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## EDITORIAL

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DR. R. A. REEVE.

In the death of the late Dr. R. A. Reeve, the medical profession of Canada, and especially of Toronto, has suffered a severe loss. This loss cannot be made good by any one else; for Dr. Reeve was unique in all his characteristics. The only compensation—and it is a great one—is the memory we have left of this truly rare type of the cultured gentleman, the ideal practitioner, the widely read scholar, and true friend.

He was a scholar and a ripe and good one,  
Exceeding wise, fair spoken and persuading,  
And to those who sought his counsel, as sweet as summer.

For the long period of nearly fifty years he taught the medical students in the Toronto School of Medicine, and, later, in the Faculty of Medicine of the University of Toronto, the science and art of his specialty, ophthalmology. Those who have had the pleasure of listening to his lectures must ever remember his candour, the simplicity of his style, and his intense desire for accuracy. His influence as a teacher cannot be set down in numbers, but must remain as a creation of the imagination. He was of the full four dimensions—length of achievement, breadth of view, height of aspiration, and depth of conviction.

He was one of the first to recognize that the proprietary Medical School could never meet the demands of a growing Medical Science. Guided by this view, he advocated the formation of the Medical Faculty of the University of Toronto, which was achieved in 1885, when the Toronto School of Medicine ceased teaching. At a later date, Trinity Medical College also ceased teaching and joined its forces with the University. In all these movements Dr. Reeve played a large part.

"Some acquire fame and some have fame thrust upon them" was eminently true in his case; for he both acquired fame, and had a bounteous measure of it heaped upon him. His steady, thorough, and pains-

taking methods raised him in the estimation of the public and the profession to which he belonged. He held the chair of ophthalmology for many years, was Dean of the Medical Faculty for twelve years, was President respectively of the University Alumni Association, Canadian Medical Association, the Ontario Medical Association, and the Toronto Academy of Medicine. He received honorary degrees from the University of Toronto, McGill, and Birmingham.

Dr. Reeve's great strength lay in his charming personality. Many writers have tried to describe the personality of distinguished men; but we shall make no attempt to do so in this case. His was one of those quiet, subtle influences that took a hold of one; and once it laid hold, grew. No one ever heard a rude or coarse remark fall from his lips. He was most deferential to the opinions of others, ever seeking to promote the welfare of his profession, always ready to act in any capacity his confrères sought his aid, and always displaying a keen insight into the questions brought before him. His humor, too, was of the most delightful character. After being in his company and parting from him one could not help feeling that—

His words were bonds, his oaths were oracles,  
His love, sincere, his thoughts, immaculate,  
His tears pure messengers sent from his heart,  
His heart as far from fraud as heaven from earth.

On the day of his death, the writer spent an hour with him, from five to six in the afternoon, at the Academy of Medicine, on the Library Committee. He was then in his usual good spirits. We walked from the Academy building to College Street and were discussing some of the points in Dr. Stockard's lecture on Heredity, which had been delivered a few evenings previously before the Royal Canadian Institute. Among other things the writer mentioned what David Livingstone said in his diary that the old chief of the Makalolo tribe told him "that God made the pure whites and God made the pure blacks, but the Devil made the half-breeds." Dr. Reeve laughed and waived a parting salute. A few hours later he dropped dead on the street, while on his way home from a University meeting.

"They live long who live well," but Dr. Reeve lived both well and long. Now that he is gone, the words of Tennyson, in memory of his friend Hallam, can be spoken of him—"And thus he bore without abuse, the grand old name of gentleman." Dr. Reeve was both an example and an inspiration. He belongs to the future as well as the past. While with us his word was "carry on;" now that he has left us his word is "come on."

So when a great man dies,  
For years beyond our ken,  
The light he leaves behind him lies  
Athwart the paths of men.

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### CHOCOLATE AND ITS USES.

The tree which yields the chief constituent of chocolate thrives luxuriantly in Mexico, West Africa, the West Indies, Central America, and the Northern areas of South America; especially in the forests along the Amazon and its tributaries; but is now being grown in many other tropical localities, where there is sufficient rain-fall, heat, and shelter from winds. Ceylon is now producing a very good grade of cocoa beans. It will grow as far north or south as the twenty-third parallel, but does best within the fifteenth parallels. The tree does best at altitudes less than 1,000 feet above the sea level, but can be cultivated up to 1,700 feet.

The tree grows to a height of from 15 to 30 feet, with drooping, bright green leaves, oblong in shape and eight to twenty inches long. The tree is an evergreen and continuously in blossom and bearing fruit, though the main crops are secured in May and June, and November and December. The fruit is from seven to nine inches long, and three to four inches in breadth, of an oval shape, somewhat like a squash or vegetable marrow, or a thick cucumber. It is of a yellow to an orange red color, or purple. The seeds, which vary from twenty to forty in number, are the important and commercial product of the tree. They are of a pale crimson color and slightly bitterish taste. To mature the seeds they are put through a process known as "sweating."

The seeds, or what is spoken of as the "beans," are toasted, and then sent to machines that crack them, separating the hard thin skin from the nutritive part of the bean, the rich, glossy kernel, known in the market as cocoa-nibs. The husks are separated from the nibs. The husks are of low nutritive value, but a light drink can be made from them. The nibs are ground between rollers that evolve enough heat to liquify the fat which flows out of the consistency of thick cream, but soon cools into brittle cakes. From this product much of the fat is removed, leaving a substance that may be reduced to a powder. This powder is placed on the market under various names, and is used in making drinks with hot water or milk. This powder may have had some sweetening and flavoring material added, or these may be added when the beverage is made.

The pure product from the bean is incorporated with the best

quality of white sugar to form the sweet chocolate used for eating and drinking purposes; and forms the most delicious, healthful and nutritious of all confections and beverages.

All foods must possess two essential properties, namely, to build tissues, and to give heat. For the first of these the foods containing nitrogen are necessary, and for the second, the carbon foods are the suppliers. These should be consumed in every diet in such proportion as physiologists have shewn to be requisite for the maintenance of health, strength, body weight, and animal heat. If one looks at the chemical composition of the ground bean, it will become apparent that these conditions are well met. A good sample yields the following proportion of the chief ingredients of diet—Fat, 50; Albuminoid substances, 20; Sugar and Starch; 13; Salts, 4; Theobromine, 2; other constituents, 11; total, 100. Here is a well rounded out nourishment, and an excellent stimulant furnished by the theobromine. The theobromine is closely allied to theine and caffeine in composition, and like both is stimulant, but unlike both does not tend to induce wakefulness, indigestion, or nervousness. As a flesh former chocolate stands alongside of milk.

The only objection that can be advanced against cocoa in its pure state is that it is too rich in fat for most persons. This has been overcome in two ways, namely by adding sugar, reducing the ratio of fat in this way, and by removing some of the fat, but leaving all the other elements of the bean for consumption. Chocolate consists of ground cocoa from which the fat has not been removed, mixed with sugar, and flavourings, of which the chief one is the pleasant and exhilarating vanilla. Thus chocolate becomes digestible, palatable and nutritious. In the making of good chocolate care must be taken that the seeds are properly fermented, dried, husked, and ground.

It has been amply proven that chocolate made from good beans and sugar, and properly flavored is a highly nutritious and stimulating article of diet. Actual tests have been made in army training to prove that a chocolate ration was equal to five times its weight of beef. It has also been proven that the continuous use of chocolate is not injurious to the nervous system as is the over indulgence in tea or coffee.

Chocolate may be put up for convenience in cakes, bars, tablets, drops, and confections of various sorts. In these forms it retains its nutritious and stimulating qualities for a long time if care be taken to cover them so as to prevent their drying out.

Chocolate when not too rich in fat is a very valuable food for growing children. A certain amount of good chocolate may be added

to other foods, such as farina, corn starch, milk powder, meat powder, and gelatin.

Chocolate is often combined with nuts in the making of confections. These nuts have also a high food value. Thus, in good chocolate confections we find—fat, sugar, nuts, flavoring, albuminoid matter and theobromine. If the children drank chocolate beverages, the result would soon be seen in their improved looks and more robust condition.

Athletes have often discovered its great value in sustaining them during some prolonged effort.

The experience of the British Navy is that chocolate is one of the most valuable ingredients in the sailor's dietary; and, in the recent war, its inestimable worth to the exhausted soldiers on the one hand, or to such as had to undertake a prolonged and strenuous task, was amply proven. It was extensively used in the military hospitals, being a favorite alike with the doctor, the nurse, and the sick and wounded.

A clear distinction should be made between the theobroma-cocoa tree, whose seeds yield chocolate, and the coconut-palm tree yielding the large nut with the firm white substance lining the shell. This latter is not employed in the manufacture of cocoa or chocolate.

The product of the cocoa tree was introduced into Europe in 1520 by Columbus, or as some historians say by Cortez in 1519. When Linnæus, the eminent botanist, became aware of its qualities he called the inestimable fruit Theobroma, which means food for the Gods, God-food. When the early Spanish adventurers visited Mexico, the West Indies, Central America, and the northern portion of South America, they found that various preparations of the cocoa tree were great favorites with the people, from the rulers down. Chocolate was the Mexican term which the natives applied to these preparations. This term was adopted by the Europeans and has remained in use ever since.

Steadily the appreciation of the food and stimulant qualities of chocolate has gained its way throughout the world. There come times to every one when the need for a stimulus is felt, and such a stimulus is found in chocolate. It can be used by the youngest and the oldest, the robust and the delicate, and the healthy and the sickly, without the slightest fear of ill effects or the formation of injurious habits. This need both for a prompt nourishment and stimulant is supplied in attractive and portable form in the many varieties of chocolate confections on the market. The habit of eating "chocolates," and especially by the young, instead of being condemned, should be encouraged.

## ORIGINAL CONTRIBUTIONS

## THE PNEUMO-CATARRHAL DIATHESIS. PREVENTION AND TREATMENT OF PNEUMONIA AND OTHER RESPIRATORY INFECTIONS BY MIXED VACCINES.

MAJOR J. PRATT JOHNSON, M.C., M.B., Lond., D.P.H., Oxon., D.A.D.M.S.  
(Pathology), S.A.M.C.

Director, Clinical Research Laboratories, Johannesburg.  
(Preliminary Publication.)

THE scope of this subject is so wide and expansive that no more can be attempted in this preliminary communication than a rough outline of the general principles governing the prevention and treatment of bacterial infection of the respiratory tract.

## MATERIAL AVAILABLE FOR INVESTIGATION.

Diseases of the respiratory system are common in South Africa; and the community scattered along the sixty miles of "Reef," aggregated into various townships of the Witwatersrand is no exception. The prevalence of these infections on the Rand is partly due to the dry, dusty climate, with its rapid changes of temperature, partly to the almost universal incidence of catarrhal infections among workers, native and European, on the Witwatersrand Goldfields, the inhalation of the fine particles of silica, always present in mine air, and the rapid changes in temperature experienced in gold mining being contributory causes. Considerable material, therefore, is available on all sides for the study of this most interesting and important group of diseases.

As Acting Bacteriologist for the Transvaal, Acting Pathologist to the General Hospital, Johannesburg, subsequently Assistant Medical Officer of Health, Johannesburg, and later as Director of the Clinical Research Laboratories, my various duties have brought me into close contact with these problems in South Africa during the last eight years. In addition my researches into the pathology of Silicosis in Man and White Rats, and Tuberculosis on the Witwatersrand, in association with Drs. Andrew Watt, L. Irvine and W. Stewart, afforded me valuable material for study. Furthermore, a considerable proportion of my private practice as a consultant and bacteriologist in recent years has been composed of this type of case. Recently, however, during the widespread incidence in South Africa of pneumonia and other diseases associated with or following on "Spanish" influenza, I have had a unique opportunity of testing the soundness of one's conclusions in this matter on a very large scale. A large number of doses of a compound catarrhal vaccine have been issued

for the treatment and prevention of the prevailing "pneumonia." The results of this mass inoculation will be available shortly for publication, but at the present juncture it is not possible to say more than that the results have been most satisfactory and significant and go far to support the attitude taken up in this paper in regard to the etiology of pneumonia and other respiratory infections.

It appeared necessary to introduce this subject in this way in order that it may be appreciated that although no statistical evidence will now be produced, these conclusions have a definite experimental and experiential basis, which will be elaborated in a later publication.

#### METHOD OF INVESTIGATION.

It is not intended to minimize the importance of the recognition of the various antibodies which have been identified and described from time to time during the last twenty years. It is by such means that we are able to appreciate something of the struggle which goes on between pathogenic micro-organisms and the body, and the nature of the various immunological processes called into play. In recent years the extraordinarily interesting phenomenon which has been named "Anaphylaxis" has attracted considerable attention. Much remains to be learned in regard to this most important factor in immunity problems, and it would appear that a closer study of anaphylaxis as applied to the employment of vaccines and sera for the treatment and prevention of infective diseases, will supply the missing link in the chain of evidence required for a more complete understanding of what takes place when these therapeutic agents are employed. Since Richet's pioneer work, an outstanding publication, is Beeredka's "Anaphylaxie et Antianaphylaxie." Beeredka shows that the danger of anaphylactic shock in a sensitized individual can be prevented by the administration by various routes, of small doses of the particular serum applicable. Such a protective injection he names the "anti-anaphylactic" injection. It is necessary to emphasize the importance of these phenomena here, as the writer is firmly convinced that these factors play a very important part in vaccine and serum therapy, especially in therapeutic inoculation. In no group of diseases are anaphylactic phenomena more evident and important than in the group of respiratory diseases under consideration. No satisfactory explanation can otherwise be offered of the fact that an injection of mixed vaccine of moderate strength, such as is commonly used for prophylactic inoculation against respiratory catarrhs, when inoculated into an individual comparatively free of catarrh produce very little local reaction and practically no general reaction; if the same dose be inoculated in the same individual in the presence of an acute respiratory "cold" or catarrh, the local and general



reactoin is enormously increased, out of all proportion to the amount of vaccine used, and the resulting effects may be so severe as to confine the patient to bed for a week. Obviously some change must have taken place in the individual to produce such vastly different results in the two circumstances indicated. This astonishing change is due to the development of anaphylaxis, produced by the activities of the causative bacteria present in the acute attack. This phenomenon is so constant that it is possible to diagnose the presence or absence of respiratory catarrh without any clinical evidence by merely noting the results of the inoculation of a suitable dose of mixed vaccine, prepared from the organisms commonly found in respiratory infections. The symptoms, local and general, following the inoculation of a mixed vaccine in an individual suffering from respiratory catarrh are closely analogous to similar conditions set up by the inoculation of tuberculosis in individuals suffering from pulmonary tuberculosis. In both cases the phenomena are largely anaphylactic. I am satisfied that anaphylactic phenomena afford a much more reliable guide to the practitioner as to dosage and interval in vaccine therapy than any observations and investigations, no matter how elaborate, in regard to the presence or absence of demonstrable specific antibodies in the blood. The latter method is of purely historic interest. I have, therefore, not followed the method of investigation adopted by previous workers in this field of research—that of almost slavish adherence to serological tests, such as agglutination and opsonic estimation—as I do not regard these tests as satisfactory guides or reliable indicators of established immunity, or of practical service in the carrying out of treatment with vaccine or sera. The presence of specific agglutinins in the blood is of service in the diagnosis of certain massive systematic infections, and in certain laboratory experiments, but in the investigation of prophylactic and therapeutic inoculation other factors, immeasurably more important, are to be considered.

#### SYMBIOTIC ACTIVITIES OF MICRO-ORGANISMS.

It would appear that the very important part played by symbiosis in bacterial infections of the respiratory organs is not sufficiently appreciated. There is no doubt, however, that the phenomenon is more fully appreciated at the present time than some few years ago. The attitude taken up in regard to the preparation of an autogenous vaccine for a case of bronchitis, for example, some seven or eight years ago, was that it was only necessary that the vaccine should be prepared from the predominant organism found in the sputum, very commonly streptococcus. The next stage, however, was the appreciation of the possibilities that all microorganisms commonly found in the sputum in these cases might have some etiological significance.

The result was the preparation of what I used to call "a pot pourri" vaccine, prepared as it was from all the organisms isolated. At this time, however, no attempt was made to isolate each organism separately in pure culture, the vaccine being prepared in a more or less haphazard manner from the organisms developing on culture. A still further development was to isolate *all* the micro-organisms from the sputum, to prepare and standardize separately the emulsion of each organism isolated, finally combining all emulsions in definite proportions in a mixed vaccine. Experience has proved that provided the specimen of sputum is properly collected, the mouth and teeth having been previously well cleaned with a brush and boiled water, it is not wise to ignore any pathogenic organism developing on human blood agar. At this point it is necessary to emphasize the importance of the nutrient media employed. In regard to respiratory infections it is advisable to employ always blood agar, preferably human blood agar, and to observe cultures and sub-cultures for at least four to five days, owing to the slow growth of some of the organisms. The employment of a mixed vaccine, prepared in this manner, has been justified by the more efficient preparation obtained and the infinitely more satisfactory clinical results. All this is a tribute to the importance of appreciating the rule of symbiotic mixed infections in diseases of the respiratory system.

#### THE PNEUMO-CATARRHAL DIATHESIS.

It is a matter of common observation that while some individuals go through life entirely free of respiratory diseases such as catarrhs, bronchitis, bronch-pneumonia, pneumonia, etc., other individuals suffer to a greater or less degree from one or all of these infections from time to time. In some instances one attack succeeds another until a chronic inflammatory condition is established which occasionally shows more acute exacerbations. In view of the mode of spread of these diseases my means of infected droplets of sputum sprayed into the air in coughing, sneezing, etc., these infective conditions are liable from time to time to assume epidemic and even pandemic incidence, as illustrated by the prevailing influenza pandemic. There is no doubt that the initial infection in the majority of cases in this epidemic is *B. influenzae*, but that sooner or later other organisms, notably *Streptococcus*, and *M. catarrhalis*, *Streptococcus mucosus capsulatus* and *Pneumococcus* become of considerable etiological importance. Doubtless many of the cases diagnosed as influenza are not true influenza, but due to one or other of the catarrhal organisms acting separately or as a mixed infection. An interesting point in the influenza epidemic in South Africa is that the most serious and fatal cases do not necessarily occur in young, old, or feeble members of the community, a heavy mortality being noticeable among adults in their prime. It is evi-

dent, therefore, that mere physical fitness is not an adequate protection against the onslaught of these respiratory infections. These phenomena can only be sufficiently explained by the appreciation of the etiological significance of the "pneumo-catarrhal diathesis," which may be defined as a constant diminished resistance to respiratory infections, constituting a definite predisposition to bacterial diseases of the respiratory organs. This diathesis must be carefully distinguished from the "irritation catarrhs" associated with various industrial processes in which the symptoms are excited in *all* workers by the inhalation of irritant particles suspended in the air, e.g., silicious particles in the air of gold mines. Doubtless, however, the individual possessed of a "pneumo-catarrhal diathesis" exposed to such conditions would suffer more severely from respiratory infections than the ordinary individual in whom the resulting catarrhal processes may be regarded as largely protective.

The success of prophylactic inoculation against infective catarrhs of the respiratory passages indicates that the pneumo-catarrhal diathesis can be artificially combated by means of specific immunization. The tissues of the lungs are richly supplied with blood, so that it is not at all surprising that bacterial disease of these organs should be so amenable and sensitive to specific therapy. On the other hand, the failure of all other non-specific remedies to influence the pneumo-catarrhal diathesis is not surprising from an anatomical and bacteriological point of view. The frequent presence of virulent microbes in the air from coughing, sneezing, etc., their ready access through the inspiratory current of air to vulnerable points to attack, the rapid absorption of bacterial toxins from the lung tissues richly supplied with blood and the vulnerability of the lung tissues to irritant and noxious vapours and foreign bodies suspended in the air, all require the most efficient system of protection to maintain freedom from respiratory diseases. A constitutional weakness in such defensive measures indicates a "pneumo-catarrhal diathesis" which can only be successfully reversed by specific immunization against all those pathogenic bacteria commonly conveyed in the air breathed.

#### ETIOLOGY OF PNEUMONIA.

In 1883 Friedlander described an organism now known as *B. Friedlander*, as the causal organism of pneumonia.

In 1884 Fraenkel published a very full and accurate description of the characters of the *Pneumococcus*, which he showed was identical with the "coccus of sputum septicemba," previously described in 1880 by Pasteur and Sternberg as being present in healthy human saliva.

Since this time *Pneumococcus* has been recognized as the chief etiological factor in acute pneumonia. From a bacteriological and clinical point of view there are various disquieting factors which call in question

the soundness of this view, and it is now proposed to show that this conception of the etiology of pneumonia is always narrow and incomplete, and frequently totally incorrect.

(1) *The Pneumococcus is not present in all cases of acute lobar pneumonia.* This point is well illustrated by a careful investigation into six cases of acute lobar pneumonia selected by a leading practitioner with expert knowledge in this disease as typical cases. The sputum was carefully collected and within an hour or two inoculated into white rats. Cultures were also made on human blood agar in each case. Two rats died within twenty-four hours, the heart blood in each rat when cultivated on human blood agar giving a growth of pneumococcus. Cultural examination of the sputum in these two cases, however, gave Staphylococcus, M. catarrhalis, Streptococcus, and Pneumococcus, in one of these cases, and Streptococcus, M. catarrhalis, Streptococcus mucosus capsulatus, B. influenzae, and Pneumococcus in the other case. The other rat also died, but Streptococcus only was recovered.

In the three other cases the rats were unaffected and cultivation of the sputum gave respectively:—

- (1) M. catarrhalis, Streptococcus, and B. influenzae.
- (2) M. catarrhalis, Streptococcus, Staphylococcus.
- (3) M. catarrhalis, Streptococcus.

Thus in six typical clinical cases of acute lobar pneumonia Pneumococcus was only present in 33 per cent. of the cases.

(2) *There is no consistent lesion in the lung in Pneumococcal infections.* The pathological conditions found are extremely varied, sometimes lobar, sometimes broncho-pneumonic, sometimes quite indefinite as to anatomical distribution of the pathological process. Histologically, moreover, the lesions are not uniform. From a purely bacteriological point of view, therefore, the objections to the acceptance of pneumococcus as the sole etiological factor in acute pneumonia are weighty.

#### CLINICAL OBJECTIONS, TYPICAL PNEUMONIA.

Whatever may be accepted as to the etiology of acute lobar pneumonia, the outstanding fact in regard to the disease diagnosed as "pneumonia" in general practice is that the majority of cases are atypical. Refinements of diagnosis such as "catarrhal pneumonia," "broncho-pneumonia," may be attempted, but the attitude taken up is that any inflammatory condition of the lungs producing adventitious sounds, such as rales or crepitations, some dullness, cough and sputum, purulent or blood stained, is broadly "pneumonia" and *that this disease is due to the pneumococcus.*

This is an illustration of the disadvantage of watertight compart-

ments and over-specialization in medical practice. The bacteriologist is not a clinician; the clinician is not a bacteriologist.

Extensive experience has demonstrated without any shadow of doubt that these atypical conditions are invariably due, from first to last, to a mixed infection with or without pneumococcus. This fact is supported by hundreds of examinations of sputum which have been carried out both culturally and by mouse inoculation. The commonest organisms in atypical pneumonia in my experience, are *M. catarrhalis* and *Streptococcus*, other organisms being *Streptococcus mucosus capsulatus*, pneumococcus, *B. Friedlander*, *B. influenzae*, *B. septicus* and staphylococcus. Furthermore, in those cases of acute lobar pneumonia in which pneumococcus is found cultivation of the sputum rarely gives a pure culture, other organisms being demonstrable commonly in the early stages, and invariably in the later stages.

It will be readily understood, therefore, that the etiological factor in pneumonia, typical and atypical, is definitely a mixed infection. It is not necessary to dwell on the mortality from pneumonia in spite of the exhibition of pneumococcus vaccines and sera. It is certain, however, that these specific preparations are used in many cases in which they are partially or totally inapplicable, as they provide only for the Pneumococcus element, the symbiotic activities of other micro-organisms being ignored.

It is difficult to estimate, but probably less than 25 per cent. of the cases diagnosed as "pneumonia" in the average general practice are due to an initial infection with pneumococcus, and in any cases secondary infections are present sooner or later in all cases of pneumonia.

The majority of cases diagnosed as "pneumonia" are due from first to last to a mixed infection in which pneumococcus may or may not be included. Briefly, the evidence which is accumulating as to the value of therapeutic inoculation in cases diagnosed as pneumonia with a mixed vaccine prepared from numerous strains (150) of *M. catarrhalis*, *Streptococcus*, *Pneumococcus*, *B. influenzae* and *B. septicus*, *Streptococcus mucosus capsulatus*, *B. Friedlander*, and *Staphylococcus*, indicate that whatever objections may be raised to the etiology of pneumonia as set out above, the clinical results fully justify this statement. Prophylactic inoculation of a stronger vaccine from these organisms has similarly given most gratifying results in preventing the onset of pneumonia, the mortality in inoculated cases which have contracted influenza being trifling.

The prevalence of "pneumonia" in South Africa during the past few weeks in which the influenza epidemic has raged throughout the land has been very marked, the appalling mortality being almost entirely due to "pneumonia." Numerous examinations of the sputum have demon-

strated that the symptoms are due to a mixed infection, the virulence of the organisms being enormously raised by "rapid passage," so that many of the cases are "septicemic" in type. The employment of the above mixed vaccine in these cases has been carried out widely throughout South Africa on a large scale, and judging from personal observation and numerous reports received, the results have been astounding. Numerous cases ill with "pneumonia" for weeks have, after one or two injections, shown a normal temperature and pulse, and made in the circumstances, a rapid uninterrupted recovery. The mortality from pneumonia has also been enormously reduced by therapeutic inoculation with a mixed vaccine. One practitioner reports over a hundred cases and another two hundred cases of pneumonia treated with mixed vaccine, without a single death.

As soon as the epidemic started numerous requests for "pneumococcus vaccine" arrived from all quarters. Steps were taken by urgent circulars to advise in preference the employment of compound catarrhal vaccine, which has produced highly satisfactory and astonishing results. It should be remembered, moreover, that a fair proportion of the cases which have occurred have been diagnosed as acute lobar pneumonia.

The use of a comprehensive mixed vaccine for the treatment of respiratory infections, including pneumonia, largely relieves the clinician—who is often without the aid of an experienced bacteriologist—of the responsibility of deciding in his own mind the bacteriology of the case before him. No matter what respiratory diseases the patient may be suffering from, whether tonsillitis, bronchitis, bronchiolitis, broncho-pneumonia, pneumonia, pleurisy, etc., such a vaccine prepared on such lines would be distinctly applicable. The very simplicity of this line of action must commend itself to the medical practitioner to whom the bacteriology of respiratory infections cannot be without some difficulty. In view of the fact that the sensitiveness of patients suffering from respiratory infections to mixed vaccines, is very marked, the greatest care must be exercised in carrying out therapeutic inoculations to avoid overdosage, which is extremely harmful.

It is realized that it is not possible to close this preliminary communication without careful reference to the valuable work on pneumonia carried out on the Witwatersrand by Dr. F. S. Lister, Bacteriologist to the South African Institute for Medical Research. Unfortunately, I have for many years been unable to accept the findings of Dr. Lister in this field of research, and feel that the time has now come to place on record my views on the work published in regard to prophylactic inoculation with pneumococcus vaccine for the prevention of pneumonia among the natives employed on certain experimental mines on the Witwatersrand.

## PROBLEM OF PNEUMONIA PREVENTION ON THE WITWATERSRAND MINES.

The subject of pneumonia is of no little interest in South Africa, especially on the Rand, where experiments on a large scale have been carried out for a number of years in regard to the prevention and treatment of this disease to which the natives are so liable. The heavy mortality among native labourers, especially those imported from tropical areas, first attracted the attention of the Government many years ago, and to this day the mining industry copes with difficulty with the shortage of labour created by the restrictions imposed by the Government on recruiting of natives for the mines. To obviate this difficulty towards the end of 1911 and throughout 1912 Sir Almroth Wright and his co-workers, Drs. Parry Morgan, R. W. Dodgson, and L. Colebrooke, carried out investigations into pneumonia on the Rand at the invitation of the Chamber of Mines. The results of their investigations were put on record in a report, published in December, 1913.

In spite of the thorough manner in which these workers went into the matter, the results of their researches were largely fruitless, and they claimed "a lamentably small harvest of suggestive and interesting facts."

The vaccine employed by Wright was prepared from local strains of pneumococcus, grown on glucose broth. The method of investigation consisted in carrying out a very large number of opsonic and agglutination tests on the sera of pneumonia cases and of natives inoculated with varying doses of pneumococcus vaccines, and the examination of statistics in regard to the incidence of lobar pneumonia in inoculated and uninoculated groups. The results obtained by these workers was distinctly discouraging as to the value of inoculation with pneumococcus vaccine of native labourers on the Rand.

The problem was then taken up by Dr. F. G. Lister of the South African Institute for Medical Research, who has strenuously and continuously laboured in this matter since 1912.

The chief difficulty experienced by Wright and his co-workers in investigating this problem was the fact that the ordinary laboratory tests, such as agglutination and opsonic estimations, were not definitely or constantly available as a guide in their experiments. They found that: "The agglutination reaction is with the pneumococcus only very irregularly obtained, and that in regard to sub-cultures of the pneumococcus from blood and lung punctures the vast majority of these gave no agglutination reaction with the blood of any patient."

Moreover, "in the case of these exceptional cultures which gave agglutination we obtained the reaction not only with a large number of sera from pneumonic patients, but also with a number of normal sera. By consequence we put aside the agglutination test as one that could not be

utilized for the purpose of estimating the effect produced by pneumococcus vaccine."

It is clear from the published writings of Dr. Lister that his method of demonstrating the presence of agglutinins and opsonins in the blood of individuals suffering from pneumonia, or inoculated with pneumococcus vaccine, differed entirely from the generally accepted methods as carried out by Wright—the originator of opsonic work—and his co-workers. It is necessary to emphasize this point, as this particular technique constitutes the keystone to the whole of Dr. Lister's otherwise careful researches.

#### LISTER'S METHOD OF DETERMINING AGGLUTINATION AND OPSONIC ESTIMATION.

Dr. Lister states: "The technique I have employed to ascertain the agglutinating and opsonizing power of sera of my inoculated animals, including man, has been essentially that originated by Sir Almroth Wright in connection with his work on the opsonic index."

This is liable to be misunderstood in view of the fact that Wright's technique is used only for the estimation of the opsonic index, and has nothing whatever to do with the estimation of agglutination. The two, however, are combined by Lister into one examination.

Sir Almroth White in his opsonic technique uses *one volume* each of white blood corpuscles, sera, and emulsion of micro-organisms; Lister, however, departs from this method and uses proportions of serum 2, 3, 4, and even 5 times as much. The mixture thus obtained is used to prepare films which are stained and examined microscopically. This film is then used to determine both the phagocytic index and the degree of agglutination. The adoption of this technique obviously would reflect entirely different results to those obtained by Wright, and explains the entirely opposite views held by Wright and Lister.

#### OPSONIC INDEX.

No one will deny that from a theoretical and academic point of view the discovery of opsonins by Wright has been of the greatest service in directing our studies and aiding us in a concrete appreciation of the process of protection against invasion by pathogenic bacteria, but it is well known that the employment of opsonic estimations as a practical diagnostic method has been largely given up by practically all workers throughout the world. The difficulty and complexity of the technique, the impossibility of avoiding numerous pitfalls, the widely different results obtained by individual workers on the same specimens, and the limited number of diseases to which this method may be applied, have all combined together to make the opsonic index a matter of purely historic



interest. This phenomenon, however, is first of all accepted as of practical utility by Lister, and then profoundly modified in its technique and is used by him as one of the main factors on which he founds his researches. One of the first principles in carrying out the opsonic estimation, is that there shall be no clumping in the emulsion of the bacteria employed for the test. A necessary precaution in utilizing an emulsion of bacteria is to examine that emulsion and to be satisfied that no clumping of bacteria is present. The employment by Lister of 2, 3, 4 and 5 volumes of serum, however, stated by him to contain agglutinins, and producing—as he states—evidence of agglutination, in just those cases in which he expects a high opsonic index, largely destroys the value of his observations on the opsonic index of any particular blood. Some years ago I saw some of Dr. Lister's slides, an examination of which did not satisfy my objections: the doubts and misgivings which I had at that time as to the value of researches built up on such a method, have now crystalized into a definite conviction that reliance on such methods can spell only failure and disappointment.

#### AGGLUTINATION.

The phenomenon of agglutination is an extremely variable and unreliable factor except under certain conditions. It is the observance of these very conditions which is so especially necessary before an opinion as to the presence of specific agglutinins in the blood against a given microbe, can be seriously accredited. Dr. Lister's method of estimating agglutination constitutes an entirely new method, which is open to the very gravest objections. It depends on the examination of a slide, prepared by placing a small drop of his phagocytic mixture on the end of a slide, and making an ordinary smear. *He then observes the degree of clumping among the bacteria, dried fixed and stained on this slide.* In my opinion no reliance can be placed on observations in regard to agglutination carried out by such technique. Numerous factors combine together to destroy the value of such an observation.

The usually accepted methods of carrying out an agglutination test are by a microscopic method, in which the micro-organism is suspended in various dilutions of serum and examined by the microscope at the end of definite intervals of time; and a similar method carried out microscopically, with larger volumes of fluid, the clumping of the microbes being sufficiently definite to be visible to the naked eye. Numerous difficulties and pitfalls may be experienced even when this test is carried out with these elaborate methods. It was by such methods that Wright and his co-workers came to express their opinion that: "The agglutination reaction is, with the pneumococcus, only very irregularly obtained."

Lister's method of carrying out a combined opsonic and agglutina-

tion test has been deliberately criticized, as it is quite clear from a careful examination of his published writings that his researches on this subject, and the conclusions formulated by him largely rest on the results obtained by the very questionable methods outlined above.

#### STRAINS OF PNEUMOCOCCUS.

During recent years advances in our knowledge of bacteriology have made the subject more complex and difficult. At one time it was thought that only one organism caused typhoid fever, only one organism caused dysentery, and so on. Since that time, however, various strains of typhoid, paratyphoid and dysentery organisms have been identified.

We have now entered on a transition stage in which it has become obvious that the dogmatic detailed classification of bacteria must be approached with caution, in view of the increasing evidence as to the phenomena of "mutation." Some have gone so far as to state that *B. typhosus* can actually be changed into *B. coli communis*, and so on. Fortunately, although mutation undoubtedly has its phase in the life history of microbes, yet the statements in regard to radical changes of *all* the specific characteristics of a micro-organism at the same time must be accepted with reserve. It is true that one or other of the characteristics exhibited by a micro-organism, e.g., agglutination, motility, virulence, etc., are subject to change, but that all the characteristics by which such organisms can be identified, should undergo a complete sudden mutation, must be accepted with considerable reserve. Time will prove, however, as to how far conservative bacteriologists are justified in maintaining this attitude. The proposition before us, however, is of an entirely different nature. We are asked to believe that a microbe, pneumococcus, is represented by a large number of named strains, nine of which have been identified as "A," "B," "C," "D," "E," "F," "G," "X," all other pneumococci not falling into any of these groups being "classified" as "unclassifiable." It is claimed that each of these strains is a definite entity and can readily be distinguished from the other; each has its own serological characteristics whereby identification can be effected. Quite apart from other considerations, in the present state of our knowledge it is surely too much to expect that such a statement can go unchallenged. Apart from this general expression of opinion, however, on reflection we find that the identification of Lister's various strains of pneumococcus is based upon a technique which it is considered is totally unreliable. In other parts of the world not more than four strains have been identified, but we find no sound reason—if identification is to rest upon such technique as has been criticized above—why an indefinite number of strains of pneumococcus cannot be identified. It is significant that the enthusiasts who insist on the importance of identification and naming of strains of

the pneumococcus reserve an "unclassifiable group for types which do not fit into their named groups. Further, the number of named groups is steadily increasing. It should be remembered that the identification of these strains rests upon properties of agglutination and opsonic estimation—which have been shown by Wright and others to be variable and useless for purposes of investigation into pneumonia. Certainly the recognition of different strains of micro-organisms has been of distinct practical value in that attention has been directed to the importance of preparing vaccine, not from individual strains, but from a number of different virulent strains.

The tendency in recent years in bacteriology has been when success has not been achieved by vaccine therapy or prophylaxis to attribute such lack of success to the presence of a new and unidentified strain of the particular micro-organism commonly accepted as the sole etiological factor in the disease. This attitude is well known in South Africa, notably in regard to the numerous experiments which have been carried out in regard to the prevention of pneumonia amongst native labourers on the Rand. Failure to afford protection to the inoculated who have developed a fatal pneumonia has always been attributed to the presence of a strain of pneumococcus previously unrecognized or not included in the particular vaccine used. The hope also has always been held out that when further additional strains of the pneumococcus are included in the prophylactic vaccine advocated and employed that success will be achieved. I must put on record most emphatically my entire disagreement with this attitude. The chief practical importance of the recognition of various strains of the same micro-organism is that the practice hitherto almost universally carried out, of preparing therapeutic vaccines and sera from one individual representative of a microbe, is no longer justified. My experience, however, extending over a number of years in the preparation of various vaccines, is that the problem of "variation" in bacteria is adequately and successfully solved by the preparation of vaccines and sera from a large number of unidentified virulent strains. Practically speaking, there is no limit to the number of strains which might be employed, and from a general point of view, the more the better, provided each strain is a virulent specific organism exhibiting all the chief characteristics of the particular microbe and is *recently* isolated from a definite pathological condition, exhibiting typical signs.

#### PREPARATION OF DR. LISTER'S EIGHT GROUP PNEUMOCOCCUS VACCINE.

It is proposed now to deal with the actual technical details connected with the preparation of Lister's pneumococcus vaccine, as set out in the publications of the South African Institute for Medical Research. This vaccine is prepared by growing pneumococci on what may be briefly called

glucose broth, instead of on solid media, because, "to obtain sufficient culture for the vaccine it is not practicable to make use of solid media owing to the great quantities of it which would be required, and the relatively poor growth of pneumococcus in such circumstances." The serious danger, however, in such a method of preparation is clearly stated by Lister as follows: "When growth of pneumococcus has occurred in this medium autolytic changes rapidly take place; after 12 hours, therefore, a close watch must be kept on the growth may speedily be rendered useless for the preparation of vaccine." Dr. Lister further states "that pneumococci sedimented in a 40-hour old glucose serum broth culture are devoid of antigenic properties both for rabbit and man."

It is, therefore, clear that the serious risk of deterioration of vaccine during the course of preparation is taken, because it is considered that the preparation of vaccine on solid media, which is preferable in every way, cannot be practically carried out. In this I entirely disagree with Dr. Lister, as there are no practical difficulties in preparing the vaccine from cultures grown on a suitable solid medium. It is merely a question of making suitable arrangements on an adequate scale. The antigenic value of vaccine depends largely in the suitability of the medium used in regard to pneumococcus, blood agar is the best medium to employ. Autolytic changes must be avoided at all costs. It is not intended, however, to minimize unduly the difficulty which might arise if inoculation were generally carried out of the whole native labour population, but the difficulties could certainly be overcome. The same anxiety, no doubt, has forced Dr. Lister to adopt the extremely questionable technique of concentrating the weak vaccine prepared by a growth of short duration in glucose broth, by means of a powerful centrifuge, which is nothing more or less than a cream separator. The contamination of the concentrated vaccine is evidently unavoidable, as Dr. Lister admits. To quote from his own paper: "As might be inferred from a consideration of this method, a few spores of *B. subtilis* are unfortunately present in the suspension, and they are not easily killed." One difficulty thus leads to another, as this concentrated vaccine has to be treated with a powerful disinfectant for a period of anything up to five days in order to kill out the contaminating organisms which are unavoidably drawn into the vaccine during the process of rapid centrifugalization. What the effect of this severe prolonged treatment by means of strong disinfectant on the concentrated vaccine may be no one can say; but it is obvious that such a complication is better avoided if possible. Vaccine prepared from solid media entirely obviates all the difficulties pointed out above. Such a method allows of the preparation in a sterile manner and its accurate standardization. Moreover, it is possible to keep each batch of vaccine

of known composition and uniform strength, which is of vital importance. Unless the vaccine be capable of issue in a uniform strength it is necessary to find the appropriate dose for each batch of vaccine issued. Furthermore, it is noteworthy that Lister's vaccine is prepared from cultures of considerable laboratory age. Recently isolated strains are preferable for the preparation of vaccine.

#### DOSAGE OF LISTER'S EIGHT GROUP PNEUMOCOCCUS VACCINE.

At first sight the doses recommended of the vaccine under consideration for the treatment and prevention of pneumonia is nothing short of astounding and demands the most careful examination. When a statement is made that a case of acute lobar pneumonia can safely be given a dose of 7,000 million pneumococcus vaccine, it is obviously necessary to seriously question the antigenic titre of such a preparation, or the possibility of the illness noth being due to pneumococcus.

I am aware that when Lister's vaccine was first employed for the treatment of cases of pneumonia that no clinical response whatever was obtained until the dose given reached about 10,000 million. In cases of pneumococcal pneumonia, I usually obtained definite response with doses of 25 million to 100 million pneumococcus vaccine carefully standardized and prepared from blood agar. The obvious inference, therefore, is that the antigenic value of Lister's 10,000 million pneumococcus vaccine is roughly equivalent to from 25 million to 100 million pneumococcus vaccine on blood agar and carefully standardized. It is therefore clear on these grounds alone that the process of manufacture enormously reduces the autogenic value of the vaccine. Autolytic changes probably represent the chief factor in this amazing lowering of its efficiency. It will therefore be seen that the objections to this method of preparation of Lister's pneumococcus vaccine are very weighty, viz.: the impossibility of preventing autolytic changes, the contamination of the vaccine, and its consequent prolonged treatment with a strong disinfectant, its astonishing reduction and consequent wide variation in antigenic value.

From a close study of the treatment of respiratory disease with vaccine I have for many years been satisfied that the above facts afford the only explanation available as to how such apparently large doses of vaccine can be employed in the treatment of such an acute disease, so sensitive to vaccine as pneumonia.

That the success or failure of vaccine in the treatment of various diseases depends very largely on the actual dosage employed need not be emphasized here except to say that the correct dosage of vaccine is just as important as the selection of an appropriate vaccine. *To put the matter shortly, it should be clearly understood that the dosage of pneumococcus vaccine recommended by Lister can and should only apply to Lis-*

*ter's vaccine.* This is probably not sufficiently well understood. Although for many years I have known of the large doses recommended by Lister of his vaccine, I have not found it necessary to in any way modify the doses which I myself employ of pneumococcus vaccine for the treatment of pneumococcal infections.

#### STATISTICAL AND GENERAL EVIDENCE.

The fallacies liable to be associated with deductions based on statistical examinations are too well known to need further emphasis here. The valuable paper by Dr. G. D. Maynard, late statistician to the Institute for Medical Research, Johannesburg, entitled, "Pneumonia Inoculation Experiment No. 3," emphasizes this matter to an extraordinary degree. It will be remembered that a large experimental inoculation was carried out on the Premier Mine, the results of the inoculation showing a most marked degree of decrease in the incidence of pneumonia among inoculated natives. As Dr. Maynard states, "this result was totally out of keeping with the results on the Rand, but in spite of this in some quarters great stress was laid on these returns." A critical examination of these figures showed, however, that the great decrease in pneumonia amongst the inoculated was spurious and that the results obtained were in a large part due to the adoption of a faulty system of allotting the control, and to other statistical fallacies. A further experimental inoculation was undertaken by the Rand Mines, the result of which was not favourable to inoculation. Dr. Maynard's paper then deals with the investigation of the experimental inoculation carried out with Lister's vaccine, in which 55,900 natives were employed, half being inoculated and half serving as controls, and confirms the conclusion of a previous investigation as follows:—

- (1) That the attack rate from pneumonia is apparently lessened by inoculation, a small positive co-relation being obtained.
- (2) That there is little or no evidence that the case mortality is favourably affected by inoculation.

He further states that he is unable to give any satisfactory reply as to whether the vaccine prepared by Lister from identical strain offers any advantages over the vaccine previously prepared by Wright from non-identified strains. On the face of it these conclusions are paradoxical. To claim protection against a particular disease, and at the same time to admit that the mortality amongst the inoculated is not favourably affected, is entirely at variance with the experience gained of preventive inoculation in other diseases. It has been the universal experience that amongst these individuals previously inoculated against typhoid and paratyphoid fevers, who in spite of inoculation developed the disease, the

mortality is considerably reduced, the disease tending to be mild and free from complications. It is stated, however, that after prophylactic inoculation against pneumonia, although the attack rate is lessened, that the case mortality is not affected. Under these circumstances, it is clear that the evidence in favour of inoculation with Lister's pneumococcus vaccine must be trifling. Without going into details of the statistics dealt with by Dr. Lister in his more recent publication, November, 1917, the concluding paragraphs of this paper are significant. Dr. Lister states: "I have not lost sight of the fact that a reduction of the mortality from pneumonia has occurred of late amongst the whole population of native mine labourers in the Transvaal. This is especially obvious during the present year and critics have lost no time in expressing the opinion that this fact indicates that the reduction recorded on the experimental lines is merely part of a general decrease due to natural causes. "This bare expression of opinion, however, constitutes a very glaring instance of *suppressio veri*. The fact that whilst there is a total of about 200,000 native labourers nearly 300,000 doses of pneumococcal vaccine have been used by this Institute for their prophylactic inoculation during the past twenty-two months is ignored. Until the statement that A, B, and C pneumonia has been completely abolished under experimental conditions, is refuted, all such speculative criticism is futile and scarcely deserves serious consideration."

As each boy received three inoculations, it would appear that some 50,000 boys were inoculated during the year. But it should be remembered that the vast majority of native workers only work for short periods, on an average about six months, on the mines, so that the actual proportion of inoculated boys to the total amount of population must constitute a small proportion, about 10 per cent. It is, therefore, clear that the incidence of pneumonia has decreased on all mines, possibly owing to the improved sanitation, better feeding and more careful selection of recruits—the susceptible tropicals being excluded—and that inoculation has been applied up to the present to only a small proportion of native labour engaged on the mines. But there is a further factor to be considered in regard to the general decline in the incidence of pneumonia on the mines. I am aware of an occasion when twelve boys, picked out for demonstration purposes as cases of lobar pneumonia, were found on investigation, in every case, to be cases of tuberculosis. The difficulty of differential diagnosis under the conditions of pressure of work obtaining on many of the mines, the wide incidence of silicosis with or without pulmonary tuberculosis amongst the natives on the mines, and the fact that—mention by Dr. Lister—"tuberculosis is un-

fortunately increasing rather than decreasing amongst the native mine labourers" all raise the very important query as to how far statistics based on rapid diagnosis which is liable to be bacteriologically incorrect, can be seriously considered? The fact remains that while the incidence of pneumonia has declined, the incidence of tuberculosis has increased. In addition to this evidence, however, it will be remembered that preventive inoculation against pneumonia was largely carried out amongst the native labour contingent which went overseas to Flanders. Investigations, however, have proved that the incidence of pneumonia amongst the inoculated and uninoculated members of this contingent showed no advantage in favour of inoculation with Lister's pneumococcus vaccine. Furthermore, it is known that experiments carried out in areas other than the Rand on a fairly large scale have given absolutely negative results. It will, therefore, be seen that quite apart from the very serious objections which have been raised in regard to a selection of strains and the actual method of preparation of this vaccine, there are many disquieting factors which call into question the validity of the claims which have been publicly put forward as to the success of prophylactic inoculation against pneumonia on the Rand. Furthermore, the evidence which is forthcoming in regard to the incidence of pneumonia among inoculated natives during the prevailing epidemic is significant. I understand no advantage in favour of inoculation has been demonstrated, a particularly heavy mortality occurring at Kimberley, where inoculation had been largely practised, and on the Rand no marked difference was apparent between inoculated and uninoculated groups. These results are in accordance with bacteriological findings, as pneumococcus alone has been a comparatively unimportant factor in the heavy mortality during the prevailing epidemic. In conclusion, it is necessary to state that the failure in the present method of prophylactic inoculation against pneumonia is due, not to the presence of an unidentified strain or strains of pneumococcus, but to the fact that the etiological importance of other micro-organisms, especially *M. catarrhalis*, streptococcus, streptococcus mucosus capsulatus, *B. influenzae*, *B. Friedlander*, *B. septicus* and staphylococcus has not been appreciated. The employment of a highly multivalent vaccine, prepared from numerous recently isolated virulent strains of the above micro-organisms enormously reduces the incidence of pneumonia and other respiratory diseases (excluding tuberculosis) and markedly reduces the mortality from these diseases. It is also significant that the individuals inoculated prophylactically with this mixed vaccine shortly before the prevailing influenza epidemic appeared in South Africa have escaped infection or only suffered from mild attacks free from complications.



In conclusion I should like to place on record my appreciation of the valued assistance and loyal support in these prolonged investigations of Mr. F. Russell, chief laboratory assistant, formerly of the Lister Institute, Mr. D. J. Russell, and Mr. J. A. Colverd, laboratory assistants, Clinical Research Laboratories, Johannesburg.

#### SUMMARY.

1. Anaphylactic and antianaphylactic phenomena play a very important part and are valuable guides in vaccine therapy, especially in diseases of the respiratory tract. Serological tests are not satisfactory guides or reliable indicators of established immunity, or of practical service in the carrying out of treatment with vaccines or sera.

2. The very important part played by symbiosis in bacterial infections of the respiratory organs cannot be too strongly emphasized. The clinical results of therapeutic and prophylactic inoculation with mixed vaccine lend strong support to these views.

3. A constitutional weakness in the elaborate defensive organization against invasion by the causative micro-organisms of respiratory diseases indicates a "pneumo-catarrhal diathesis." This constant diminished resistance can be successfully reversed by specific immunization with a highly multivalent mixed vaccine prepared from numerous recently isolated virulent strains of those pathogenic bacteria commonly conveyed in the air breathed. Non-specific treatment is of no avail.

4. Roughly, less than 25 per cent. of cases diagnosed as pneumonia in general practice are due primarily to infection with pneumococcus, the proportion varying from time to time. In all cases of pneumonia, however, the condition is sooner or later a mixed infection, in which any of the causative bacteria of respiratory diseases may be present. *M. catarrhalis* and streptococcus are the commonest in South Africa. Pneumococcus, *B. Friedlander*, *B. influenza*, streptococcus mucosus capsulatus, staphylococcus, *B. septicus*, are also regarded as important organisms in the etiology of pneumonia.

5. Whatever theoretical objections may be raised to this statement, the clinical results in practice, both of therapeutic and prophylactic inoculation for pneumonia, with a mixed vaccine, afford overwhelming evidence as to the soundness of these views. The mixed vaccine used is prepared from 150 virulent recently isolated strains of *M. catarrhalis*, streptococcus, pneumococcus, streptococcus mucosus capsulatus, *B. Friedlander*, *B. influenzae*, *B. septicus*, and staphylococcus. Each organism is represented in a curative therapeutic dose, the actual dose used being somewhat less than the amount required when each organism is used separately.

6. These views have been strongly confirmed and widely tested on a very large scale in South Africa during the prevailing epidemic of Spanish influenza, the very heavy mortality being due almost entirely to pneumonia. The mortality from pneumnoia has been greatly reduced by therapeutic inoculation with mixed vaccines. Similarly, prophylactic inoculation with larger doses of this mixed vaccine has reduced the incidence of influenza and prevented pneumonia, fatalities in individuals inoculated twice being rare.

7. The failure of preventive inoculation against pneumonia with various pneumococcus vaccines is due to a false or incomplete conception of the etiology of the disease broadly diagnosed as "pneumonia." This want of success is not due to faulty dosage of pneumococcus vaccine, or the absence of unidentified strains of pneumococcus. If pneumococcus vaccine was of definite value, proof would have been forthcoming long since in view of the numerous experiments which have been carried out on a large scale.

8. This failure is due to the fact that these etiological significance of other micro-organisms have not been recognized. The organisms in addition to pneumococcus are *M. catarrhalis*, streptococcus, streptococcus mucosus capsulatus, *B. Friedlander*, staphylococcus, *B. influenza*, and *B. septicus*. That the incomplete and inaccurate views in regard to the etiology of pneumonia have survived so long is due to the modern development of water-tight compartments in medicine. The clinician is not a bacteriologist. The bacteriologist is not a clinician.

9. Prophylactic inoculation with mixed vaccine prepared from the organisms enumerated will enormously reduce the incidence of pneumonia and other respiratory diseases (excluding tuberculosis), and largely abolish the mortality from these diseases. The actual composition of the vaccine and proportion of each organism represented in the mixed vaccine used should be decided from a close and extensive study of the bacteriological flora found in respiratory diseases.

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#### INTRAVENOUS THERAPY IN PERNICIOUS ANAEMIA.\*

A. BRODY, M.D., Toronto.

**I**N view of the very short time at my disposal, I shall confine my remarks to a consideration of the value of blood transfusion in typical cases of idiopathic pernicious anaemia. This does not mean that this same therapeutic measure is not equally important in the secondary anaemias, as for example in chronic sepsis, or as a pre-operative meas-

\*Read at the Toronto Academy of Medicine.

ure in malignancy, or as a means of conferring passive immunity in infectious diseases, where one can utilize the blood of an immune individual. This latter use has been suggested just recently in the treatment of very severe cases of the present epidemic.

One word as to the history of transfusion. Richard Lower of Cornwall, an able physiologist and successful practitioner, was the first to perform direct transfusion from one animal to another, in Feb., 1665. Next year he performed the same operation on a man before the Royal Society. Many similar operations followed in which the blood of animals was sometimes injected into human beings, with many resulting fatalities. This soon brought the use of transfusion into marked disrepute.

Not until 1875 was it experimentally shown that animal blood would hemolyze human blood, and not until 1892 that the blood of some individuals, whether normal or diseased, would destroy the blood of other persons. These advances revolutionized transfusion, as they practically eliminated all its dangers.

The method employed up to recently of direct transfusion by the suturing of vessel to vessel was laborious and surrounded with great difficulty, and it was not until 1914 that Hustin of Brussels showed that sodium citrate could be used to prevent coagulation of blood during transfusion. This method, now universally used, is simplicity itself, and is no more difficult than giving an intravenous saline.

Briefly, the method is as follows:—After satisfactory matching of prospective donor's and patient's blood, the donor is bled through a large needle in the vein into a quart flask containing 100 cc. of 2 per cent. sodium citrate solution. Later the fluid blood is run into the patient's vein just as a diarsenol would be. The procedure is simple and can be done by a medical man as well as by a surgeon, thus reducing the cost considerably.

The vast majority of pernicious anaemia patients who are presented for transfusion are in the very last stages of the disease. Degeneration of nerve, glandular and muscular tissues has far advanced, and these changes are secondary to the anaemia or a specific toxine, it is certain that as long as the patient is allowed to go down hill, these changes will progress.

Transfusion for this disease should be done early and not as a last resort. The signs of failing bone marrow function soon become evident in the blood picture, and it is then we should have recourse to this valuable therapeutic agent in order to give the blood forming organ a chance to recuperate,—resting them as we do a diseased heart. The aim of treatment should be to keep the blood nearly normal by small frequent.

ly repeated transfusions, and never allowing the hemoglobin to go below say 70 per cent. If this is kept up, as has been done in certain clinics, who knows but that the bone marrow may again take on its normal function and combat successfully the unknown etiological agent.

There is no doubt in the world of the efficacy of transfusion in this disease—the symptomatic improvement in over 75 per cent. is as rapid as it is miraculous, and a good proportion of the cases, in at least 50 per cent., if taken in hand early, enter into remission stages the duration of which may be even longer than hoped for.

The main point I am making, then, is early and frequent examinations of the blood to ascertain the onset of the disease or the approach of a relapse, and frequent transfusions, if necessary, to spare the hematopoietic organs as much as possible. Add to this the sensible hygienic care of these cases, the proper elimination of infected foci, the removal of the spleen in certain selected cases, and you have the very best treatment for this disease known to-day.

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#### THE PREVENTION OF VENEREAL DISEASES.

The Division of Venereal Diseases in the U. S. Public Health Service was created in July, 1918, as a section to the "army bill," and appropriation of \$4,000,000 was made for the campaign to control venereal diseases. This sum was made available from July 1, 1918, during two fiscal years. One million dollars was to be immediately available for state boards of health throughout the country, apportioned on the population basis. The same sum will be available on July 1, 1919, but on the condition that each state raises a sum equal to its apportionment. This condition is not imposed for 1918.

One million dollars is at once available to assist various states in caring for civilian persons "whose detention, isolation, quarantine, or commitment to institutions may be found necessary for the protection of the military and naval forces of the United States against venereal diseases."

For scientific research to discover more effective medical measures in the prevention and treatment of venereal diseases, one million dollars is appropriated; for the discovery and development of more effective educational measures in preventing venereal diseases and for related sociological and psychological research, \$300,000 is appropriated. For a Division of Venereal Disease in the Public Health Service \$200,000 is available and \$100,000 will be used for the expenses of the Interdepartmental Social Hygiene Board, provided for in the bill and composed of the Surgeons General of the Army, Navy, and Public Health Service.—*The Social Hygiene Monthly*.

## CURRENT MEDICAL LITERATURE

## SURGICAL SHOCK

F. C. Mann, Rochester, Minn. (*Journal A. M. A.*, Oct. 12, 1918), says that the extensive recent work on shock demonstrates the fact repeatedly emphasized by him, that the condition the surgeons call shock may be due to a variety of causes. Future work, he says, will probably concern itself with the different etiologic factors that could produce the clinical picture the surgeon has in mind. One general statement can be made to include all cases clinically diagnosed as shock, namely, that the fundamental cause of death in each instance is a failure of physiologic compensation. The relation of the nervous system to shock is not clear. It is probably a primary etiologic factor in some cases, particularly where an anesthetic has been employed, but this has not been absolutely proved by experiment. Under only two conditions has Mann been able to produce death by nerve stimulation. One condition was by stimulating the nerve fibres that inhibited respiration under deep anesthesia. He has never been able to cause death by stimulating nerves that did not inhibit respiration. It has also been long known that inhibition of the heart by vagus stimulation in mammals might cause death, and this has been suggested as a cause of fatal shock. However, to the present time, death, owing to reflex inhibition of the heart, has not been produced, in the author's experiments, by stimulation of any nerve except the superior laryngeal. It is quite possible that deep etherization and inhibition of respiration during operations has caused death in some cases that have been diagnosed as shock. The relation of fluid volume to shock has been questioned because of the distinction made between hemorrhage and shock. Mann has, experimentally, tried to determine the relation of capillary and venous circulation to shock by allowing the arteries to pump blood into the limb and obstructing the venous and lymph return, and it would seem that such a condition might produce the symptoms, but it should be emphasized that simple vasomotor dilation will not bring this about. The treatment of shock consists of, (1) general measure, (2) the use of drugs, (3) attempts to restore the fluid volume, and (4) special measures. The method of his experiments is described. The general measures employed consisted of placing the animal in the head-down position, and the application of heat, etc. A moderate heat applied was found to be of distinct value. Drugs were found useful for two purposes, either as a stimulant to the circulation or to produce vasomotor constriction. No experimental proof of benefit was discovered in these treatments. The value of vasomotor constrictors is still an open question. A large number

of artificial fluids have been used, and justify some tentative conclusions from their use in experimental shock. Physiologic sodium chlorid solutions are of least value, though hypertonic sodium chlorid solutions are of some value, and making the fluid alkaline helps. The use of glucose in the injected solution is also of value. None of the sodium chlorid solutions alone will maintain blood pressure for more than a very short time, even when it has been lowered but a slight degree by the exposure of the abdominal viscera. The employment of the so-called colloidal solutions, such as those containing acacia or gelatin, is of distinct value; injected into the veins, they will often restore and maintain the blood pressure for several hours, after it has been decreased one-half by abdominal exposure. Hence it would seem that the ideal artificial fluid should contain; (a) some substance to increase its colloidal properties, (b) an alkaline salt, and (c) glucose. It should be noted that none of the artificial fluids are as good as whole blood or blood serum for the purpose. The value of transfusion is well known, and in his experiments Mann has had good results from the use of citrated bloods, but to approximately restore blood pressure, in his experiments, the amount had to be comparatively large. Blood serum seems never to have been used in the treatment of shock. But in most of his experiments, Mann had better results with the intravenous injection of homologous serum, the best with relatively large doses, 20 c.c. per kilogram. Whether the method will prove of practical value, he does not know. The employment of other than homologous serum would probably be very dangerous. Special measures like rebreathing, etc., have been shown to be of value under experimental conditions.

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#### ANTIPNEUMONIA VACCINATION FOR SOLDIERS AND CIVILLIANS

The War Department authorizes the following:

Memorandum for all officers, enlisted men, and employees on duty in the War Department:

1. Vaccination against pneumonia has been given in two of the Army camps. At Camp Upton during the 10 weeks from the period of vaccination until the troops went overseas, no case of pneumonia due to the type of pneumococcus protected against (I, II, and III) occurred among the vaccinated troops. The incidence of pneumonia from the other organisms was only one-tenth as high among the vaccinated as among the unvaccinated, although previous to vaccination the incidence of pneumonia had been equal in the two groups.

2. The vaccine now being used is a lipo vaccine, given in a single injection, and containing pneumococci types I, II, and III. Reactions

are, as a rule, rather less pronounced than after antityphoid vaccination.

3. This vaccine is intended to afford a certain degree of protection to healthy individuals against pneumonia; it is not intended to cure those already sick. It is not advised for persons suffering from acute colds or fever.

4. This prophylactic vaccination is available to all officers, enlisted men, and employees on duty in the War Department who desire it. It will be administered at the Army Medical School, 462 Louisiana Avenue N.W., between 4 and 4.30 p. m. every afternoon except Sunday.

F. F. Russell,  
Colonel, Medical Corps, U. S. A.

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### 202 CASES OF INDUCED PNEUMOTHORAX

Everett Morris, of Oak Forest, Ill., reports on his use of induced pneumothorax in cases of pulmonary tuberculosis in the October number of the *American Review of Tuberculosis*.

The ideal case for this treatment is a recent progressive ulcerative unilateral lesion in one or more lobes (Turban II or III) without marked adhesion formation, the opposite lung being clinically free from pathological change. Such cases are rare and seldom found. The next class reveals extensive infiltration, consolidation, or cavity formation throughout one lobe or more (Turban II and III) with evidence of active infiltration in the opposite apex (Turban I) or its equivalent. In these the border line between utility and danger has to be sharply drawn. The treatment often relieves certain cases of acute pleurisy and may be expected to yield most gratifying results in recurrent haemoptyses otherwise uncontrollable and seemingly hopeless. Fibroid phthisis, miliary tuberculosis, tuberculous enteritis and cases with serious heart and kidney lesions should not be selected. The proper time for instituting treatment in the opinion of the author is after two to four weeks of sanatorium regimen have brought about no marked improvement. The third necessary factor to be considered is a co-operative attitude on the part of the patient.

The author has used the Murphy outfit adapted for the use of atmospheric air with arrangements for cleansing, sterilizing and warming the room atmosphere. The procedure necessitates all the precautions proper to a major operation. All refills as well as the initial treatment must be preceded by thoroughgoing physical examinations. The site of puncture is sterilized and anaesthetized with novocain and the Schleich infiltration method employed. After the introduction of the needle the oscillations of the manometer indicate the position of the

end of the needle and the occurrence and character of the various mechanical complications that may arise. The manometer is the vital part of the apparatus.

Large amounts of gas have been proved undesirable and the maximum has been reduced from the former dosage of 1200 to 1600 c.c. to the arbitrary maximum of 300 c.c. Small amounts call for frequent refills depending upon the absorptive power of the pleura, a power that decreases after pneumothorax has existed for some time. In the treatment of haemoptysis large amounts of air are necessary without considering the integrity of the opposite lung. Partially replacing fluid with air in pyo-pneumothorax and hydrothorax has given palliative results. Dangers incident to the opposite lung are minimized if guarded by small amounts of air during the early part of the procedure. Success depends on how the working lung accommodates itself to the new demands made on it.

In addition to loss of many distressing symptoms due to lessened auto-intoxication, the conversion of an open case into a harmless one is of great importance, especially if the length of residence in an institution is limited.

Of the cases treated many are helped, many restored to full working capacity, and a number have died. Proportionately more unilateral cases with haemoptysis are at work than any other class. Success depends upon the careful selection of cases for treatment. Detailed tables of 310 classified cases are appended giving the number of treatments and the outcome.

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### THE INFLUENCE OF PSYCHIC ACTS

Tohru Ishagami of Osaka, Hamadra, Japan, discusses the influences of psychic acts on the progress of pulmonary tuberculosis in the October number of the *American Review of Tuberculosis*. A variety of clinical observations were made with the following conclusions:

1. Psychic acts frequently influence the course of pulmonary tuberculosis unfavorably and render the treatment difficult.
2. Psychic acts often cause transient glycosuria.
3. The psychic influences upon the disease are accompanied by a lowering of the opsonic index.
4. Sugar and adrenalin both inhibit opsonic reaction.
5. Lowering of the opsonic index in emotional excitement is caused by an increase in the amount of sugar and adrenalin in the blood.
6. Impairment in the progress of the disease is caused both by a decrease in the opsonic reaction and in the digestive function.



7. Overtaxation of the mind of our youths by our unsatisfactory educational system seems to be the cause of the high mortality of young consumptives in our country.

8. The high mortality of our youths from tuberculosis is also partly due to the infection from tuberculous teachers, who in turn are the victims of excessive mental strain.

9. Prevention of excessive mental strain by an improvement in our educational system is one effective means of preventing the spread of consumption among our youths.

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#### PREVENTION OF BLINDNESS IN U. S. A.

The National Committee for the Prevention of Blindness is often asked to summarize briefly the objects for which it was instituted; these are as follows:

1. To endeavor to ascertain, through study and investigation any causes, whether direct or indirect, which may result in blindness or impaired vision.
2. To advocate measures which shall lead to the elimination of such causes.
3. To disseminate knowledge concerning all matters pertaining to the care and use of the eyes.

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#### DEATH RATE FROM DISEASE IN AMERICAN ARMIES

A health rate, which as far as known has never been surpassed, has been established by the American armies both here and overseas. For the week ended July 26 the combined reports of the American Expeditionary Forces and of the troops stationed in the United States show an annual death rate for disease of 1.9 per 1,000—less than 2 men per 1,000 per year. The annual death rate for disease of men of military age in civil life is 6.7 per 1,000.

This new rate is based on an approximate strength of 2,500,000 men, and includes men living under abnormal conditions. The overseas record was made while American soldiers were participating in the heavy fighting in the Marne salient, when they were frequently compelled to sleep and eat under the most primitive conditions.

That this record is truly representative of the general health of the troops is shown by the combined reports, which indicate the figure of 2.8 per 1,000 as the average death rate for disease during the past two months.

An idea of the progress being made in military sanitation is gained by a comparison with the following:

During the Mexican War the annual death rate for disease was 100 per 1,000. During our Civil War the rate in 1862 was 40 per 1,000 while during 1863 the rate jumped to 60 per 1,000. The disease death rate for the Spanish-American War was 25 per 1,000.

As far as available records show, the lowest figure heretofore recorded was 20 per 1,000 during the Russo-Japanese War.

*California State Journal of Medicine*

### THE VENEREAL DISEASE CAMPAIGN

The success of the campaign against venereal disease throughout the State will largely depend upon the public sentiment in the local community. In the past years the presence of venereal diseases was kept secret by the infected person and his physician, or was camouflaged. These methods were so successful that many intelligent people are surprised today to find what great prevalence these diseases have. To many the statistics seem greatly exaggerated. Even the best intentioned people sometimes find it inconceivable that such health conditions should prevail. If a truthful statement of facts collected from the country at large backed with some local statistics can be properly presented to these people they will become as ardent in their efforts to suppress these diseases as they have been in the past campaign against tuberculosis, typhoid fever and diphtheria. To some people the public health of the community will be the most important phase of the work; to others the great economic loss by these diseases will be sufficient reason for their enlisting in the campaign.

Manufacturers and employers of young men and women can be expected to render a great deal of assistance to the local health officers if their attention is called to the seriousness of the diseases. In a number of instances the large manufacturers are taking leading parts, even to the extent of establishing clinics of their own or contributing large funds for the establishment of municipal clinics.

The Social Hygiene Committee, through its branch office 105 W. 40th Street, New York City, is able to furnish to large employers of labor, literature that is very excellent, stimulating and capable of holding the interest of their employees. Glowing reports have come in from several communities where the manufacturers have made use of this literature.

In the education of the public two subjects should be kept in view. The importance of the public health and the treatment of the individual. If proper treatment be employed, the venereal diseases can soon be freed from their infective stage, and when treatment is continued for a sufficient length of time an absolute cure may be effected. When the in-

fectured individual can be assured of this and also that such treatment will not cost him a fortune, he will no longer be so sensitive about consulting a physician.

Another very effective method of educating public sentiment is to have well informed speakers talk before Chambers of Commerce, Mothers' Clubs or fraternal organizations. If requested, the department will make special effort to furnish speakers for such meetings.

*Heath News*

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## PERSONAL AND NEWS ITEMS

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I. R. Smith, M.B., M.R.C.S., Eng., L.R.C.P. Lond., formerly resident house surgeon in the New York Eye and Ear Infirmary, desires to announce to the medical profession that he has located his consulting rooms at 60 College St, Toronto, and will in the future confine his practice to the nose, throat, ear and eye. Telephone, North 464.

Dr. G. Sterling Ryerson announces that he has resumed practice. He has opened offices over the Canadian Bank of Commerce Building, No. 2 College St. He will devote his attention, as in the past, to diseases of the eye, ear, nose and throat. Telephone, North 3202, and residence, Hillcrest 1850. He will also give attention to the medical use of radium.

The virus of trench fever and those of influenza and of some forms of neuphritis have been isolated and identified, according to a report submitted to the Director-General of the Army Medical Service in France by a number of army medical officers who have been investigating the causes of these diseases. The report, which is preliminary to one promised soon, is signed by Major-General Sir John Rose Bradford, consulting physician with British expeditionary forces in France; Captain Dashford and Captain Wilson, and is printed in the *British Medical Journal*. According to this official statement the virus in each case has been proved to be a minute globular cell varying in size and behavior in the three types of disease. Investigations which have been conducted have resulted, it is believed, in the isolation of the germs of mumps, measles and typhus, the causes of which have hitherto been obscure and the bacilli of which have never before been isolated.

Twenty thousand Red Cross nurses, on their return from overseas, will be utilized in an educational campaign for the development of classes in home hygiene, according to plans outlined at the opening in New York of the Atlantic Division of the American Red Cross. The classes to be organized among business men and women, school children

and other groups, will work in conjunction with municipal, county and state public health boards and agencies, including industrial organizations in various parts of the country.

Medical arrangements for the allied forces at Archangel were declared to be "first class" by the British Commander-in-Chief in a report to the British Government, excerpt of which is made public here by the War Department. Sanitation in the districts occupied by the troops was poor, the report said, but this had not affected the health of the troops. "At present," said the report, "there is hospital accommodation for 20 per cent. of the allied and American troops of the force; and this percentage can be readily increased if necessary. There are plenty of medical supplies and equipment. A railway ambulance train is in service with accommodation for 100 patients and also 100 ambulance sleds."

Certain tribes of Indians on reservations in Utah have been almost decimated by the influenza epidemic, according to unconfirmed reports reaching the State Board of Health. Advices from San Juan County, in the southern part of the State, say that fully two thousand perished when the epidemic swept the Navajo reservation. Bodies are being found in many out-of-the-way places, it is reported, where Indians, men, women, and children, died alone and far from medical assistance. A canvass is being made in this section, and it is feared that one or two small tribes may have been wiped out entirely. Realizing the epidemic character of the disease, the Indians wandered away from their tribesmen, it is said, and strict account of deaths is virtually impossible.

Arthur C. Hendrick, M.A., M.B., F.R.C.S. Edin., desires to announce to the medical profession that in future he will confine his practice to gynaecology and abdominal surgery. Consultations by appointment, 20 Bloor St. E., Toronto. Telephone, North 3374.

Col. H. A. Bruce was married on 3rd February to Miss Angela Hall at Ipminster, Essex, England.

The Department of Civil Re-establishment has decided to utilize the Westminster Soldiers' Convalescent Hospital at London exclusively for mental cases. It will accommodate 350 patients. Patients now located at the Newmarket mental hospital will be transferred there. Neurological and shell shock cases will be treated as formerly in general hospitals. A new sanatorium for tubercular patients is to be built at Woodbridge at a cost of \$320,000.

Capt. Robert Dewar MacKenzie, M.B., 1914, joined the C.A.M.C. in February, 1916, and after being stationed in Toronto for six months, crossed to England, where he was attached to various battalions at Witley and Seaford Camps. Later he joined the 1st Field Ambulance

in France, and was wounded at Hill 70 in August, 1917, while serving as M.O. to the 15th Battalion, Toronto Highlanders. On his recovery he joined the 1st Field Ambulance, remaining with this unit until May, 1918, when he went again to the 15th. His aunt, Mrs. J. W. Gibson, lives at 590 Indian road, Toronto.

The report of the Provincial Board of Health on contagious diseases throughout the province for the month of January shows that there is a slight relief in the influenza epidemic and the number of deaths from the disease has greatly decreased. The deaths in January numbered 1,514, while last October there were 3,015, November 2,608, and in December 1,568. The total number of deaths since the epidemic started were 8,795.

The Victoria Cross has been awarded as a post-humous honor to the late Lieut. Wallace Lloyd Algie, of Toronto, who was killed in action in October last. His father, Dr. James Algie, resides in Parkdale.

Capt. Maurice R. Helliwell, M.B., 1915, who has served overseas with the R.A.M.C. and the R.A.F., has been critically ill since November 9th with pneumonia and pleurisy, following influenza. According to the latest reports, however, he is now well on the way to recovery at the home of Mrs. Ruthven Smith, Kent, England. In November, 1916, he was wounded in an airplane crash and returned on leave to Canada, but has been back in France about a year.

Dr. Cyril Muellieur was sentenced to six months' hard labor in Regina jail on a charge of manslaughter by Judge Elwood in the Court of King's Bench. The accused was found guilty of causing the death of Kathleen E. Thorne, at Norquay, Sask., last January, evidence submitted by the Crown showing that he failed to take all necessary precautions for sterilization at the time of the confinement of deceased, resulting in her death from peritonitis.

Capt. Roy H. Thomas, who went overseas three years ago, has been recalled for special duty. He arrived in Toronto recently. He has been for sixteen months in No. 1 Field Ambulance, and has been awarded the Military Cross for services on the field. Capt. Thomas was goalkeeper for the Barrie and later for the University hockey teams. Before enlisting he was in practice with Dr. N. A. Powell, of 167 College Street, and was first assistant in the Emergency Department of the Toronto General Hospital.

The figures for Toronto for 1918 show 12,218 births, 4,960 marriages, and 8,140 deaths. For 1917 the figures were 12,517 births, 5,206 marriages, and 6,186 deaths. The rise in the death rate was due to the influenza epidemic.

The Military Orthopedic Hospital on Christie Street, Toronto, is up to date in every detail. It has accommodation for 1,000 beds. It is expected that the Orthopedic Hospital at Davisville will be closed, and the patients transferred to the Christie Street institution.

Dr. Henry S. Tanner, who fasted for forty days in 1880, died in San Diego, Cal., on 12th January, at the age of 87.

Dr. Christopher Addison, President of the Local Government Board, has been entrusted with the task of establishing the British Ministry of Health. There will be an efficient intelligence department to keep the authorities advised on the outbreak of all contagious diseases. There will also be research laboratories.

The University of Toronto has received the payment of £5,253 from the British Government hospital equipment taken over by it, when the University Hospital was removed from Saloniki to Britain.

At a mass meeting of doctors in Wigmore Hall, in London, England, a proposal to form a trades union and use the strike as a weapon was narrowly defeated. Speeches were made in denunciation of the British Medical Association, and a resolution to form a new body to safeguard the interests of the medical profession was carried by a vote of 192 to 93.

The first steps toward the organization of a social hygiene programme for Canada were taken 3rd February, when representatives of a number of the provinces met in Ottawa at the call of the Acting Premier, Sir Thomas White, to discuss legislation for the control of venereal diseases. The conference was brought together at the suggestion of the military authorities, and each province was invited to send its chief health officer. While some of these were unable to be in attendance, those provinces which could not send representatives sent telegrams expressing their cordial sympathy with the objects of the conference.

The General Hospital in Chatham was quarantined when it was found that a patient had been admitted with smallpox.

The appropriations for the Public Health Department of Toronto this year will be \$602,776. The amount required for a measles hospital and for a nurses' home for the Isolation Hospital has been deferred for the present.

A movement has been set on foot for the erection of a General Hospital for the County of Essex.

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**OBITUARY**

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**R. A. REEVE, B.A., M.D.**

One of the prominent physicians of Canada, Dr. Richard A. Reeve, died suddenly 27th January, at Harbord Street and Spadina Avenue, after attending a meeting at the University.

Constable Williams who saw him falter and fall, immediately summoned Dr. H. D. Munro, 616 Spadina Avenue, who pronounced life extinct. The body was removed to his late residence, 48 Bloor Street East.

Dr. Reeve, who was born in Toronto in 1842, son of the late William R. and Mrs. Reeve, obtained many honors in his profession, and had been engaged in his work as eye specialist almost up to the hour of his death. He obtained his B.A. degree, and won the silver medal in Natural Sciences in Toronto University, 1862, and took his degree of M.D. from the University a few years later, after obtaining the same degree from Queen's University, Kingston.

In 1902 he was presented with the honorary degree of LL.D. of Toronto, and in 1911 the corresponding honor was accorded him by McGill and Birmingham Universities. He was elected a fellow of the Royal College of Physicians and Surgeons in 1866. A year later Dr. Reeve began his work as eye and ear specialist in Toronto, and for many years lectured on ophthalmology in the Toronto School of Medicine. He was appointed lecturer in ophthalmology and otology in the University of Toronto in 1885, and was elected Dean of the Medical Faculty in 1896, resigning from this in 1908.

Dr. Reeve was a member of the Toronto University Council, a member of the Board of Regents, Victoria University; at one time president of the Canadian Medical Association, and was president of the British Medical Association when it met in Toronto in 1906. He was appointed head of the service, eye department, in Toronto General Hospital in 1907. From 1904-7 he was president of the University Alumnae Association, and a delegate to the British Medical Congress in 1910. A few years ago he was president of the Toronto Academy of Medicine.

Dr. Reeve was an active member of the Central Methodist Church. His wife predeceased him nearly two years ago. The immediate surviving relatives are two sisters, Mrs. M. Lavelle, of Kingston, widow of the late Dr. Lavelle, and Mrs. Rosebrough, of this city, widow of the late Dr. A. M. Rosebrough, and a brother, Dr. J. Reeve, of Deland, Florida.

A warm tribute was given recently to the late physician by Sir Robert Falconer, President of Toronto University: "We looked upon him as one of the greatest friends of the University. He was a man who

served greatly, and his name will long be cherished. He was an ideal dean, and a man whom everyone respected."

The funeral service, at Convocation Hall, was simple and yet impressive in character. Following a brief service at the family residence, 48 Bloor Street East, for relatives and close friends, the funeral cortege proceeded to Convocation Hall, where a large gathering of students and members of the staff awaited to pay their last tribute of respect to a beloved scholar. Chopin's funeral march was played by the organist, Mr. Mouré, while the gathering sang "Oh God, Our Help in Ages Past." Hon. Dr. Cody offered prayer, and Chancellor Bowles, of Victoria, and Rev. E. B. Lancely, of Central Methodist Church, paid tribute to the character and attainments of the dead. Chancellor Bowles referred to Dr. Reeve as one of the most beloved physicians and one of the finest Christian men he had ever known, one who had a world vision and was trying to pass on what he had to the world. Rev. Dr. Lancely spoke of his modesty as an outstanding feature of his character.

Beautiful floral tributes were sent from the Faculty of Medicine, the University of Toronto, the Fellows of the Academy of Medicine, the Ontario Medical Association, the Aesculapian Club, from the Faculty of Applied Science. The trustees of the Toronto General Hospital sent a floral wreath, and fragrant roses were the offering from the Governors and Senate of Toronto University.

The pall-bearers were: President Falconer, Dr. C. K. Clarke, Dean Robertson, Prof. Lang, Dr. I. H. Cameron and Dr. Alexander McPhedran.

In order to permit the staff and students to attend Convocation Hall, work was suspended in all faculties and colleges from 2 to 4 o'clock.

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#### CAPT. H. R. SMITH, M.D.

The death occurred 14th January, at the General Hospital, from pneumonia, of Capt. Dr. Harry R. Smith, of the staff of Hart House. Capt. Smith went overseas in 1915 with Col. Rennie's No. 2 Casualty Clearing Station, and was connected with the stations at Alexandria and Khartoum, in Egypt. He was seriously wounded in France on Dec. 8, 1916, and after returning to Toronto joined the staff of the Hart House. While connected with this institution Capt. Smith visited several hospitals doing similar work in the United States, where he contracted the illness which proved fatal.

Capt. Smith was married and besides his wife, is survived by his parents, who live at 48 Yorkville Avenue.

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#### GUY H. WALLACE, M.D.

Dr. Wallace, son of Mr. A. E. Wallace, of 94 Glen Road, Toronto, died last December at his home in New York. He graduated in medicine



from the University of Toronto in 1909. He was for some time assistant professor in the Pathological Department of Bellevue. He went overseas for upwards of a year, but his health failing, he returned to Toronto, where he underwent an operation. He is survived by his widow.

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DR. J. BARRETT SCOTT.

A very promising career was cut short in the sudden death by pneumonia following influenza at Moose Jaw, Sask., on Oct. 28th, of Dr. J. Barrett Scott. The late Dr. Scott was the second son of the late Rev. M. H. Scott, at one time Principal of the Ottawa Ladies' College. He graduated in medicine in 1909 from McGill University and was enjoying a lucrative practice in Moose Jaw, where he was making a reputation for himself in the treatment of nervous and chronic diseases.

He was 34 years of age and is survived by his widow.

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DR. WM. E DEMPSTER.

While ministering to the sick of Timmins, Ont., Dr. William Edwin Dempster contracted influenza, and after a short illness, died on 10th February. After receiving his degree at Toronto University, he married Miss Electa Strong, who survives him, and began practicing in Northern Ontario. He was born in Sault Ste. Marie some 30 years ago.

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MENTIONED IN DESPATCHES

Amongst Canadian soldiers during the war, the use of tobacco in one form or another was almost universal. It often happens that a man can enjoy a chew of tobacco when conditions prevent him from smoking, and such conditions frequently arose during the life at the front.

Chewing Tobacco kept the soldiers cheerful, and its use was therefore encouraged by influential men who knew from personal observation that it was desirable and beneficial for them. For example, we find that one of the best-known of Canadian chaplains overseas, when cabling recently to friends in Montreal, stated that gifts of chewing tobacco would be most welcome and appreciated by Canada's soldiers.

It was Lt.-Col. the Rev. Canon Scott, C.M.G., who gave chewing tobacco this special recommendation. As senior chaplain to the First Canadian Division and having been associated with the troops during four years of active service, Canon Scott knew exactly what the men wanted and why they should have it. Taking into account his long experience and his solicitude for the welfare of the men, his mention of chewing tobacco in the despatches referred to above is a remarkable testimony to the value of tobacco in that form.

## BOOK REVIEWS

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### SURGICAL TREATMENT, VOLUME II.

**Surgical Treatment.** A Practical Treatise on the Therapy of Surgical Diseases for the use of Practitioners and Students of Surgery. By James Peter Warbasse, M.D., formerly Attending Surgeon to the Methodist Episcopal Hospital, Brooklyn, New York. In three large octavo volumes, and separate Desk Index Volume. Volume II. contains 829 pages with 761 illustrations. Philadelphia and London: W. B. Saunders Company. 1918. Per set (three volumes and the Index Volume): Cloth, \$30.00. J. F. Hartz Company, Toronto, Canadian agents.

This splendid work of Dr. Warbasse is making progress towards completion. The second volume reflects great credit on the author. His skill and care in its preparation are seen on every page. This volume covers treatment of the head, eye, nose, larynx, mouth, ear, the spine, neck, thyroid gland, the thorax, the breast, the abdomen, and the preparation of the patient. The methods of surgical treatment are sound and modern, and must be an excellent help to all who have to deal with surgical cases. The work is superbly illustrated. The publishers have done their part in an ideal manner.

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### INTERNATIONAL CLINICS.

A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Paediatrics, Obstetrics, Gynaecology, Orthopaedics, Pathology, etc., etc. Edited by H. E. M. Landis, M.D., Philadelphia. Vol. IV., Series 28th, 1918. J. B. Lippincott Company, Philadelphia, 1918.

This is as good a volume as any in the long series. The articles cover a wide range of topics, and the subjects have been selected with the view to making the volume useful for the present moment. There are ten clinical lectures, five on medicine, one on public health, and fourteen on surgery. The illustrations are numerous and excellent. Praise is due the publishers for their efforts in keeping up so high a standard.

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### PROGRESSIVE MEDICINE.

A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., and L. F. Appleman, M.D., December, 1918. Lea & Febiger, Philadelphia and New York. Price \$6.00 per year.

The volume before us covers diseases of the liver, pancreas, peritoneum, and digestive organs by Dr. Rehfuss; diseases of the kidneys by Dr. Christian; genito-urinary diseases by Dr. Bonney; surgery of the

extremities and a number of other topics by Dr. Bloodgood; and practical therapeutics by Dr. Landis. These articles all merit praise. The paper, presswork and illustrations reflect the highest credit upon the well-known publishers. Progressive Medicine is worthy of a place in any library.

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### MEDICAL CLINICS OF NORTH AMERICA.

The United States Army Number, September, 1918. Published Bi-monthly by W. B. Saunders & Company. Philadelphia and London. Price per year, \$10.00.

This number is full of the most useful sort of articles on the medical problems of the army. It would well repay a careful reading, however, by those who are not connected with army work, as the infections discussed are those met with in civil life. These "Clinics" are finding a wide field of useful work, and the excellence of the issues from time to time is commanding respect and confidence.

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### TORONTO'S VITAL STATISTICS.

In his report to the Local Board of Health for the month of December, Dr. Hastings, M.O.H., gives the following information:

There were 610 deaths from all causes during December. In December, 1917, there were 445. Deaths under one year of age last month numbered 84.

A total of 217 cases of communicable diseases were reported.

Seventy-six child welfare clinics were held.

There were 393 home visits by nurses in pre-natal work, and 640 birth registrations.

In the Public Schools 1,249 complete physical examinations of children were made, and in the Separate Schools 195. Altogether there were 843 pupils with notifiable defects other than of teeth. Pupils in the Public Schools with notifiable defects of teeth numbered 1,688, and in Separate Schools 1,258.

Tuberculosis clinics held, 28; patients, 299.

At the Isolation Hospital there were 160 admissions, 118 discharges, and 10 deaths.

Five thousand nine hundred and fifty-nine families were under the supervision of the public health nurses.

One thousand eight hundred and forty-five examinations were made in the laboratories.

Two hundred and ninety-nine houses were placed under quarantine; 148 people were removed from homes under quarantine to hospitals.

## MISCELLANEOUS

DECORATIONS AWARDED TO OFFICERS OF THE CANADIAN  
ARMY MEDICAL CORPS DURING THE WAR.

*Victoria Cross.*—Captain P. A. C. Scrimger.

*Companion of the Bath.*—Lieut.-Col. (Temp. Col.) G. L. Foster, P.A.M.C., Colonel H. S. Birkett, Colonel J. Q. Roberts, Colonel A. E. Ross, Colonel A. Primrose.

*Companion of St. Michael and St. George.*—Colonel A. E. Ross, Lieut.-Colonel F. S. L. Ford, Surgeon-General G. C. Jones, P.A.M.C., Lieut.-Colonel F. Etherington, Lieut.-Colonel S. M. McKee, M.C., Major E. G. Davis, Lieut.-Colonel E. C. Hart, P.A.M.C., Major-General J. T. Fotheringham, Colonel C. A. Hodgetts, Colonel D. W. McPherson, Colonel W. A. Scott, Colonel W. L. Watt, Major (acting Lt.-Col.) J. A. Amyot, Colonel A. E. Snell, P.A.M.C., Colonel G. E. Armstrong, Honorary Lt.-Colonel G. W. Badgerow.

*Order of the British Empire (Officers).*—Lieut.-Colonel F. H. Mewburn.

*Order of the British Empire (Member).*—Capt. W. H. Fox, Capt. R. Kirkpatrick.

*Knight Bachelor.*—Major A. Macphail.

*Distinguished Service Order.*—Major P. Burnett, Major (Act. Lt.-Col.) P. C. Bell, Major (Act. Lt.-Col.) A. T. Bazin, Lieut.-Colonel G. J. Boyce, Colonel H. A. Chisholm, P.A.M.C., Lieut.-Colonel J. E. Davey, Lieut.-Colonel C. H. Dickson, Lieut.-Colonel A. S. Donaldson, Major (Act. Lt.-Col.) J. J. Fraser, Major R. M. Gorrslie, P.A.M.C., Major G. H. R. Gibson, Lieut.-Colonel A. L. G. Gilday, Lieut.-Colonel J. N. Gunn, Lieut.-Colonel E. B. Hardy, Lieut.-Colonel W. B. Hendry, Lieut.-Colonel H. M. Jacques, P.A.M.C., Major J. S. Jenkins, Lieut.-Colonel D. P. Kapple, Major G. S. Mothersill, Lieut.-Colonel T. J. S. Murphy, P.A.M.C., Capt. T. H. McKillip, Lieut.-Colonel C. F. McGuffin, Lieut.-Colonel J. D. McQueen, Capt. S. A. Smith, Temp. Colonel A. E. Snell, P.A.M.C., Lieut.-Colonel Templeton, Lieut.-Colonel W. Webster, Lieut.-Colonel R. P. Wright, Lieut.-Colonel E. J. Williams, Temp. Capt. H. G. Young.

*Military Cross.*—Capt. H. H. Argue, Capt. A. C. Armstrong, Capt. J. E. Affleck, Capt. H. G. Allison, Capt. W. F. Abbott, Capt. W. Brown, Capt. Act. Major H. Buck, Capt. T. H. Bell, Capt. J. A. Cullum, Capt. H. E. Cumming, Capt. K. E. Cooke, Capt. A. B. Chapman, Capt. W. G. Cosbie, Capt. W. Creighton, Capt. J. P. S. Cathcart, Temp. Capt. D. St. C. Creighton, Capt. A. A. Drinnan, Capt. F. F. Dunham, Capt. H. C. Davis, Capt. E. Douglas, Capt. (Act. Major) W. T. Ewing, Capt. C. P.

Fenwick, Capt. G. M. Foster, Capt. G. G. Green, Capt. R. J. Gardiner, Capt. W. M. Hart, Capt. A. K. Haywood, Capt. R. H. M. Hardisty, Capt. H. Hart, Capt. W. Hale (Junior), Capt. R. T. W. Harold, Capt. A. D. Irvine, Capt. C. W. Johnston, Capt. H. B. Jeffs, Capt. A. C. C. Johnston, Capt. E. S. Jeffrey, Major A. L. Jones, Capt. A. M. C. Jepson, Capt. J. E. Kidd, Capt. R. W. Kenny, Capt. C. Kerr, Capt. F. W. Lees, Capt. R. M. Luton, Capt. V. H. K. Moorehouse, Lieut. H. P. MacGregor, Capt. (Temp. Major) R. H. MacDonald, Capt. H. R. Mustard, Capt. G. A. Menzies, Capt. J. F. S. Marshall, Capt. T. W. Moore, Capt. J. G. MacNeill, Capt. W. J. McAllister, Capt. J. B. McGregor, Capt. H. W. McGill, Capt. J. E. McAskill, Capt. A. McCausland, Capt. E. A. McCusker, Capt. W. F. Nicholson, Capt. T. F. O'Hagan, Capt. (Act. Major) P. Poisson, Temp. Lieut. F. G. Pedley, Capt. A. A. Parker, Capt. H. F. Preston, Capt. A. S. Porter, Capt. A. Ross, Capt. S. G. Ross, Lieut. (Temp. Capt.) C. G. Sutherland, Capt. A. H. C. Smith, Capt. W. H. Scott, Capt. W. H. Secord, Capt. W. E. Sinclair, Capt. G. W. Treleaven, Capt. F. J. Tees, Capt. A. H. Taylor, Capt. W. G. Turner, Capt. D. G. K. Turnbull, Capt. H. W. Wadge, Capt. W. L. Whittemore, Temp. Capt. D. A. Warren, Capt. J. W. Woodley, Capt. H. W. Whytock, Capt. E. C. Whitehouse.

*Bar to Military Cross.*—Capt. J. A. Cullum, Capt. F. W. Lees.

*Mentioned in Despatches.*—Major J. A. Amyot, Lieut. (Act. Capt.) A. A. Anderson, Capt. F. C. Bell, Colonel J. W. Bridges, P.A.M.C., Major A. T. Bazin, Capt. T. H. Bell, Capt. H. Buck, Colonel H. S. Birkett, Major P. Burnett, Capt. N. J. Barton, Major (Act. Lieut.-Col.) P. G. Bell, Capt. (Temp. Major) H. A. Chisholm, Lieut.-Colonel K. Cameron, Lieut.-Colonel R. P. Campbell, Capt. J. A. Crozier, Capt. W. A. Clarke, Capt. J. E. Campbell, Capt. L. E. Clarke, Major D. J. Cochrane, Major J. L. Duval, Capt. A. S. Donaldson, Lieut.-Colonel E. G. Davis, Lieut.-Colonel H. R. Duff, P.A.M.C. (deceased), Major C. H. Dickson, D.S.O., Lieut.-Colonel J. E. Davey, Lieut.-Colonel F. Etherington, C.M.G., Capt. A. W. M. Ellis, Lieut.-Colonel (Temp. Col.) G. LaF. Foster, C.B., P.A.M.C., Lieut.-Colonel F. S. L. Ford, C.M.G., Capt. J. J. Fraser, D.S.O., Major-General J. T. Fotheringham, C.M.G., Capt. G. H. R. Gibson, Major R. M. Gorrslie, D.S.O., Capt. (Act. Major) D. A. L. Graham, Lieut.-Colonel J. A. Gunn, Major E. B. Hardy, D.S.O., Lieut. A. K. Haywood, M.C., Lieut. W. M. Hart, M.C., Capt. G. C. Hale, Lieut.-Colonel W. B. Hendry, D.S.O., Lieut.-Colonel E. C. Hart, C.M.G., D.S.O., P.A.M.C., Lieut. R. Henderson, Major L. C. Harris, Capt. R. H. M. Hardisty, M.C., Capt. H. Hart, M.C., Capt. H. B. Jeffs, M.C., Capt. J. S. Jenkins, D.S.O., Lieut.-Colonel H. M. Jacques, D.S.O., P.A.M.C., Capt. G. E. Kidd, M.C., Capt. G. Kerr, D.S.O., Lieut. (Temp. Capt.) A. F. Laird, Capt. W. G. Lyall, Major W. T. M. MacKinnon, Capt. R. H. MacDonald, Major C. H.

Morris, Major G. S. Mothersill, D.S.O., Capt. H. R. Mustard, M.C., Capt. R. St. J. MacDonald, Capt. W. J. E. Mingie, Lieut.-Colonel T. J. F. Murphy, D.S.O., P.A.M.C., Colonel D. W. McPherson, C.M.G., Capt. R. H. McGibbon, Capt. T. H. McKillip, D.S.O., Lieut.-Colonel J. D. McQueen, D.S.O., Lieut. D. McGugan, Colonel M. McLaren, Lieut.-Colonel S. H. McKee, C.M.G., M.C., Capt. A. McCausland, M.C., Capt. R. R. McClenahan, Lieut.-Colonel C. F. McGuffin, D.S.O., Lieut.-Colonel G. R. Philp, Major H. C. Parsons, Major S. Paulin, Lieut.-Colonel A. E. Ross, C.M.G., Major A. C. Rankin, Colonel J. A. Roberts, Capt. D. E. Robertson, Capt. S. G. Ross, M.C., Capt. (Act. Major) A. B. Ritchie, Lieut.-Colonel A. T. Shillington, Capt. E. L. Stone, Colonel A. E. Snell, C.M.G., D.S.O., P.A.M.C., Capt. A. B. Schinbein, Lieut.-Colonel C. P. Templeton, Q.-M. and Hon. Capt. J. T. Tulloch, Lieut.-Colonel E. J. Williams, Major F. Walsh, Lieut.-Colonel R. P. Wright, D.S.O., Lieut.-Colonel F. W. E. Wilson, Major C. A. Young, Temp. Capt. H. G. Young, D.S.O.

## FRANCE.

*Croix de Commandeur*.—Lieut.-Colonel E. A. LaBel, P.A.M.C. (Major-General E. Fiset, D.S.O.

*Croix de Officier*.—Major-General G. LaF. Foster, C.B., P.A.M.C.

*Croix de Chevalier*.—Lieut.-Colonel A. Mignault, Colonel G. E. Beauchamp.

*Croix de Guerre*.—Capt. A. C. Armstrong, Major W. H. K. Anderson.

## BELGIUM.

*Croix de Guerre*.—Colonel A. E. Ross, C.B.

## SERBIA.

*Order of Saint Sava*, "5th Class."—Capt. H. J. Shields.

## ITALY.

*Silver Medal for Military Valour*.—Capt. H. H. Burnham.

## C.A.M.C. NEWS, MONTH OF JANUARY, 1919.

*Appointments (Canada)*.—Capt. John Wesley Brien, is posted for duty at the Hart House, Toronto; Lieut.-Colonel Charles Hawkins Gilmour, resumes duty in M.D. No. 2 from M.D. No. 5; Capt. William Henry Butt is posted for duty under the A.D.M.S., M.D. No. 2 on ceasing to be seconded to the Royal Air Force; Lieut. Ashley William Valens is posted for duty under the A.D.M.S., M.D. No. 13 from M.D. No. 2; Capt. Harold St. Clair Wismer is detailed for duty at the Military School of Orthopaedic Surgery and Physiotherapy, Hart House, Toronto; Major William Bernard MacDermott is posted for duty as Officer Commanding the

London Military Convalescent Hospital, vice Major John Cameron Wilson; Major Edward S. Jeffrey, M.C., is posted for duty under the A.D.M.S., M.D. No. 2; Capt. Joseph Jordan is posted for duty under the A.D.M.S., M.D. No. 2; Major (Temp. Lt.-Col.) Charles Carter is detailed for duty temporarily as D.A.D.M.S. Hospitalization, M.D. No. 2; Lieut.-Colonel David Alexander Whitton is posted for duty as O.C. Camp Hill Hospital, vice Lieut.-Colonel A. J. MacKenzie; Capt. Hiram Benson Thompson is posted for duty under the A.D.M.S., M.D. No. 2; Colonel George Eli Armstrong, C.M.G., is posted for duty as Consultant in Surgery in M.D. No. 4, and as Surgeon in Charge of the proposed Special Surgical Clinic at the Royal Victoria Hospital, Montreal; Capts. Wilfred Elmo Jones White and James Moore are appointed under the A.D.M.S. embarkation and attached to the Clearing Service Command; Lieut.-Colonel Charles Stanley McVicar is posted for duty as Officer Commanding Dominion Orthopaedic Hospital. The following officers are appointed as Medical Officers to Conducting Staffs and attached to the Clearing Services Command: Capt. James Wallace Smuck, Major James Allen Williams, Capt. Arthur William McArthur, Capt. Kelso Carmichael Cairns, Capt. Thomas Ronald Dwyer, Capt. Albert Theodore Leatherbarrow, Capt. Saul Alfred Cloutier, Capt. James Henry Egbert, Capt. Samuel Astrof; Lieut.-Colonel Gilbert Royce is posted for duty under the A.D.M.S., M.D. No. 2; Capt. Michael Joseph Casserly is posted for duty under the A.D.M.S., M.D. No. 2; Capt. (Act. Major) John Ewart Campbell is posted for duty under the A.D.M.S., M.D. No. 11; Capt. Donald Cecil McFarlan on being appointed for special duty in connection with demobilization overseas is attached to the Clearing Services Command.

*Promotions.*—Major Robert Michael Hillary to be Lieut.-Colonel whilst specially employed in connection with Medical Services, M.D. No. 2; Lieut. Aulder Leopold Gerow, M.D. No. 7, to be Captain; Lieut. William Harold Maxwell Johnson, A.M.C., Training Depot No. 1, to be Captain; Lieut. William Hunter Woods, A.M.C., Training Depot No. 1, to be Captain.

*Returned from Overseas.*—Capt. L. A. Gried, Capt. W. E. Graham, Lieut. C. E. Lamb, Lieut. V. B. Persse, Capt. Hiram Benson Thompson, Lieut.-Colonel Edward Cooper Cole, Capt. A. R. Perry, Capt. J. C. McCullough, Capt. W. McCullough, Capt. A. P. Argue, apt. (Act. Major) H. H. McIntosh, Major W. L. Shannon, Capt. G. M. Reid, Capt. Walter Walker Wright, Major Thomas Francis O'Hagan, Capt. M. W. Macaulay, Capt. W. V. Sargent, Lieut.-Colonel J. H. Wood, Capt. R. N. Thomas, Colonel J. M. Elder, Major (Act. Lt.-Col.) G. Turner, Capt. D. A. McCaulay, Lieut.-Colonel G. Clingan, Capt. H. G. Craig, Major Thomas Pinkerton Bradley, Capt. W. L. Muir, Capt. Alexander Douglas

# Caffein and Cardiac Disease

Persistent interference with the rythmical functioning of an organ will inevitably induce organic disintegration.

The habitual daily use of coffee and tea, both containing the alkaloid, caffein, a well-known cardiac stimulant, sooner or later *must* result in harm to the heart's functional and organic integrity.

Is it not the duty of every physician to induce those of his patients who are injuring themselves from tea or coffee drinking to leave it off.

It's easy to secure ready compliance if you suggest in place of coffee a cup of hot, well-made

## POSTUM

This famous food-drink contains all the nutritive elements derived from whole wheat, and a small per cent of wholesome molasses; but is entirely free from caffein or any other drug.

Postum has a dark-brown color which changes to golden-brown when cream is added; the taste is snappy and much resembles that of high-grade Java.

Postum comes in two forms: Postum Cereal must be well-boiled to bring out its rich flavor. Instant Postum requires no boiling. A teaspoonful in a cup with hot water dissolves quickly and, with the addition of sugar and cream, makes a delightful, healthful drink instantly.

Samples of **Instant Postum**, **Grape-Nuts** and **Post Toasties** for personal or clinical examination, will be sent on request to any Physician who has not yet received them.

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Canadian Postum Cereal Co., Ltd., Windsor, Ont., Canada



Dyas, Capt. Arthur John Martin, Major H. C. Hall, Capt. J. E. Berry, M.C., Capt. N. B. Taylor, Capt. L. S. Foster, Capt. A. B. Blackett, Capt. D. St. C. Campbell, Capt. W. F. Coy, Major W. A. Groves, Capt. C. E. Slatt.

*Retirements.*—Capt. Franklin Fracker, on general demobilization; Capt. Charles Watson Hurlburt, assumes duty with the Board of Pension Commissioners; Capt. Robert James Gibson, on general demobilization; Capt. Arthur Earington Ranney, on general demobilization; Capt. Walter Linlow Barlow, on general demobilization; Capt. Charles Delmar Rilance, medically unfit; Capt. Julien Derwent Loudon, medically unfit; Capt. Wilfred Curtis, medically unfit; Lieut.-Colonel Hadley Williams, on general demobilization; Lieut. Joseph Percy McGrath, on general demobilization; Major William Wesley Lorne Musgrove, on general demobilization; Capt. Henry Mansfield Torrington, on general demobilization; Capt. Edwin I. Reach, on assuming duty with the Invalided Soldiers' Commission; Capt. Lawrence Thornton Ainley, on assuming duty with the Board of Pension Commissioners; Capt. Thomas Geddes, medically unfit; Major Harry Manley Nicholson, on assuming duty with the Board of Pension Commissioners; Lieut. Robert Henry Baker, on general demobilization; Colonel Charles A. Hodgetts, C.M.G., on general demobilization; Capt. William Berkeley Stark, on general demobilization; Capt. Harold D. Courtenay, on assuming duty with the Board of Pension Commissioners; Capt. Donald George Sinclair McKay, medically unfit.

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#### THIRTY-NINTH ANNUAL MEETING OF THE ONTARIO MEDICAL ASSOCIATION, TORONTO, MAY, 1919.

The thirty-ninth annual meeting of the Ontario Medical Association will be held in Toronto on Wednesday, Thursday and Friday, May 28th, 29th and 30th, 1919.

The Committee on General Purposes will meet on Tuesday, May the 27th, at 2 p.m.

The Chairmen and Secretaries of the various Sections are as follows:

*Medicine.*—Chairman, Dr. John Sheehan, Toronto; Secretary, Dr. F. C. Harrison, Toronto.

*Surgery.*—Chairman, Dr. Edmund E. King, Toronto; Secretary, Dr. T. A. Robinson, Toronto.

*Obstetrics and Gynaecology.*—Chairman, Dr. B. P. Watson, Toronto; Secretary, Dr. Gordon Gallie, Toronto.

*Eye, Ear, Nose and Throat.*—Dr. F. C. Trebilcock, Toronto; Dr. J. C. Calhoun, Toronto.

**SMOKE**

**SWEET CAPORAL  
CIGARETTES**

“The purest form  
in which tobacco  
can be smoked”

*Lancet.*

**SOLD  
EVERYWHERE**

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*for*

**15c**



Every effort is being put forth to present a programme that will be of interest to all practitioners, and we trust that the members of the Association throughout the province will keep the above dates in mind and let nothing prevent them from attending the Victory Meeting of our Association.

DR. T. C. ROUTLEY,  
Toronto, Secretary.

DR. G. STEWART CAMERON,  
Peterborough, President.

### INFLUENZA MORTALITY.

The following is the table of influenza and pneumonia losses and the claims resulting therefrom as reported by the individual companies for October, November and December, 1918. The indications are that when the full figures are available it will be found that the total loss of insured lives will reach, if not exceed, 200,000 and that the claims will aggregate in the neighborhood of one hundred million dollars.

	No. of Lives.	Estimated Amount.
Aetna Life Insurance Co. of Hartford . . . . .	1,250	\$1,897,408
American National Life Ins. Co. of Galveston . . . . .	....	200,000
Bankers Life Ins. Co. of Des Moines . . . . .	....	1,000,000
Berkshire Life Ins. Co. of Pittsfield . . . . .	84	316,337
Connecticut General Life Ins. Co. of Hartford . . . . .	230	552,201
Connecticut Mutual Life Ins. Co. of Hartford . . . . .	232	725,390
Equitable Life Assn. Society of U.S. . . . .	1,512	3,414,775
Fidelity Mutual Life Ins. Co. of Philadelphia . . . . .	...	553,042
Guardian Life Ins. Co. of America . . . . .	195	610,896
Life Ins. Co. of Virginia of Richmond . . . . .	...	300,000
Metropolitan Life Ins. Co. of New York . . . . .	....	15,000,000
Mutual Benefit Life Ins. Co. of Newark . . . . .	503	2,286,828
Mutual Life Ins. Co. of New York . . . . .	....	2,500,000
National Life Ins. Co. of Montpelier . . . . .	...	593,081
New England Mutual Life Ins. Co., Boston . . . . .	....	1,590,000
Penn Mutual Life Ins. Co. of Philadelphia . . . . .	....	2,615,436
Provident Life & Trust Co. of Philadelphia . . . . .	381	1,190,034
Prudential Life Ins. Co. of Newark . . . . .	40,000	12,000,000
State Mutual Life Ins. Co. of Worcester . . . . .	...	750,000
Travelers Ins. Co. of Hartford . . . . .	....	2,250,000
Union Central Life Ins. Co. of Cincinnati . . . . .	495	1,398,144
Union Mutual Life Ins. Co. of Portland . . . . .	...	162,519