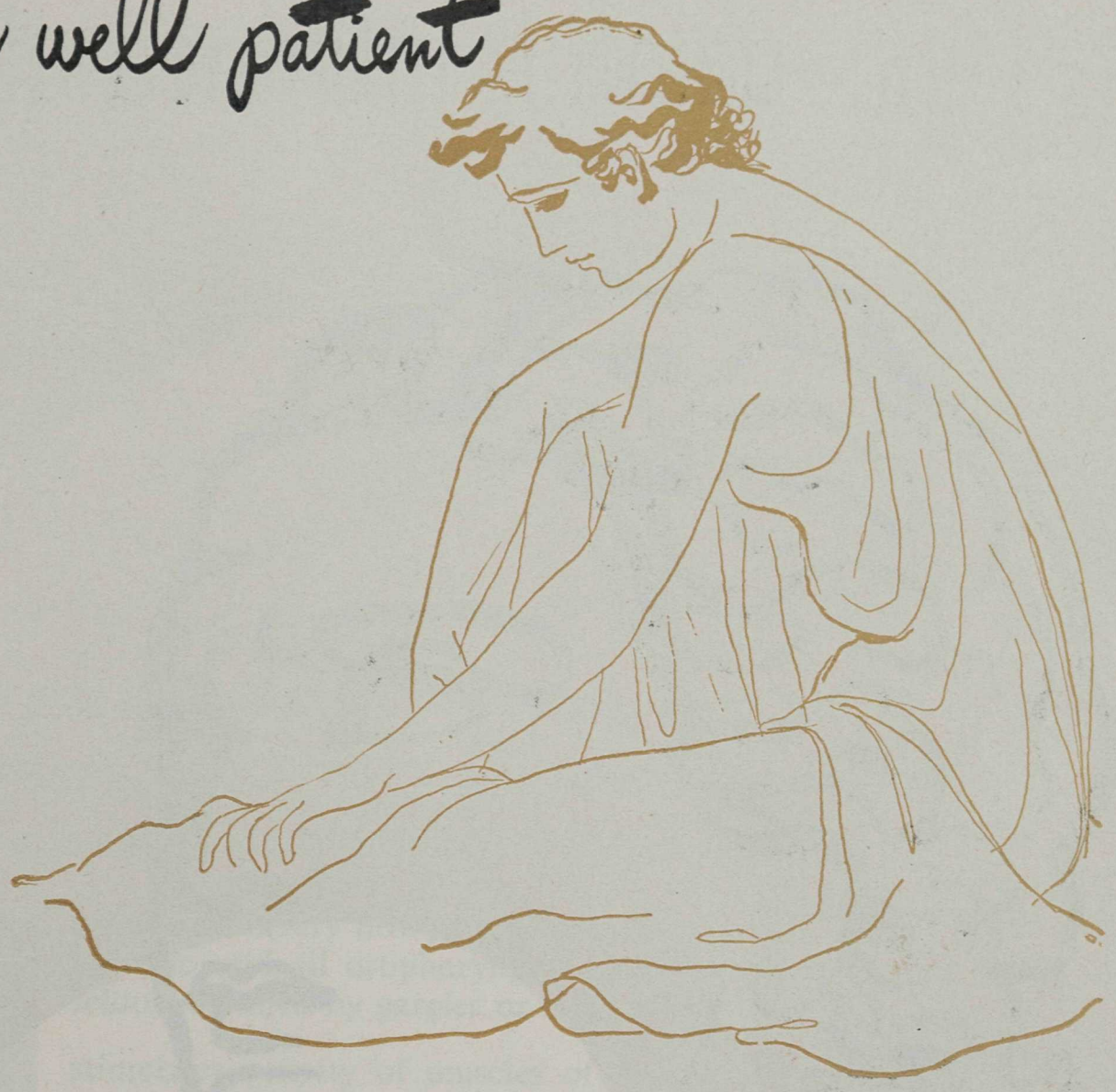
The assessment of a therapeutic aid in tuberculosis is notoriously difficult. Advancing cases of pulmonary disease will halt and heal, cavities will close unexpectedly, even miliary tuberculosis has been known to become arrested. We have all seen x-rays of individuals who show extensive healed disease who were never aware that they had had tuberculosis. Renal disease in rare instances becomes arrested and heals. But as far as I know no proven case of tuberculous meningitis has recovered spontaneously. Obviously if streptomycin were used coincidentally with a rise in the patient's natural resistance it would be given undue credit. Then only by the observation of a large number of cases would its true value be found. The investigators are well aware of these facts and are very modest in their early claims for streptomycin.

Bearing in mind the nature of the disease I would like to give short accounts of several cases, the results of which seemed to me more than mere coincidence.

1. *Miliary*: A youth of 18 had a tuberculous epididymis removed a year previously. He developed clinical miliary tuberculosis with typical x-ray appearance of the lungs and toxicity. Streptomycin was commenced intramuscularly. Under therapy his temperature was normal in a month and in two months his chest x-ray was clear.

2. *Laryngeal*: A middle-aged woman had gradually progressive laryngeal tuberculosis until at commencement of treatment the cords were extensively ulcerated and

for the well patient



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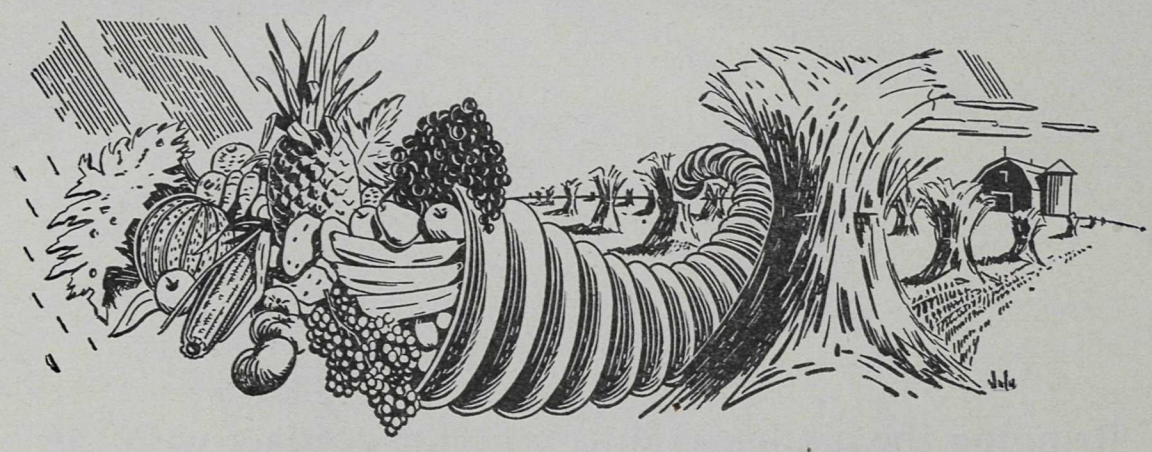

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To preserve the thiamine hydrochloride from the known destructive action of iron salts, Dietary Supplement B.D.H. is presented in two parts—the vitamins in capsules and the minerals in tablets.

Despite the wide range of 'protective' foods available, dietary fads, unwise self-selection, hastily prepared and irregular meals adversely affect the nutritional status of all age groups.

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swollen, and the voice was lost. The tissue was proven by biopsy and photographs of the larynx were taken for record purposes. In two months under nebulization and intramuscular injections, the acute process had subsided; the cords while scarred were healed and the voice was reasonably normal. An infiltrating lung lesion which was being followed by x-ray was decreasing in size.

3. *Tracheo-Bronchial*: A nurse with a previous history of pulmonary tuberculosis employed in a sanatorium developed a very acute infection of the tracheo-bronchial tree with a highly positive sputum. She was treated by nebulization and intramuscular streptomycin. There was rapid clinical improvement although at the time of my observation an occasional positive sputum was still present.

4. *Renal*: A youngster of 9, with bilateral renal tuberculosis, was under treatment for a period of nine months. At the end of that time the disease was considered to be healed and one kidney, being non-functioning, was removed surgically. No pathological evidence of tuberculosis was apparent in this kidney; it was just a scarred and useless organ.

5. *Chronic Fibro-Caseous Pulmonary Disease*: A young woman with extensive left pulmonary tuberculosis with multiple cavities and broncho-stenosis had fibrosis and arrested disease in the right lung. After a period of four weeks on streptomycin the left lung was removed. At operation fluid was present in the pleural space with fibrin on the pleural surfaces. Streptomycin therapy was continued post-operatively. A small spread on the right side occurred after operation but this was of no consequence and cleared rapidly. To me the most striking feature of this case was the failure of the patient to develop a tuberculous empyema—a complication which would seem to have been inevitable without streptomycin.

6. *Meningitis*: A man of 30 who had had a testicle removed a few months previously for caseous tuberculosis was admitted to hospital stuporous, with a rigid neck and with a high lymphocyte count in the spinal fluid. The diagnosis of tuberculous meningitis was assumed and intrathecal and intramuscular streptomycin commenced at once. The improvement was striking; in a few days he was conscious and in two weeks was clinically well. Streptomycin was continued for a six months period. He was completely well, the spinal fluid was normal and there were no neurological signs or symptoms. In this case the precaution was taken of sending the spinal fluid for guinea pig inoculation and culture to two different laboratories. In all cases a positive result was obtained, proving beyond all doubt the accuracy of diagnosis.

The earlier results in the treatment of meningitis were disappointing, this being due apparently to lateness in commencing treatment. While there were records of survival in some cases, neurological signs of considerable severity were present. The fatal cases showed that the meningitis had been controlled but that a tuberculous encephailitis had developed. This is understandable when the ability of the various tissues to take up streptomycin is analysed. No streptomycin passes to the brain tissue. A meningeal infection spreading by contact to the brain would be uninfluenced by either intrathecal or intramuscular injection.

Promising as streptomycin appears to be there are several serious drawbacks:

1. *Duration of Treatment*: The present opinion of the investigators is that a six months period of treatment in such a chronic disease as tuberculosis is necessary.

2. *Cost*: The previous cost of the drug was $25.00 per gram or million units. A patient receiving 1.5 to 3.0 grams per day would incur an expense of $6,000 to $12,000. I have since heard that the price has dropped in the United States to $8.00 per gram. The cost is still formidable.

3. *Reactions*: *a. Histamine-like reactions* consisting of headaches, flushing of the skin, nausea and vomiting are frequently seen. They are not serious but are disagree-

able to the patient. They may be due to impurities in the preparation although with crystalline streptomycin they also occur.

b. Sensitization reactions shown by skin rashes and fever. These have not been serious and are also probably due to impurities. They frequently disappear on changing the particular batch that is being used.

c. Neurological disturbances. A curious disturbance of function of the vestibular apparatus with vertigo is a frequent and distressing complication. In Hinshaw's experience the time of onset has varied from the first days of treatment to after several weeks. One observer reports its onset between the 17th and 27th days in nine out of ten cases which he had treated. In earlier cases it was used as a signal to discontinue treatment. Recently Hinshaw has stated that recovery is about as rapid with continuation as with the drug's treatment. Apparently permanent damage is done but the patient accommodates to the loss of his sense of balance by sight and muscle sense. Tinnitus and deafness occur rarely but only in those conditions such as typhoid and meningitis that might be the primary cause.

4. *Difficulties of Administration*: An intramuscular injection every three hours day and night for six months becomes very trying. There is more local pain and more reaction then with penilillin. Recently Hinshaw has been utilizing a smaller needle and injecting into the subcutaneous fat. But this lesser needle pain is compensated for by more local reaction. The routine with nebulization has been to dissolve half a million units of streptomycin and 200,000 units of penicillin in 20 c.c.s of water. Two c.c.s of this mixture is inhaled as a vapour ten times a day. Daily intrathecal injections for the first several weeks in the treatment of meningitis becomes quite a chore.

Accepting the premise that streptomycin does have a suppressing action on the tubercle bacillus, what can we look forward to in the future? Obviously we cannot expect to regenerate tissues that have been destroyed by such a chronic necrosing disease as tuberculosis. I have cited cases that have apparently responded to the drug. I have not mentioned Hinshaw's five out of six chronic empyaemas that showed no response whatever (one case with discharging sinuses did heal). Nor have I spoken about its use in the early minimal cases because I had no personal observation of such cases. I can say that those who have used the drug seem to feel that an early response is obtained, greater than can be expected by a natural body rsistance; but this is still to be proven by its use in a much larger series of cases. One is reminded of the first sulphonamide, prontosil. It was a far cry from our present sulpha family. Toxic reactions were frequent; cyanosis was common; the nursing staff was disturbed by the spilling of the drug, or the patient's scarlet urine, on the bed linen. But it did cure a high percentage of cases of puerperal sepsis. It was impressive enough to justify the experimentation and research that has given us our present sulpha range.

Tuberculosis has so far resisted all attempts at pharmacological control. Perhaps streptomycin is the forerunner of a family, other members of which will prove less toxic, more easily manufactured, and more specific for the tubercle bacillus. Failing the development of the ideal successor, streptomycin itself does offer distinct possibilities. It is apparently very useful in laryngeal and tracheo-bronchial disease where it comes in direct contact with the organisms; military disease being blood borne, is proving amenable; previously fatal meningitis cases now have some hope. But from a surgical point of view my own feeling is that its present greatest use will be in established pulmonary disease. Surgery in many advanced cases is withheld because the morbidity and mortality is so high. One of the outstanding dangers, either in collapse therapy or resection, is the spread of the disease to the other lung or to the remaining portion of the resected lung. Another danger in the resected case is the development of a tuberculous empyaema. If these two dangers can be obviated or minimized, then the more frequent removal of diseased pulmonary tissue becomes a practical possibility.

A CASE OF PSYCHOMOTOR EPILEPSY

DR. W. J. FOWLER

Senior Resident in Neurology, The Vancouver General Hospital.

The choice of the title is, I'm afraid, both controversial and misleading—misleading in the sense that I am not presenting a case of psychomotor epilepsy but am attempting to illustrate the value of electro-encephalography in the investigation of a case of abnormal behaviour. The choice of the word "psychomotor" is controversial in that a great many authorities refuse to accept it as a separate clinical entity. Penfield includes it as a subdivision of automatism and in contrast to a post-icto-ultimatism which is the paralysis persisting after an attack, whereas a true psychomotor seizure he states "would have to be defined as a seizure in which abnormal behaviour occurs in a co-ordinated individual, as the direct result of a pattern discharge in the highest level of neural integration." Gibbs is one of the few authorities who uses the word "psychomotor," meaning a definite clinical entity, but to avoid any confusion, tonight by psychomotor I mean to use it in the same sense as that used by Lennox who employs the terms psychic equivalent or psychomotor seizures.

These seizures are hard to describe because the appearance and actions of the patient may be even more diverse than in the case of grand mal. The patient does not completely lose consciousness or control of himself. The patient is in a state in which he acts as though he were conscious but afterwards has usually no memory of what took place. In the attack he may mumble incoherently, make chewing motions, get up and walk about or perform acts like buttoning or unbuttoning his clothes. He may attempt response to questions or walk about the streets. Usually the attacks last only a few minutes but they may go on for hours and even days. In the latter event, the patient on regaining consciousness may find himself in a different city. Though acting like one intoxicated, he is never hilarious but rather is morose and irritable and may become ugly or violent if forcibly restrained. Occasionally he may commit a crime in an attack. Convulsive movements may be present but they take the form of a tonic rather than a clonic spasm. In a tonic or "contortion" spasm, the patient becomes unconscious, his arms and legs may stiffen, or, if sitting, his body may twist; he may clamp his jaws; perhaps dribble a little and may become dusky in the face. He may not fall even if standing, and there is never the violent rhythmic jerking movements of the grand mal.

The patient under discussion tonight was first admitted to The Vancouver General Hospital on May 30, 1946, following two seizures which had been witnessed by her foster parents in the foster home in which she was living. No investigation was done at this time. An outbreak of mumps occurred in the ward and the child was discharged. She was re-admitted on August 6, 1946, again at the request of the foster parents. Three days after admission a seizure was seen by the junior interne who described it as "the patient lay on her side, bent her knees up, closed her eyes and rolled them up to the right and kept twisting the blankets in her hands. She remained in this state for some thirty minutes." From this seizure he gathered the impression that it was hysterical. This conclusion was prompted by this child's unfortunate family background. She was one of two girls in a family. The parents were divorced; the mother re-married and the patient was unable to get along with either mother, sister or stepfather—as the patient herself described it "she could do no right and her sister could do no wrong." This state of affairs reached such a climax that the child was taken out of her home and made a ward of the Children's Aid Society. When the patient was first seen by us on August 12, one was impressed by her alertness and brightness; her intelligence seemed to be high average or above average.

Past History: This child states that she had a head injury as a baby but this could not be confirmed. She further stated that from the age of four until the age of eleven, she frequently walked in her sleep and her mother resorted to various tricks such as putting obstacles in her way or against the door to prevent her from going outside.

Examination: Physical and neurological examination were essentially negative. Hyperventilation for six and one-half minutes failed to produce an attack of petit mal. It was then thought that this child was possibly a case of psychomotor epilepsy, but as she was a ward of the Children's Aid Society and the diagnosis of epilepsy would necessitate her removal from her foster home, it was decided to have an electro-encephalogram done to confirm our suspicions. The child was discharged on August 23, and on September 3, I was approached by her doctor who informed me that he had a telephone call from the foster parents stating that the child had left the house in her night attire at three o'clock in the morning. Various neighbours and the police were searching for the child who returned home at six o'clock in the morning and was not then aware of where she had been or what she was doing, and the next morning could remember nothing about it.

The child was then re-admitted. During this admission, on a number of occasions seizures with contortion spasms were observed and on a number of occasions she left the ward and proceeded outside but came back with the nurse with no resistance when found.

The electro-encephalographic report was now at hand to confirm the diagnosis, the report being as follows:

"BACKGROUND: Poorly regulated alpha rhythm.

ABNORMALITY: Considerable dysrhythmia is apparent from all head regions. This is characterized by diffuse 6-8 sec. activity and some high amplitude 3-6 sec. waves. The abnormality is most apparent in the temporal head regions C7 and C8 and from the monopolar electrodes. Occasional phase reversals are seen from both temporal regions.

HYPERVENTILATION: There is an increase in abnormality and a tendency for the 6/ sec. activity to become more dominant and to become bisynchronous.

IMPRESSION: The findings are suggestive of psychomotor type of epilepsy as described by Gibbs. There is evidence of a very diffuse cerebral dysrhythmia."

This case, I feel will illustrate the assistance of the electro-encephalogram in the investigation of a problem of this kind. Prior to the advent of electro-encephalography this child would have been considered a straight behaviour problem. Now we know that there is a very definite clinical entity. Whether or not the behaviour problem superimposed on it is greater than the epilepsy one cannot say, but at least we can offer this girl some assistance with the present available though not completely satisfactory medications.

AMERICAN UROLOGICAL ASSOCIATION

Urology Award—The American Urological Association offers an annual award "not to exceed $500" for an essay (or essays) on the result of some clinical or laboratory research in Urology. Competition shall be limited to urologists who have been in such specific practice for not more than five years and to residents in urology in recognized hospitals.

For full particulars write the Secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis, Tennessee. Essays must be in his hands before May 1, 1947.

The selected essay (or essays) will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Hotel Statler, Buffalo, New York, June 30-July 3, 1947.

RECENT DEVELOPMENTS IN VENEREAL DISEASE TREATMENT

New Drug—BAL—Available.

The Division of V.D. Control, Provincial Board of Health, wishes to announce that there is on hand a supply of a new drug, BAL, for the treatment of serious complications arising from the use of arsenicals in the treatment of syphilis, namely,

(1) generalized exfoliative dermatitis

(2) haemorrhagic encephalopathy

It is important to note that the above complications are extremely serious and often fatal, so that prophylaxis is urged. It is recommended that:

(1) Always question your patient before each arsenical injection as to the development of pruritus, dermatitis, and headaches (warning signals).

(2) Always examine the arms, forearms and chest for evidence of rash before each injection.

Development of any of the above demands caution, reduced dosage, change of arsenical (i.e., from neoarsphenamine to mapharsen) or the stoppage of all arsenicals.

Penicillin Therapy for Syphilis.

Penicillin therapy for syphilis is *STILL EXPERIMENTAL* and the schedules for treatment outlined in our bulletin of April 3, 1945, have recently been revised and are still subject to change. Your attention is again drawn to the fact that this Division is still limiting the use of penicillin to the following exigencies:

(a) Serious reactions to routine arsenic-bismuth therapy.

(b) Relapsing, resistant or fulminating forms of early infection.

(c) Early syphilis in asocial promiscuous persons.

(d) Early syphilis in persons unable to obtain regular weekly treatment (remote rural areas, merchant seamen, fishermen, loggers, miners, etc.)

(e) Elderly persons with early infection.

(f) Persons with "difficult" veins—addicts, obesity.

Requests for BAL or Penicillin should be accompanied by a complete history of the case and forwarded to the Director, Division of V.D. Control, 2700 Laurel St., Vancouver, B. C.

Follow-up after Penicillin Therapy for Gonorrhoea or Non-specific Urethritis

It is recommended that patients receiving penicillin therapy for gonorrhoea or non-specific urethritis be asked to return for a blood test in four months, since it has been found that penicillin may mask symptoms of syphilis for a period of four months.

News and Notes

The Annual Dinner of the Vancouver Medical Association was held in the Hotel Vancouver on Thursday, November 28th. The record attendance reflected the growing number of doctors in Vancouver. The entertainment, which has always been a feature of these dinners, was of high order and the entire affair was judged a great success.

Doctors Lavell Leeson and Roy Huggard of Vancouver attended the Ottawa meeting of the Defence Medical Association held in October, as representatives from the British Columbia Division of the Canadian Medical Association.

Doctors D. E. H. Cleveland, D. H. Williams and Ben Kanee of Vancouver attended the sessions of the American Academy of Dermatology and Syphilology in Cleveland from December 7th to the 12th.

Dr. T. S. Perrett of Kamloops travelled by air to Ottawa last month to attend a scientific meeting of the Fellows of the Royal College of Surgeons.

Dr. Frank Bryant of Victoria was named President of the North Pacific Surgical Association at the 33rd annual meeting recently. Victoria has been selected as the site for the next meeting of this association.

Dr. E. A. Campbell has returned from a Refresher Course in Psychiatry and Neurology at the University of California Medical School.

Doctors Allan Davidson and Frank McNair have returned to duty at the Provincial Mental Hospital, Essondale, having completed a course in psychiatry at the Allan Memorial Institute, McGill. Two other members of the staff, Doctors Bruce Bryson and R. C. Novak, have left for McGill to complete the same course.

Dr. K. R. Blanchard, who has been on staff of St. Joseph's Hospital in Toronto for the past six months, is expected back in Vancouver after the New Year.

Dr. M. R. Earle is on staff of the Royal Victoria Maternity Hospital in Montreal.

Dr. R. L. Miller is practicing in Victoria.

Dr. B. T. Shallard is back from Alert Bay and practicing in Vancouver.

A visit to the College office was made this month by Dr. J. S. Daly of Trail who called in to say hello. Belated congratulations are due Dr. and Mrs. Daly on the birth of a daughter in October.

Dr. L. B. Fratkin is a civvy again and practicing in Vancouver.

Dr. F. H. Bonnell, formerly of Vancouver, has moved to Victoria to practice.

Word comes from Calgary that Dr. N. D. C. MacKinnon has been discharged.

Dr. J. A. McLaren reports from Montreal that he is discharged and continuing studies in internal medicine at the Montreal General Hospital for a time.

We regret to report the death of Dr. P. L. Straith in Courtenay recently. Dr. Straith registered with the College of Physicians and Surgeons of British Columbia in 1934 and practiced in Courtenay since then. Deepest sympathy of the profession is extended to Mrs. Straith and family in their bereavement.

Deepest sympathy is extended to Dr. and Mrs. E. E. Shepley in the loss of their son at Vancouver recently.

We note with interest the appointment of Dr. W. G. Rice as Provincial Medical Director of the Red Cross Blood Transfusion Service for British Columbia. Dr. Rice is a graduate of the University of Toronto 1938, and fellow in pathology and bacteriology of the Banting Institute.

Dr. and Mrs. Roy Mustard of Vancouver have left for a month's holiday in California.

Congratulations to the following doctors and their wives on their recent good fortune:

Dr. and Mrs. F. W. Grauer, Vancouver—a son.
Dr. and Mrs. B. Meth, Ioco—a daughter.
Dr. and Mrs. J. I. Horsley, Vancouver—a son.
Dr. and Mrs. E. V. Holm, Port Alberni—a son.
Dr. and Mrs. W. A. Dodds, Ladner—a son.
Dr. and Mrs. G. H. Worsley, New Westminster—a son.
Dr. and Mrs. A. J. Beauchamp, Nelson—a daughter.

Dr. J. A. Rankine of Kelowna is spending a holiday in the United States during which he will attend the American College of Surgeons Meeting at Cleveland, Ohio.

Dr. P. S. Rutherford has returned to Vancouver from Montreal where he passed his oral examinations for certification in Pathology.

We are very happy to report that Dr. C. M. Robertson of Nelson has made a satisfactory recovery from his recent serious illness.

Dr. F. E. Coy has returned to Vancouver and is with the Department of Veterans' Affairs here.

Dr. J. W. Vosbrough, formerly of Princeton, is with the Department of Radiology at the Vancouver General Hospital.

Dr. A. B. Watson, recently discharged, is practising in Dawson Creek.

Dr. K. W. Weaver has moved from Port Alberni to Kamloops to practice.

Dr. P. S. Tennant, formerly of Kamloops, is now with the Department of Indian Affairs in Vancouver.

Dr. G. H. Ryan has returned from Winnipeg to practice in Vancouver.

Dr. V. W. Smith, recently discharged is practicing in Victoria.

Dr. W. P. Goldman, formerly of Alberta, has commenced practicing in Vancouver in association with Dr. A. B. Greenberg.

Dr. J. F. Haszard has left the Workmen's Compensation Board and returned to practice in Kimberley.

Dr. R. M. Campbell, formerly with the Workmen's Compensation Board, is taking a three-year course at the Hospital for the Ruptured and Crippled in New York.

Dr. Elizabeth Johnson recently joined the staff of Tranquille Sanatorium.

Old Way . . .

CURING RICKETS in the CLEFT of an ASH TREE

FOR many centuries,—and apparently down to the present time, even in this country—ricketic children have been passed through a cleft ash tree to cure them of their rickets, and thenceforth a sympathetic relationship was supposed to exist between them and the tree.

Frazer* states that the ordinary mode of effecting the cure is to split a young ash sapling longitudinally for a few feet and pass the child, naked, either three times or three times three through the fissure at sunrise. In the West of England, it is said the passage must be "against the sun." As soon as the ceremony is performed, the tree is bound tightly up and the fissure plastered over with mud or clay. The belief is that just as the cleft in the tree will be healed, so the child's body will be healed, but that if the rift in the tree remains open, the deformity in the child will remain, too, and if the tree were to die, the death of the child would surely follow.

*Frazer, J. G.: The Golden Bough, vol. 1, New York, Macmillan & Co., 1923

It is ironical that the practice of attempting to cure rickets by holding the child in the cleft of an ash tree was associated with the rising of the sun, the light of which we now know is in itself one of Nature's specifics.

New Way . . .

Preventing and Curing Rickets *with* MEAD'S OLEUM PERCOMORPHUM

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Like other specifics for other diseases, larger dosage may be required for extreme cases. It is safe to say that when used in the indicated dosage, Mead's Oleum Percomorphum is a specific in almost all cases of rickets, regardless of degree and duration.

Mead's Oleum Percomorphum because of its high vitamins A and D content is also useful in deficiency conditions such as tetany, osteomalacia and xerophthalmia.

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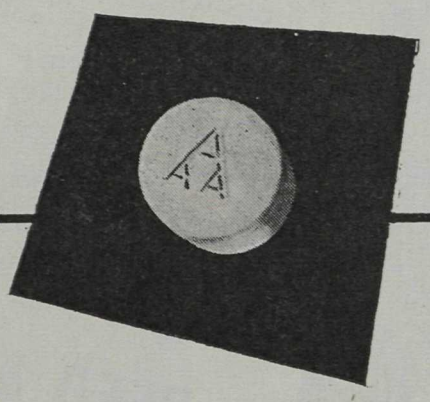

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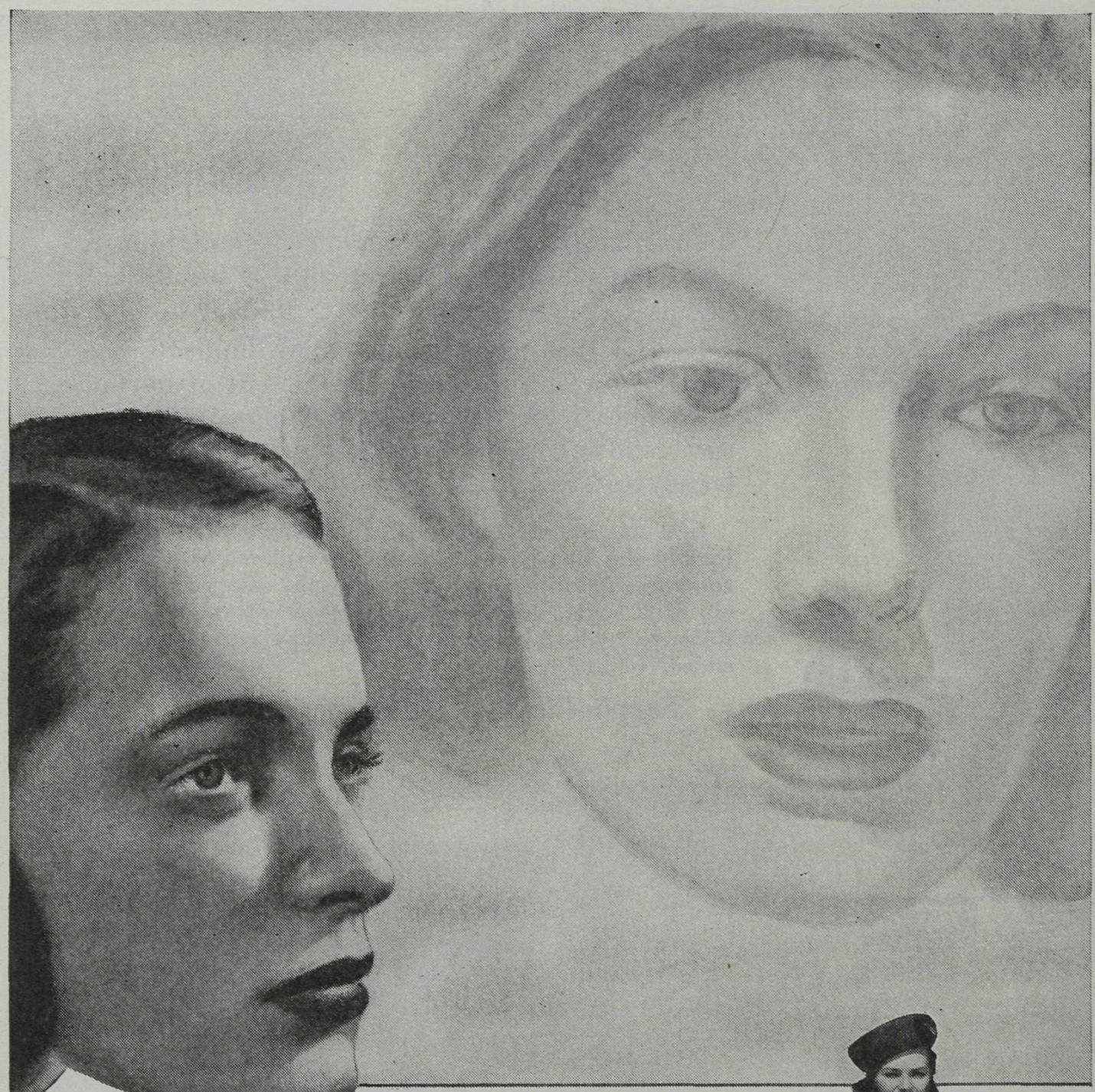

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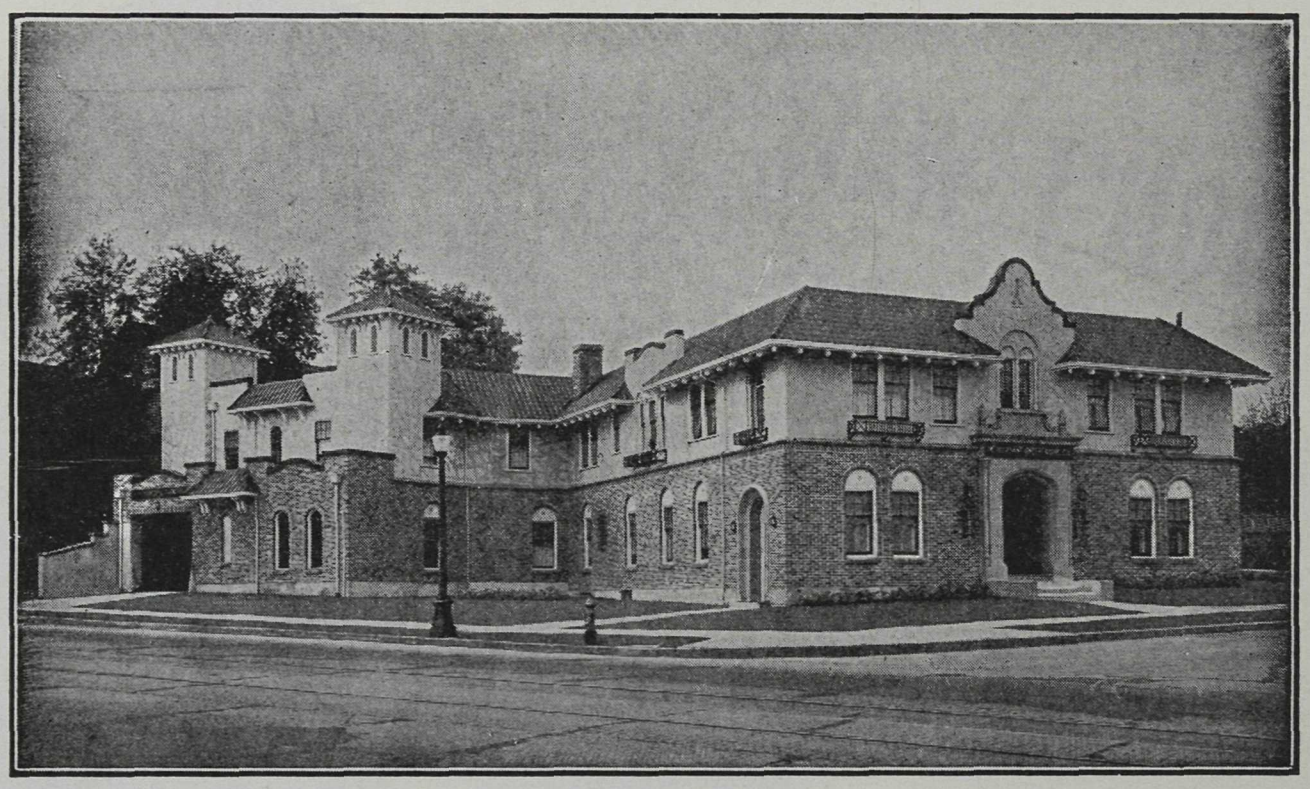

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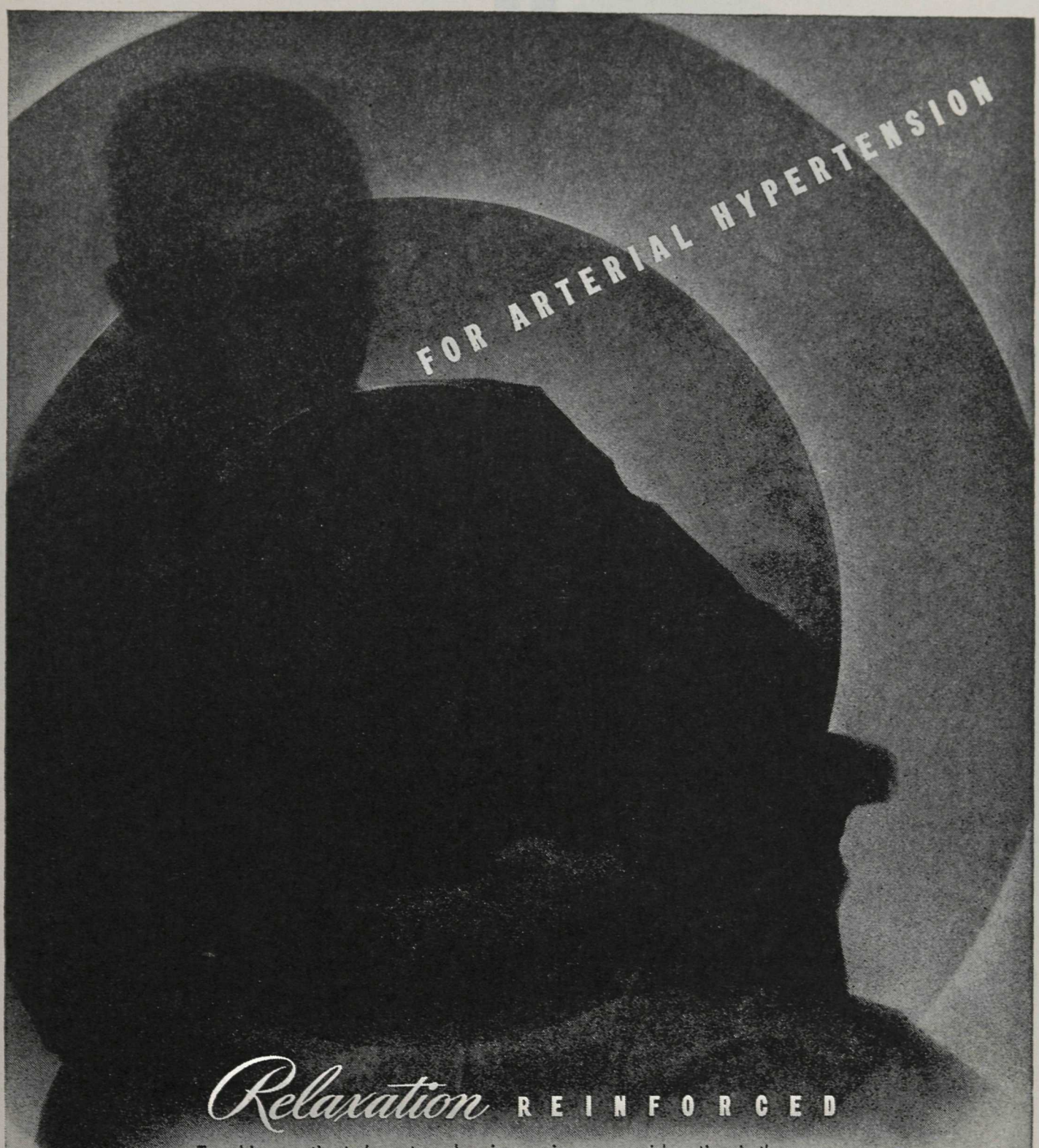

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*Luminal (trademark), Winthrop Chemical Company, Inc., brand of phenobarbital.

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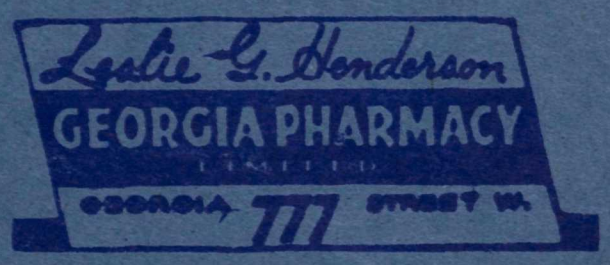

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