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THE
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HAY FEVER.*

BY DR. A. B. WELFORD, WOODSTOCK.

Gentlemen: It devolves upon me, owing to the illness of Dr. Hodge, of London, to prepare a paper on "Hay Fever." I have done so, not so much with the expectation of giving you anything new on the subject, as it is one with which I have had no practical experience whatever, but more in the anticipation that in the discussion which will follow something new, interesting, and valuable may be added to the subject, more particularly in the line of treatment. Under these circumstances, gentlemen, I trust you will not be too severe in your judgment of the originality of my meagre paper.

Bostock, an Englishman, appears to have been the first physician who recognized hay fever as a particular affection, as early as 1819, although it was described as a disease producing sneezing, headache, itching of the nose, and followed by spasmodic asthma, after the inhalation of the odor of roses and sweet-smelling plants, by Botallus as early as the sixteenth century. The disease seems much more prevalent now than it was thirty or forty years ago. Its victims are principally among the better-educated people, more particularly those of a nervous temperament. This fact may be used as an argument by those who do not believe in the higher edu-

cation of the masses; and also as an excuse for the colleges to prevent overcrowding in the professions. The disease was comparatively little known in any country excepting England up to as late a date as 1862, at which time it was written about by Phœbus, a German physician, although Drake, an American, had published notes of a case of the autumnal variety in 1854; but in no country has it attracted more attention or more valuable literature been added to the subject, especially of the autumnal form, than in the United States.

The causes may be divided into (1) predisposing, (2) exciting.

(1) *Predisposing causes.* Hereditary tendency is undoubtedly one, as the statistics of every year more strongly testify, as a number of authentic cases are on record where two or three generations of the same family have been attacked with the disease. Males seem to be more liable than females; this may possibly be accounted for by the greater opportunity of exposure to its causes by the former. It does seem strange that with so many thousands being exposed to it such a small percentage should be attacked, showing undoubtedly that there is an individual peculiarity in some persons rendering them susceptible to its influence. Negroes and the natives of India are proof against it. The time of life when one is more susceptible to it is in youth or middle age; rarely is it contracted after forty. Geddings, in his article on hay fever, in 1885, says that other affections of the respiratory tract do not seem to predis-

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pose to it, nor does it in turn produce any of the other respiratory affections. Bosworth says, in 1889, that it is a generally accepted view that previous catarrhal affections powerfully predispose to the development of hay fever. A local morbid condition of the mucous membrane is probably present in all true cases of hay fever as a predisposing cause, and is, no doubt, brought about by an obstruction in the anterior part of the nasal cavity, giving rise to a diminution of air pressure immediately behind the obstruction in every act of inspiration. This process continuing for a length of time will necessarily result in a permanent dilatation of the blood vessels of the soft, spongy tissue covering the lower and middle turbinated bones, thus rendering the local conditions much more favorable to the production of the peculiar train of hay fever symptoms when the pollen is implanted thereon.

A psychical influence is believed by many to be a predisposing cause, and this is not the only disease that there are very good reasons for believing that the influence of the mind has a most powerful effect in precipitating. When we consider how variable the flowering time of certain plants is, owing to the great variations of the climate at the same time of year in different seasons, and yet, notwithstanding the peculiar regularity of the attacks in hay-fever subjects, there seems to be a considerable discrepancy between cause and effect. Nevertheless it may be in the main true that at that season when the atmosphere is most heavily laden with pollen, hay-fever patients may be more generally attacked, according to the experiments of Blackley; but when we know that in the case of John McKenzie (who was himself a sufferer), which was reported in the *American Journal of Medical Science*, 1886, where an attack of rose-cold was brought on by smelling an artificial rose, and also of an attack precipitated in a patient of his by looking at a picture representing a field of hay, there must be more truth than fiction in the influence of the mind doing its work as faithfully as pollen. When we consider the physiological or pathological condition of the nerve centres produced by this mental influence, we may be endeavoring to explore that "Darkest Africa" of our minds where eccentricity ceases and monomania begins

(2) *Exciting causes.* Hay fever affords a most striking proof of the fact that where so large a number of different remedies are suggested, there is more truth yet to be found out before a specific can be sought for, or named; and where so many exciting causes can be given as in this disease, there yet remains great uncertainty as to the true causative agent. Moist air, heat, sunshine, and dust are in themselves probably not true causes, but render the conditions more favorable for their development. The flowers of grasses, more particularly those of the anthrox-anthum, odoratum, geraniums, roses, heliotropes, and other sweet-smelling flowers, ragweed and ambrosia-artemisifolia, are probably among the chief causative agents. From the experiments of Blackley, of Manchester, there can be but little room to doubt that the true cause of the attack is to be found in the deposition of pollen of flowering plants upon the mucous membrane of the upper air passages. Blackley's experiments seem to confirm to a very great extent the theory of Bostock, that in dry, hot weather there is more pollen diffused in the air at the periods when the attacks generally come on—that is, from the last of May to the 10th of June for the spring variety (rose-cold), and about the 29th of August for the autumnal variety—with this difference, that Bostock believed the most air, heat, and sunshine to be the actual causes, when, no doubt, they were only the conditions favorable for its development. Is pollen the cause of the exacerbations, or is it the cause of the disease itself?

Pathology. The written pathology of hay fever is rather limited. The changes which take place are not those of an ordinary inflammatory process, the latter going through certain definite changes and ending in gradual resolution. In hay fever the outset may be gradual, but in the majority of cases it is quite sudden, and its termination the same. The natural physiological action of the nasal mucous membrane is a gradual process of exosmosis of a watery fluid, varying in different people from 8 to 12 ounces, or more, in 24 hours, the amount and character being regulated by the sympathetic system of nerves according to the atmospheric changes. In hay fever the impact of pollen produces a more or less complete paralysis of the nerves

which control this exosmosis, resulting in a complete relaxation of the large veins which compose the turbinated bodies. These veins being dilated admit of a free transudation of serum, the veins remaining in this condition as long as the pollen remains present, regaining their normal condition on the withdrawal of the exciting cause, the pollen affecting principally the venous sinuses of the turbinated bones involved in the respiratory process, the exacerbation being due to peripheral causes. Some writers believe that the peripheral effects are produced by a hyperæmic or anæmic condition of the nerve centres; this may be more than mere speculation or theory.

Symptoms. The symptoms are so well known that a mere mention of the most important may be all that is necessary. The attack is marked by a sense of irritation in the upper part of the nasal cavities; a sense of fullness over the bridge of the nose, with more or less violent sneezing; a burning or itching sensation in the roof of the mouth, referable to the upper surface of the soft palate. As the disease progresses the nasal membrane becomes swollen, and the passages more or less occluded, with a profuse watery exudation from the nostrils. The mucous membranes of the eyes, mouth, and ears sometimes participate in the congestion. This condition is produced about the fourth day; the symptoms abate somewhat at night, and are renewed in the morning. Asthmatic symptoms set in about the third week, with bronchial irritation.

Course and duration. In the majority of cases the attack begins about the latter part of August (autumnal variety); at this season of the year the pollen from the ragweed is more abundant. The next in frequency is that which occurs in June, known as rose-cold. The autumnal variety is almost exclusively American. Rose-cold is most prevalent in England, France, Germany, and other European countries.

Diagnosis. Its sudden onset and sudden disappearance will distinguish it from an attack of acute rhinitis, coupled with the violent and profuse watery discharge. In acute rhinitis the mucous membrane is red, highly congested, and pours out a less profuse mucus or muco-pus discharge, which is seen coating its surface in yellow flakes or masses. In hay fever the mucous

membrane, although swollen, never presents the bright red of inflammatory action, but has a bluish-gray tinge.

Treatment may be considered under three heads: (1) General, for the neurotic habit. (2) Local, or relief of diseases of mucous membrane. (3) Treatment of the exacerbations.

(1) For the neurotic condition, those remedies which our experience in other neurotic diseases lead us to use, *i.e.*, belladonna, zinc salts, strychnia, arsenic, quinine, phosphorus, bromides, iodide, and cocaine, given a few weeks before the attack, and continued through it, the cold spinal douche or ice-bag, to allay irritability and sleeplessness, and hypodermic injections of morphia.

(2) Diseased conditions of upper air passages. The treatment of the special affections which act as predisposing causes, such as naso-pharyngeal catarrh, deflections of the septum, polypi, hypertrophic rhinitis, or any obstructive diseases which tend to produce dilatation of the turbinated sinuses. Cauterization subdues turgescence and reduces hypertrophy. The galvano-cautery has been used with apparent success.

(3) Treatment of the exacerbations. Many local remedies have been tried, as douches for the nasal cavities containing quinine, salicylic acid, boracic and carbolic acid, and bichloride of mercury, the success of which has been almost equal to the benefits derived from the very much advertised and historical St. Jacob's oil and Hölman's liver pads, that when the mind had time to escape from the novelty of the new remedy the conditions presented themselves in about the same vigor as before their trial. Cocaine seems to be the only drug yet used that has given any definite and satisfactory results in the form of a local application for the relief of the exacerbations, by contracting the venous sinuses and relieving turgescence.

And, in conclusion, I hope I will be forgiven when I offer a suggestion as to the treatment of the exacerbations, a powder used as a snuff, and consisting of:

R—Menthol - - - grs. iij.
Morphiæ s., - - - grs. ½.
Cocaine - - - grs. i.
Bismuth carb., - grs. viij.

Ft. pulv.

This I have used for two or more years for

the very common affection known as cold in the head, with almost constant and prompt relief. Although it varies but a trifle from the combination in use for hay fever, it possibly may be found more useful, and, besides, I feel in duty bound to offer something original, the latter being the only originality I can hope to claim in this paper.

A PREDISPOSING CAUSE OF HAY FEVER.*

BY R. SHAWE TYRRELL, M.D.,

Lecturer on Medical Jurisprudence at the Women's Medical College, Toronto.

Mr. President and Gentlemen: The paper which I am about to read to you on hay fever has been prompted by a personal experience of the malady, extending over a period of sixteen years; and although I ought to be able to write somewhat in detail on the subject, inasmuch as experience is, in many cases, the best master, I feel diffident in expressing a theory upon what might be considered insufficient grounds. Yet because there has been so much want of unanimity in the treatment of the affection, and so much has occurred yearly by the enforced absence of ourselves or our patients from professional or other work, not to speak of the personal annoyance occasioned by the disease itself, I consider that I am justified at any rate in stating my views to you, and in doing so to endeavor to elicit information regarding this troublesome autumnal catarrh.

I myself have enjoyed no immunity by medicinal measures from the regular recurrent attacks until the year which has just passed. In other words, I have had my annual attacks with pitiful regularity for a period of fifteen years, and finally succeeded in missing a season. I do not wish to place too much importance upon this fact, inasmuch as I am aware that one swallow does not prove the existence of summer; but I hope that you will be able to acknowledge that at least my theory will apply to a considerable number of cases, and, if so, I will feel that I have been the means of conveying to you some small amount of benefit.

And now proceeding to state my views without any discussion on the literature of the subject, and having regard to no theory, however

plausible, that has, so far as I know, been advanced, but speaking simply from what has fallen under my own observation, I would at once call your attention to what I consider to be the most important predisposing cause of hay fever, excluding altogether from the paper all other causes.

The cause I refer to is lithæmia, and, in discussing this as one of the causative agents in the production of this disease, it will perhaps be as well to simply enumerate the causes of lithæmia, and then to consider these in reference to hay fever.

Now the three causes which have been assigned as occasioning this imperfect oxidation of nitrogenous matter in the liver, resulting in the production of insoluble lithic acid and lithates, are an excess of food, want of exercise, and derangement of the liver and kidneys, any or all of which will bring about this excess of lithic acid, which, in circulating through the blood, produces symptoms that are of a very unmistakable character, and which I have recognized as being present in a considerable number of cases of hay fever that have fallen under my observation. Then, again, defective action of the kidneys, either from functional disorder or organic disease, has the effect of retaining in the system the lithic acid or lithates which may have been excreted by the liver in normal quantity, and hence you will have the same effects produced, viz., those disorders of digestion which are so common in everyday practice. But if lithæmia is so common, you may ask me how it is that hay fever is not so also, to which I would reply that it is simply *one* of the manifestations of this lithic acid and its salts. It will frequently be observed that one son of a gouty father will develop bronchitis, while another will inherit his parent's disease; and if gout and bronchitis be so closely allied, is it unreasonable to suppose that this hypersensitive condition of the nasal mucous membrane may not be due also to lithic acid, provided, of course, that these parents suffer from other symptoms which point to an excess of this acid in the blood? I think that it will readily be admitted that hay-fever patients have a more or less tender condition of the nasal mucous membrane all the year round, although in some more than others, and this sensitive condition you will notice to be frequently aggravated at any

*Read before the Ontario Medical Association.

season by some excess in diet or inattention to the functions of the excretory organs. How often do you notice a so-called "cold in the head" as a consequence of one's indiscretion in diet; and I think that it would not be inferring too much to say that if to this "cold" be added certain conditions of the atmosphere, we might expect at least that the patient would suffer from a more or less aggravated attack of nasal catarrh.

I have stated that an excess of food was one of the causes of lithæmia, and have drawn an inference that it also was one of the causative agents in the production of hay fever; and although this in the main may be true, yet I think it would be well to qualify this statement by the remark that an excess of some kinds of food, or even some varieties in any quantity, will provoke or increase this excretive condition of the mucous membrane of the nasal passages.

It would be going too much into details to discuss food of all kinds as it relates to my subject in this paper; but it will be sufficient for my purpose to state that I have found those varieties of food which provoke symptoms of lithæmia all the year round are highly provocative of attacks of sneezing during the hay fever season.

I have mentioned a sedentary life, or want of exercise, as a cause of lithæmia, and of *them* all I think this one holds a prominent place, for proper disintegration cannot go on in an inactive body, neither can elimination of the waste products of the system take place satisfactorily; which, being granted, I have frequently observed during active and steady exercise in the hay fever season that I would be almost entirely free from the distressing affection. One year I remember having made a somewhat lengthy canoe trip, using the paddle myself, and in this way obtained almost complete immunity throughout the entire time, although the district in question was by no means one in which the atmospheric influence was favorable, and I have found on numerous occasions that the prostration which is so pronounced a symptom with so many persons gradually gives way under the influence of forced exercise.

I have now referred shortly to food and exercise in relation to hay fever, and it will only be necessary to mention the third and last

cause of lithæmia, viz., an inactive liver and kidneys, resulting either from organic disease or functional disorders, and I have frequently observed that the symptoms of hay fever may be considerably modified and distress mitigated by promoting an increased action of these organs; and, hence, I think it not improbable that defective disintegration of albuminous substances in the liver, as well as some defect in the eliminating power of the kidneys, may be responsible to a certain extent for the occurrence of this disease.

It has been well established that gout is hereditary. It has also been made manifest that disordered conditions of the liver descend from father to son, and it has more recently become evident that hay-fever patients beget children who have a strong tendency to their parents' malady. This, of course, is no proof in itself that these disorders are due to the same cause; but it is, to say the least, a straw pointing to the direction of the wind.

And now as we are sometimes able to diagnose certain conditions by the treatment adopted, the reference which I have taken the liberty to draw, viz., that lithæmia is a causative element in hay fever, may be verified to a certain extent by my method of treatment, which I will proceed, in as few words as possible, to place before you. I myself, being of a lithæmic habit, have had frequent opportunities at all seasons of testing different drugs with a view of combating this lithic acid, and before mentioning the particular medicine which I have found of most value, not only in the more common symptoms of lithæmia, but also in hay fever, during the past season, I may merely refer to some of the classes of medicines which are frequently prescribed; and to make a pretty bold statement, I have found no benefit from any of the neurotics.

Stimulants are of a very evanescent value, and on the whole are better avoided, inasmuch as the reaction which follows their use is accompanied by great depression.

Tonics I have found of very doubtful benefit, although they ought not to be entirely discarded in many cases.

Mercurial cathartics were of considerable value in all the cases of lithæmia that have come under my notice, and the remark applies also to

hay fever; but as it is difficult or impossible to administer them daily, I have not been able by their employment to obtain anything like complete immunity from the disease, although I have often experienced decided relief.

Diuretics and diaphoretics are of especial value, not only in the more common manifestations of uric acid, but also in hay fever, and claim more than a passing notice, especially when they also combine the property of a purgative, for it was by a medicine of this class that I succeeded in avoiding an attack during the month of September last. I refer to the salicylate of soda, which acts with me as a laxative, diaphoretic, and diuretic when taken at the proper time.

I may say that I have used the drug for several years, occasionally, to combat lithæmic symptoms, and always with the happiest results, so that it was not unnatural that I should have been led to try it for the relief of autumnal catarrh. I accordingly, two years ago, took a dose of about gr. xx on retiring every night, which had the effect of relieving the symptoms very materially; in fact, to such an extent that I escaped the cough which had in previous years always commenced about the 10th September, and continued for a month or longer. I may remark in this connection, however, that this dose taken at night did not act as a decided laxative, but only had the effect of a diaphoretic and diuretic.

Last year I commenced the drug on the 20th August, being a few days before the time when my attacks commence, and, instead of taking gr. xx at bedtime, I took about gr. xv before breakfast. This had the effect of a mild purgative, apart from its action on the skin and kidneys, and by this means I think I succeeded in eliminating the excess of uric acid from the blood, or, at all events, I succeeded in escaping an attack of hay fever. I do not wish to maintain that the dose would be a suitable one for all patients, as I know it would not; neither do I think that one dose in the day would be sufficient for many patients, but I place considerable importance in the fact that if taken before breakfast the best results are obtainable.

It may be urged that the skin does not eliminate uric acid from the blood, but if this be the case diaphoresis would in another way

have a salutary effect by preventing congestion of the liver and kidneys, and thus in reality assisting their action; and I may conclude by saying that I think it is not outside the bounds of probabilities that, the successful treatment of the more common forms of lithæmia and hay fever being identical, the causes, if not the same, are more or less closely allied, and hence we may have this abnormal condition of the blood, as represented by some writers, explained in the way which I have endeavored to elucidate.

A CASE OF RHEUMATIC AFFECTION
OF THE EYES, ASSOCIATED WITH
CHRONIC RHEUMATISM,
TREATED BY PILO-
CARPINE.*

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Rheumatic affections of the eyes are always serious, and especially is this the case when at the same time there is present a general rheumatic condition of a progressive character. I am now going to speak of this affection in reference to the eyeball solely; the external muscles and surrounding structures are not to be dealt with. This disease may attack the cornea, iris, and the deeper structures either separately or implicate more than one. Its seriousness does not arise so much from the consequence of the first attack as from its well-known characteristic of relapsing, which latter may become so frequently repeated as finally never to leave the eyes free. The affection beginning in the cornea by a small infiltration may quickly subside, only, however, again to reappear, and finally the cornea becomes studded with closely-placed small infiltrations, and the vision becomes much impaired.

Rheumatic iritis is even more intractable, and the attack is rightly said to be obstinate, painful, and recurrent. The same remarks apply to the sclera, ciliary region, choroid, and vitreous.

It is thus easily seen how dangerous such a disease becomes when the deeper structures are involved. As a rule, in frequent relapses, the

*Read before the Ontario Medical Association.

disease spreads from one structure to another in the eye, and, as a final result, there may be not only loss of sight, but also, eventually, destruction of the eye, and even sometimes excision of the eye on account of the severe pain.

I have given this brief summary in order to impress upon you the necessity and value of successfully grappling with so persistent a disease. I shall now give an illustration by narrating a case in which the success of the treatment followed has surpassed my expectations.

On November 29th, 1890—that is, one year and a half ago—Robert M., æt. 50 years, was sent to me by Dr. Tucker, Orono. The general condition was that of chronic rheumatism, as stiffness, pain; some of the joints, especially the ankles, tender to the touch; swollen especially after rest; general health very fair; great loss of weight; muscles beginning to atrophy; hair almost white; in fact, so crippled was he that it was with difficulty he walked into my consulting-room by the aid of a stout cane. His occupation is that of a farmer and agent for agricultural implements, which entails a good deal of exposure. This latter seems to have been the chief cause of the disease.

The condition of the eyes was serious. The centre of each cornea was studded with closely-placed and small infiltrations, occupying a space greater than the pupillary area. In the left eye these spots were beginning to assume an appearance of almost calcareous degeneration; no iritis, the pupils being active and dilating fully under atropine. With the ophthalmoscope the vitreous was slightly hazy. No changes were seen in the fundus. This view could be obtained through the surrounding clear cornea. This haze of the vitreous was regarded as serious, pointing to a gradual extension to the deeper structures.

The first attack of the eyes began about two years ago. After each relapse the eyes were quiet, but the intervals became shorter and the relapses more severe, till, at the time of consulting me, the vision of each eye was very poor, viz., no letters of Snellen's type at 20 feet, and only a few letters of No. 20 of that same type at 6 inches with proper presbyopic correction, and the left No. 15 of the same type. He could not even guess the time on looking at

the face of a watch with large figures and hands. He said after each relapse the sight was much worse. He informed me that he had been under the care of a specialist, and, though given careful treatment by local and constitutional remedies, his eyes were now rapidly getting worse. In order to arrest the disease, an iridectomy had been advised.

On placing himself under my care, I at once began the hypodermic injection of pilocarpine. He remained with me for the period of three weeks, and during that period I gave an injection every day, the quantity varying from gr. $\frac{1}{8}$ to gr. $\frac{1}{2}$. Before he left he could easily make out the time by the watch. He returned every two months, and remained each time from eight to ten days, receiving a hypodermic injection every day.

From the beginning of the treatment there was a constant uninterrupted improvement both of the eyes and general condition. The eyes have progressed most satisfactorily; no relapse has occurred, and now he reads words of ji., and $\frac{20}{100}$, with a good attempt at $\frac{20}{70}$, Snellen's type. The reason that ji. is not read more clearly is that the corneal haze is greater below than above. The corneal infiltrations have so changed that to the ordinary observer the eyes seem almost clear, whereas at the beginning their condition was most plainly evident. I now feel persuaded that this absorptive process will continue till each cornea becomes clear.

I may also mention that I used a solution of eserine, gr. $\frac{1}{4}$ ad. \bar{z} i., once daily on retiring, during a considerable part of the time. This, however, was only regarded as an aid, but almost valueless of itself.

I gave the injections in the afternoon, pursuing the following routine: He went to bed clothed in a thick flannel suit. The temperature of the room was 70° to 80°. The perspiration which ensued after using the medicine was usually so profuse as not only to soak the flannels, but also to wet the sheets, and the saliva ran very freely from his mouth. After its employment the patient did not venture out that day, but the next he did so freely, always, however, remaining in an hour or so before the medicine was again used. Three hours usually elapsed from the time the injection was given till he

could again assume his usual clothing. Before dressing he was always well rubbed with warm towels. Each day, bathing the wounds in the forearm caused by the needle with lead lotion prevented any local inflammatory reaction. In giving the medicine, let the first dose be light, say $\frac{1}{8}$ gr., so as to avoid unpleasant nervous symptoms; do not give so much as to cause vomiting, though the stomach may sometimes feel uneasy. Also let the dose be small, or miss a day if the tension of the eyes has a tendency to remain subnormal, or uncomfortable sensations are persistent. I should also advise great care in its use if there is noticed any peculiarity or suppression of the usual physiological effects. The change in this man's general condition as well as in that of his eyes has been reliable and thorough, and I believe he will regain almost or full normal vision. This man, who, when he first presented himself, could with great difficulty walk across a room by the aid of a stout stick, can now plough and do a good day's work. I may also mention that his weight has increased twenty pounds.

The use of pilocarpine in many and very varied diseases of the eye is well known, but I think that this is the first time it has been used so long and continuously in this disease with such excellent results. The effect regarding the general rheumatic condition has been fully as satisfactory as that of the eyes.

Even Dr. Noyes, in the well-known and most recent edition of his book on diseases of the eye, mentions it with little enthusiasm as a remedy in rheumatic affections of the eye. Dr. Osler, in his most excellent treatise on medicine, says of chronic rheumatism, "Internal remedies are of little service."

I think I am justified in regarding the outcome of the treatment of this case as satisfactory and encouraging both to the general physician and oculist.

I may mention that he is still under my care, and I purpose, on another occasion, to give the final result.

Pilocarpine may act by so increasing physiological action generally that absorptive processes are made unduly active, and this being kept up for a long time uninterruptedly gives the final issue of a return to health of the affected parts.

Selections.

ASPIRATION IN PNEUMOTHORAX.

BY G. A. SUTHERLAND, M.B. EDIN., M.R.C.P. LOND.,
Physician to the North London Consumption Hospital.

Amongst the many complications of phthisis none causes greater anxiety than pneumothorax, the mortality of which, according to Dr. Samuel West's statistics, is 66 per cent.* The line of treatment usually adopted is expectant, but that some more active interference may be carried out with advantage is illustrated in the following case :

H. V—, aged thirty-two years, was seen for the first time on Dec. 15th, 1890. He had been in India for several years, and had suffered from ague and dysentery. He had had rheumatism occasionally, and, when a boy, had brought on a "strain of the heart" by running races. There was a family history of phthisis. He stated that he had had sickness and vomiting after dinner for a few days, accompanied by the old malarial symptoms. On the previous night he had coughed up blood seven or eight times. There had been no sweating or loss of flesh. He was poorly nourished, and very much pulled down. The chest was well formed, and no evidence of disease of the lungs was detected on physical examination. As regards the other organs, the only point noted was a reduplicated second sound at the base of the heart. There was a slight attack of hæmoptysis next day, and the temperature in the evening was about 101° for a week, after which all symptoms disappeared, and he resumed his work in the following month. Two months later there was a recurrence of the hæmoptysis, with cough and profuse mucoid expectoration, which was found to contain tubercle bacilli. The only sign of pulmonary disease detected was slight crepitation near the root of the left lung posteriorly. He was sent to Ventnor in March, preparatory to leaving England for the Cape at the end of the summer. In May, 1891, he returned to town very much worse. He had lost flesh and was troubled with violent cough, followed by sickness and great depression. There was slight pyrexia in the afternoon and sweating at night. The left lung showed dullness at the

*The Lancet, vol. 1, 1884, p. 791.

apex anteriorly, and over the upper third posteriorly, with blowing breathing and crepitation, and friction sounds were heard over the left scapula. No evidence of disease was detected in the right lung. On June 22nd, after severe and prolonged coughing, he was seized with acute pain in the lower part of the left chest, passing from the front to the back, and accompanied by headache, sickness, sweating, and great prostration. The temperature was 104° , pulse 120, and respiration 32. The decubitus was right-sided. The cardiac sounds were inaudible to the left of the sternum, but louder than normal to the right of it. Expansion was very slight on the left side of the chest, and vocal fremitus was entirely absent. The percussion note over the front of the left lung, from the clavicle downwards, and including the cardiac area, was hyper-resonant, and this condition existed also in the axilla, and posteriorly from the middle of the scapula to the base. Over this area the breath sounds were almost inaudible, and the vocal resonance was very much diminished. The breath sounds were more inaudible along the left side of the spine. The expectoration was muco-purulent, blood-stained, and contained many tubercle bacilli. The treatment adopted was nourishing fluid diet, alcohol, and morphia in full doses, both hypodermically and by the mouth, which soon checked the troublesome cough and retching, and the severe chest pain which these caused. He had occasional attacks of dyspnoea with cyanosis. The decubitus became left-sided, any other position causing him acute pain. The strength was well maintained until the third day, when the temperature again rose to 104° , and there seemed to be an increase of pressure in the chest, followed by progressive weakness. On the eighth day of the attack he became much weaker, and at midnight his condition was critical. There was muttering delirium, the respiration was 36 per minute and very labored, and the pulse was so weak and irregular that it could not be counted. There was a uniform distension of the left side of the chest, with complete absence of expansion, and vocal fremitus. The area of hyper-resonance extended one inch and a half to the right of the sternum, and the cardiac apex was felt one inch internal to the right nipple. The breath-

ing over the hyper-resonant area was distant amphoric, with occasional tinkling rales, and the "coin sound" was well marked. The heart sounds were faintly audible to the left of the sternum. It was resolved to puncture the chest for relief of pressure. The needle of an aspirator was inserted into the left pleura in the axillary region, but no air passed out. The aspirator was then attached, and the air in the receiving bottle was partially exhausted. On opening the connection, air was at once heard to pass into the bottle, and by means of slow and interrupted aspiration a considerable quantity of air was removed from the pleural cavity. The process occupied about an hour, and the patient's condition was manifestly improved. The respiration fell to 24, and the pulse to 108, becoming at the same time fuller and stronger, while the heart sounds could be heard much more distinctly to the left of the sternum. On the following evening there was a recurrence of the cardiac weakness, and an area of dullness at the base of the left lung posteriorly was noted. Aspiration was again performed. At first air only was withdrawn, then air mixed with fluid, and finally nine ounces of clear fluid were evacuated. A friend who was present noted the change in the position of the cardiac apex during the process, and found that it moved three-quarters of an inch to the left, while the pulse again showed marked improvement. There was no cough on either occasion. A few days later expansion became evident on the left side, with sinking in of the intercostal spaces during inspiration, and the breath sounds became louder, blowing in character, and in parts amphoric, with tinkling accompaniments. At the end of a month, progress being delayed by a slow formation of fluid in the left pleura, with displacement of the heart to the right, the chest was again aspirated and thirty-four ounces of clear fluid withdrawn. He then improved rapidly, and in September he was found to have gained eleven pounds and a half in weight, and could walk four miles without fatigue. There remained impaired resonance over the left side of the chest, but the expansion was fairly good, and the breath sounds, although weak, were audible all over. He sailed for the Cape on Oct. 8th, 1891, and has continued in good health.

Treatment by aspiration is not advised by the leading authorities in cases of pneumothorax. Dr. Douglas Powell* speaks of the timely introduction of a fine trocar, when there are signs of increasing pressure within the chest, but says nothing about aspirating the pleura for air. Dr. Wilson Fox† refers to the treatment by a simple trocar, but says that "aspiration is best avoided; it brings with it the danger of renewing the fistulous opening, and this effect has actually been observed in a secondary effusion following pneumothorax." Dr. Hilton Fagge‡ says an aspirator should never be used, on account of the danger of reopening the original aperture. It is evident that the use of a trocar will only be of service when the pressure of air in the pleura is greater than that of the atmosphere, which, according to Dr. Hilton Fagge, is by no means generally the case. On the other hand, Dr. Douglas Powell has shown that lateral displacement of the heart occurs in pneumothorax owing to the normal elastic retraction of the sound lung, which drags over the mediastinum, even when the pressure of air is not greater than that of the atmosphere. If, then, the use of a simple trocar be accepted as the final treatment in the cardiac asthenia of pneumothorax, we cannot expect very great relief in cases in which the intra-thoracic pressure is not greater than that of the atmosphere. The dangers of slow aspiration in suitable cases have perhaps been exaggerated, and the above case shows that the benefit may be very marked. In considering the question of aspiration one point must not be lost sight of, namely, that an attack of pneumothorax, by giving rest to the affected lung, may be a most effective therapeutic agent in phthisis. This patient's phthisical condition at the onset of pneumothorax was very serious, and was rapidly getting worse, while two months later no evidence of active phthisical mischief could be detected, nor has any since appeared. It is probable that the compression of the lung, at first by air and later by fluid, had brought this about, and that a repetition of the aspiration, except when urgently called for, might have prevented this good result. In the management of the above case I

had the benefit of several consultations with Dr. Cheadle, to whom my best thanks are due for much valuable assistance and advice.

[NOTE.—Writing on May 2nd, patient states that a large amount of fluid was withdrawn from the left pleura in January, that no signs of phthisis are present, and that he is well and strong.]—*Lancet*.

SUBSTITUTION AND ITS ATTENDANT EVILS.

BY JOHN AULDE, M.D., PHILADELPHIA.

The evils attendant upon substitution and sophistication of remedial agents have long been surmised; they have not, however, until recently, received attention at the hands of the medical profession. Increased diagnostic skill, along with greatly improved facilities for the manufacture of medicaments, favor an approach towards mathematical exactness in computing therapeutic results. When these are wanting, we challenge the character of the remedy. The question which presents itself is: Has our patient received the true medicament or a base counterfeit? However attractive in theory, it will be found impractical for the medical profession to drift away from the pharmacists, and it should be our aim to reward the faithful and bring the guilty to punishment. The friendly bond between the two professions should be honesty, as neither can afford to work independently: there is an interdependence which makes them mutually helpful.

It is said of Lawson Tait that he has returned to first principles, and carries a mill with him, so that when ergot is needed he prepares it fresh with his own hand. The reliable character of Squibb's ether has been maintained through his business sagacity in having it prepared chemically pure and distributed over all the world in sealed cans, thus precluding the possibility of sophistication or substitution.

The life of a patient suffering from rheumatism may depend upon his being supplied with sodium salicylate prepared by a combination of Merck's chemically pure bicarbonate of soda and true salicylic acid obtained from oil of wintergreen, and yet few pharmacists, even in large cities, pretend to keep either in stock. They are the exception in Philadelphia, and doubtless the same is true of other cities.

*Diseases of the Lungs, p. 142.

†Diseases of the Lungs and Pleura, p. 1118.

‡Principles and Practice of Medicine, vol. ii., pp. 192, 199.

Some years ago Dr. Squibb, of Brooklyn, set his seal on Marchand's peroxide of hydrogen by endorsing its character and defending its merits as the most powerful and yet harmless bactericide which could be employed in the treatment of various formidable and fatal diseases. Dr. Robert T. Morris, Dr. Paul Gibier, and other well-known authorities have corroborated his statements from clinical observation, and as a consequence a revolution has taken place in our methods of treatment in both medical and surgical practice. The efficacy of this simple remedy, its innocuousness and extended field of application, have shed a flood of light upon modern therapeutics, but at the same time there has followed in its train a host of worthless imitations.

The substitution of the commercial for the medicinal peroxide is calculated to work serious injury, and destroy our confidence in a most potent remedy. In the treatment of diphtheria, for example, the commercial product is positively harmful. When death results, shall we blame the attending physician or the unscrupulous druggist who substitutes a base imitation for the genuine product? And still, pharmacists who claim to be respectable do not hesitate to trifle thus with human life. Is it any wonder, then, that our mortality percentages are on the wrong side?

Cascara sagrada has been counterfeited and sophisticated until it is almost impossible to secure a reliable preparation of this most useful medicament, although Parke, Davis & Co., the pioneers in its introduction, have adopted every means in their power for the protection of the medical profession. Antipyrin, a patented preparation, has met with phenomenal sales, and possesses distinct therapeutic properties, and as a result imitations and substitutes are offered to take its place in medical practice. Whether these imitations are better or worse than the original product, I do not care to discuss; neither is it for the druggist to decide. The decision here, as to any special remedy or preparation, rests entirely with the physician, as he alone is responsible for the condition of his patient; no one else, not even the druggist, should be permitted to interfere with his directions. Substitution is an evil which should be guarded against; it is an evil which must be

eradicated, or the entire medical structure will collapse. It is a duty we owe to ourselves and to our patients to look after his unnatural condition of affairs in which we are so vitally interested, and the time is near at hand when a systematic effort must be made with a view to accomplish the desired end.

This subject is commended to the attention of the American Medical Association, with the suggestion that a committee be appointed who shall recommend suitable measures for the protection of the medical profession from the evils of substitution and sophistication on the part of unscrupulous pharmacists. Shall we have a "list"?—*Jour. of Amer. Med. Asso.*

REMARKS ON TWO CASES OF INSANITY CAUSED BY INHALATION OF SULPHURETTED HYDROGEN.—*Case 1.*—B. H., æt. 30, was admitted into Rainhill Asylum, September 20th, 1888. There was no history of insanity in the family. The patient himself was said never to have had any illness, but he appears to have drunk somewhat. He was a single man and a laborer in some chemical works. On the morning previous to his admission into the asylum he went to his work as usual. About 9 a.m. he was observed to be acting strangely, throwing his arms about wildly and shouting. In addition, he lost power over his legs. As he was engaged in an occupation which exposed him to some chemical fumes (probably sulphuretted hydrogen), it was supposed—apparently with very good reason—that he had inhaled the gas. He remained excited and rough all that day, laughing and shouting by turns, and did not appear to recognize his brother. When admitted into the asylum on the following day he was in a very maniacal condition, shouting and throwing himself about, and it took several men to carry him to the ward. He kept throwing his arms about, but was distinctly unsteady on his legs when made to stand. In bed he wriggled about, throwing his head back on the pillow and waving his right arm round and round. This condition of things lasted for two or three days, when he became more quiet; and he then gradually passed into a taciturn, depressed state, sitting or standing about for hours doing nothing, and never speaking except when addressed. After remaining in this condition for

many months he gradually developed delusions of persecution and interference, and became very dangerous, making assaults on those around him. This condition of things lasted for upwards of a year, but during the last two months an improvement has set in, and at the present time, although apparently not altogether free from delusions, these are nevertheless much less prominent; and, though still excitable and talkative, he is much more tractable, and is regularly employed at outside labor. It is improbable, however, that he will ever fully recover.

Case 2.—R.H., *æt.* 32, was admitted into the Rainhill Asylum on January 27th, 1890. He was a married man with three children, and was employed as an engineman at some chemical works. He had always been healthy and temperate, but shortly before the onset of the mental affection he had had an attack of bronchitis, which kept him at home for about ten days. Whilst at his work a few days after this, he accidentally inhaled sulphuretted hydrogen and became "gassed," as it is called at the chemical works. This produced headache, stupor, and prostration, for which he was kept at home for a few days, when he became delirious. He passed rapidly into a very violent, excited state, shouting and gesticulating; said he was Jesus Christ, etc.; tried to bury his head in the floor, and to raise his feet above his head. When admitted into the asylum, three days later, he was still very violent and excited, gesticulating and talking incoherently chiefly on religious subjects. He continued in a maniacal condition for two or three weeks, but at the end of a month from admission he had distinctly improved; he had then become rational and was working fairly well. The improvement continued and he slowly recovered mental vigor, and was discharged recovered on June 27th, just five months after his admission into the asylum.

Remarks.—I have grouped these two cases together, although it is not quite certain that in the first case the gas which affected the patient was sulphuretted hydrogen, details being wanting as to the exact fumes to which the man had been exposed. That he had inhaled gas of some sort is, however, I think, pretty clear from the history, and there can, I think, be little

doubt that sulphuretted hydrogen was the agent in question. That it was so in the second case is clearly stated in the history obtained from the patient's friends. There was a good deal of similarity between the two cases as regards the symptoms presented at the onset, there being in both a greater amount of muscular excitement than is usual in ordinary mania, and both men exhibiting a curious tendency to roll the head on the floor or pillow.

Laborers in chemical works are quite familiar with sulphuretted hydrogen gas and its usual effects on the system; for it is not by any means unusual for persons exposed to its fumes to become "gassed," as the saying is; that is, they pass into a condition of insensibility which lasts a variable time, and when coming round they are very often sick and dazed, and have a sense of oppression about the chest, and there is often a good deal of prostration for a day or two afterwards. Sometimes indeed, though very rarely, the insensibility ends in death. It is, however, very unusual for lasting or permanent effects to be produced upon the nervous system such as come under the designation of insanity. Indeed, I am not aware that any such cases have been recorded before. It does not, however, appear to me matter of surprise that such effects should at times occur. That the gas has powerful narcotic properties is evidenced by the rapid insensibility it produces when inhaled in any quantity. Cases have been recorded by Savage and others in which insanity, generally taking the form of mania, has resulted from the inhalation of chloroform, ether, nitrous oxide gas, and other similar agents, and the cases just described as produced by sulphuretted hydrogen seem quite to fall into line with these.

The effect of all these agents appears to be to paralyze, in the first instance, the highest controlling and co-ordinating plexuses in the brain. If the dose be large or the administration continued, more and more of the cortical centres in a descending series are involved, and insensibility ensues. But when the paralysis is confined to the highest cortical arrangements the immediate result is not lethargy but excitement, owing to the centres next in series being emancipated from the control of the higher, and hence acting over-vehemently and incoherently. Such, at least, is the explanation which

I have to offer of the pathology of these toxic cases, which are hence assimilated to the more ordinary forms of mania which we meet with in practice. — *J. Wigglesworth, M.D., in British Medical Journal.*

TREATMENT OF PHTHISIS BY CREASOTE AND GUAIACOL.—Dr. F. P. Kinnicutt, in delivering the Middleton-Goldsmith Lecture for this year in New York,* chose as his subject "New Outlooks in the Prophylaxis and Treatment of Tuberculosis." He considered very carefully the various methods of treatment which had lately been introduced and gave his experience of those he had tried. One of the most interesting series of records are those cases treated by creasote and guaiacol. Dr. Kinnicutt wished to test the practicability of employing a very large daily dosage of the creasote preparations and to determine, if possible, any advantage which this method might possess over their use in smaller quantities. Several of the patients selected for this treatment presented in a well-marked degree many of the symptoms—namely, hectic sweats, etc.—attributed to the toxic influence of the products of the bacillus and were therefore well adapted to test the effect of creasote upon such manifestations. A tabulated report is given of seven cases which were treated with subcutaneous injections of guaiacol, rapidly pushed to a daily dosage of one gramme and five cases of creasote by the mouth, also rapidly increased to *six grammes* daily. In four of the former cases there was little, if any, appreciable change in the physical signs of disease. In one of them, however, the general condition greatly improved and there was a gain in weight of eight pounds; in one the weight decreased by one pound and three-quarters, in one there was a loss of four pounds, in one the weight remained stationary; in the three remaining cases there was a progressive increase of the pulmonary lesions. No influence upon hectic, when present, was observed. Night sweats, however, were affected favorably. In a single case suffering from chronic nephritis (confirmed by necropsy) a marked increase in the albuminuria was observed when a daily dosage of one gramme was reached. The treatment was then discontinued and the albuminuria gradually di-

minished. In no other case treated either with guaiacol or creasote did any trace of albumen appear in the urine, although examinations were made every other day. In a single case, where the maximum dose of guaiacol was reached, the urine became dark in color and very similar in appearance to urine containing carbolic-acid products. In the cases treated with creasote two exhibited no appreciable differences in the physical signs. In those there had been a gain of one pound and a loss of three pounds respectively. In the three remaining cases there was a progressive increase of the lesions. The effect of a very large daily dose of creasote upon hectic sweats corresponded to that noted in the use of guaiacol. Entire tolerance of six grammes (over one and a half drachms) of creasote was exhibited by three of the five patients. One complained of slight gastric discomfort when a daily dose of five grammes was reached. Carbonate of guaiacol was also tried. In addition to possessing the advantage of being tasteless and odorless, it seemed to have a beneficial effect on the appetite. The conclusions which Dr. Kinnicutt formed from a careful study of these cases were: That both creasote and guaiacol in certain forms could be given in very large doses with entire tolerance and without injurious effect; that such doses apparently possessed no advantages over much smaller ones and had no greater effect upon hectic and night sweats; that subcutaneous injections of the drug possessed no advantages over administration by the mouth; that whatever beneficial influence creasote might exert in pulmonary tuberculosis could be effected with a comparatively small dosage; and that favorable results could be expected only by its continuance and prolonged employment.—*Lancet.*

THE ADVANTAGES OF BODILY EXERCISES.—In the *Journal of the American Medical Association* for June 4th is an interesting paper by Dr. J. Madison Taylor on the Influence of Bodily Exercises upon the Length of Life. He commences by enunciating two propositions: (1) That judicious activities of the body tend to maintain and increase its efficiency; and (2) that the hurtful effects of violent athletic competition are popularly overrated. The first of these propositions is obvious, and he therefore

**Boston Medical and Surgical Journal*, May 26th, 1892.

chiefly deals with the second. Against the growing interest in athletic matters there are constantly urged objections to the effect that many perfectly healthy young men are injured beyond repair by strains and shocks to vital organs received in the course of training or competitive sports even among those who avow much confidence in the value of physical exercise; yet many declare the pity of it because such havoc is wrought thereby. Instances are cited, rather vaguely it is true, of fine fellows utterly wrecked by contests on land or water, of lives cut short by overtasks at so-called sports. After pointing out how important it is for medical men to define and point out dangers and urgently insist on their avoidance in such cases, Dr. Taylor proceeds to argue that even the best and wisest of medical teachers can err in opinion, and cites as an example an assertion of Dr. B. W. Richardson: "I venture to affirm there is not in England a trained professional athlete of the age of thirty-five who has been six years at his calling who is not disabled"; and the same author as saying: "When the artificial system of training ceases, the involuntary muscles, the heart especially, remain in strength out of all due proportion greater than the rest of the active moving parts of the organism." Dr. Taylor maintains that this authoritative statement has swayed the judgment of thousands of thinking men. He has had these views on the damage done to involuntary muscles quoted to him again and again. Such cases he considers are indeed possible, and from such causes do they come in the laborious ranks of iron-workers and those who put forth in long days excessive and continued muscular exertion. Among professional athletes the heaviest strains must come, as upon the output of the most concentrated force alone comes to them honest reward. Dr. Taylor has collected the brief histories of a score of these men now living, which he thinks at least illustrate how vigorous and sound such men may be even long after the age limit which Dr. Richardson has assigned to them. These histories are interesting, and some of them very remarkable, and Dr. Taylor is strongly of opinion not only that the judicious pursuit of bodily exercises, either in the line of ordinary avocations, special duties, or sports, tends greatly to maintain and enhance the vigor of both body and mind, but also

that the hurtfulness of severe muscular exertion short of profound exhaustion is merely temporary and recoverable, and that dangers to internal organs and vital centres are comparatively rare. —*Lancet*.

A GREEK MEDICAL WORK 2000 YEARS OLD. —In the last number of the *Classical Review* Mr. F. G. Kenyon, of the British Museum, who last year edited the newly-discovered papyri of Aristotle and Herondas, describes another similar manuscript recently obtained for our national collection, which contains an ancient treatise upon Medicine by a Greek author, probably of Alexandria. The work, which has apparently hitherto been lost, is of much interest, and the following *résumé* of the state and contents of the manuscript condensed from Mr. Kenyon's report will indicate its importance. The papyrus is of tolerable size, measuring twelve feet, and bears thirty-nine columns of writing, each about three inches in width. Towards the end the writing is more compressed, and the concluding portion, which comparatively contains the largest amount of matter, is fortunately in exceedingly good condition, but the other parts of the papyrus are both torn and rubbed and the text frequently barely legible. As to the treatise itself, the first eighteen columns are devoted to quotations from earlier writers as to the origin of diseases, and present to us so many quotations from Greek medical authors of the earliest times that if the text can be tolerably well restored it will prove most valuable. Among the writers cited are Euryphon of Cnidus, Herodicus, Hippocrates, Timotheus of Metapontum, Philolaus of Croton, Polybius and Menicrates, Dexippus of Cos, Petron and Philistion, and Alcamenes. In quoting from some of these writers the author tells us he obtained their extracts from a work of Aristotle. Mr. Kenyon suggests this was not an authentic work of that philosopher, but the one cited by Galen, as bearing his name, which was really written by his disciple Menon, and thinks it probable that much of this papyrus text is derived from Menon's work. These quotations appear to cease with authors of the fourth century B.C., and then the more original part of the work is taken up. Unfortunately, just here the writing is very defective, but it car-

be gathered that much importance is attached to an explanation of the rival views of Herophilus and Erasistratus. The latest author quoted is Alexander Philalethes, who flourished towards the termination of the first century B.C., and the omission of all reference to Galen would seem to show that the recovered treatise was written originally before his time, though this papyrus may be a later edition. It is to be hoped that some of the medical societies may undertake to assist a competent scholar to edit this work, the funds of the British Museum being more properly applied to the acquisition than the publication of such treasures.—*Lancet*.

FATAL RESULT OF WATER DRINKING.—An old way of poisoning criminals used to be to compel them to swallow large quantities of bull's blood, and it is interesting to note how this acted as a means of causing death. Bull's blood is not a poison at all in the ordinary sense of the word, but when it enters the stomach it forms a coagulum, and, instead of the organ being filled with a liquid which might be ejected by vomiting, it is filled with a solid mass. This mass presses upwards upon the heart and displaces it. The pressure upwards upon the lungs interferes with the respiration, and the pressure backwards upon the aorta, vena cava, and the solar plexus would probably be sufficient to cause death. The same thing occurs in animals when they are first turned out among the clover; they over-eat themselves and are very likely to die from over-distension. A case was recently reported in the newspapers of an Irishman who had eaten largely of potatoes and milk and who died suddenly. The *post mortem* examination revealed no disease. He was apparently healthy, except that his stomach was distended, and no doubt he died in exactly the same way as the criminals who were compelled to drink bull's blood. Generally death cannot be brought about by the simple drinking of fluids, because the stomach is able to eject them. Apparently, however, this is not always the case. In one of the lay papers, a few days ago, there was a notice of three Frenchmen who laid a wager as to who would drink the most water, and all three of them died in a comparatively short time. The death in this case might have been partly due

to the distension of the stomach and partly to the effect of the water on the blood after its absorption. It very rarely happens in a healthy person that enough water can be absorbed to cause any alteration in the blood, because it is excreted as rapidly as it is absorbed and the composition of the blood is kept nearly constant. Death from the action of water on the blood may occur after profuse hemorrhage when thirst is extremely urgent. This has been noticed in the battlefield and also in the case of women who have been nearly drained of blood by hemorrhage. In these cases it is always advisable not to give pure water to quench the thirst, for it is not only an irritant to living tissue, but it is also destructive to the blood. The risk of injury is considerably lessened by adding a little salt to the water, making it of the strength of the physiological normal saline solution.—*Lancet*.

THE RESTRAINT OF JUVENILE SMOKING.—It is time that the attention of all responsible persons should be seriously directed to the prevalence and increase of tobacco smoking among boys. Here and there, as we have recently shown,* there have been observed expressions of a strong repugnance existing in the public mind against this form of juvenile perversity; but we still lack the support of a general and outspoken objection to its continuance. At the same time, we feel assured that no man who has really given any thought to the matter would hesitate in condemning the injurious folly of this practice. Stunted growth, impaired digestion, palpitation, and the other evidences of nerve exhaustion and irritability have again and again impressed a lesson of abstinence which has hitherto been far too little regarded. A further stage of warning has been reached in a case which lately came before the coroner for Liverpool. A lad was in the habit of smoking cigarettes and cigar ends, and after an attack of sickness died somewhat suddenly. The *post mortem* examination revealed fatty changes in the heart, which there was little doubt, as the verdict held, had been fatally supplemented in their influence by the smoking habit referred to. This of course is an extreme example. It is also, however, after all,

**The Lancet*, May 14th.

only the strongly colored illustration of effects upon health which are daily realized in thousands of instances. Not even in manhood is the pipe or cigar invariably safe. Much less can it be so regarded when it ministers to the unbounded whims and cravings of every heedless urchin. Clearly there is need of some controlling power here. The parent in certain classes is almost as ignorant of consequences and probably often quite as apathetic as his boy. Where he can be roused to the active exercise of his authority in repression, he should be. In very many cases he cannot, and we have therefore no hesitation in asserting once more our conviction that it is incumbent upon the legislature, in view of its known pernicious effect upon mind and body during boyhood, to restrict this habit by an age limit which will fall outside this period.—*Lancet*.

THE NEW RIFLE BULLETS.—Professor von Bardeleben has been studying the effects of the rifle bullets used in modern rifles. The new projectile has an inner core of lead, but this is inclosed in a casing of steel, which prevents the lead, even when softened by conversion of motion into heat, from becoming deformed and enlarged at the point of contact with the wound. This change is of much interest for military surgery. The weight of the new 8 millimetre projectile is much less than that of any of the old bullets. It is to its higher rate of velocity and pointed shape that its greater perforating power must be ascribed. Owing to the immense velocity it preserves in its flight, and its small surface of contact, it meets with little resistance on striking a person, causes little commotion of the neighboring parts, has no time to stretch the various tissues it encounters, and merely punches a hole, carrying the contused elements before it clean out of the wound, without seriously damaging the surrounding wall of the tract. The wound is thus left in a fit state for healing by first intention, as no contused parts remain for removal by sloughing. But on the battlefield this absence of contusion, which frequently stayed the bleeding of injured vessels, must lead to more frequent deaths from hemorrhage. Again, in former wars bullets which had been fired from great distances were found to strike the chest

or other parts of the body, perhaps to break a bone, and then to glance off or rebound without penetrating farther. This is now impossible; a projectile coming from enormous distances, if it wounds at all, has sufficient power to pass through, cutting any vessels or organs it may meet in its way. Colonel Boonen-Rivera, reporting on the civil war in Chili, where he held the post of brigade commander, says that the number of dead on the battlefield was many times—according to his observation four times—larger than that of the wounded. This is the only war in which the new Mannlicher rifles with steel-covered projectiles have been used.—*Med. Record*.

THE
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THE COUNCIL AND THE MEDICAL
DEFENCE ASSOCIATION.

In our issue of July 1st we referred to the fact that the Ontario Medical Council had appointed a committee to confer with the supporters of Dr. Meacham's "bill" with reference to proposed amendments to the Medical Act. Let us hope that such a conference may accomplish what is desired, *i.e.*, "a restoration of the feeling of harmony that had existed . . . and should continue to do so, between the profession and their representatives in the Medical Council." We believe that many members, if not the majority of the Council, recognize the fact that it is absolutely necessary to make some concessions, and agree to certain changes. The Defence Association is strong, and is growing stronger. It is well that this should be distinctly understood and properly appreciated. We have taken considerable pains to ascertain the views of the profession in the prov-

ince, and are convinced that a large proportion are in favor of some radical changes.

(1) There must be a redistribution of some sort. The general profession must have the controlling voice in the Council's deliberations. This might be done by diminishing or abolishing school representation, by diminishing university representation, and by diminishing the homœopathic representation.

(2) The vested rights of practitioners who received practically unconditional licenses to practise medicine in perpetuity must receive consideration. Any legislation, retroactive in character, which interferes with vested rights comes close to the border land of tyranny, and is always apt to be dangerous.

Other matters of minor importance will have to be considered. Much has been said about real estate speculating and gambling. Just criticism is allowable, but we hope no efforts will be made to impugn the honor or honesty of the men who certainly thought they were working in the interests of the profession in erecting a substantial building for the Council. The question of an annual assessment is a somewhat knotty one. There might be a large reduction in expenses if the number of representatives were cut down in the way we have indicated. Economy might reduce expenses in other directions. It might be possible to reduce or abolish the fee after this year. We will not attempt to go into details, but may simply say that strict economy will be urgently demanded. We hope that one of the results of the agitation will be that the members of the profession throughout the province will take greater interest in the election of their territorial representatives in the future than they have in the past.

STERILIZED MILK FOR INFANTS.

It has become quite the fashion in many parts of the world to extol the merits of sterilized milk as a food for young infants. The experience of those who have used it during the last two years has not, however, been entirely satisfactory. In fact, many who have given it a thorough trial have ceased to use it. The subject has been carefully investigated by such men as Hirst, Davis, Leeds, Conn, and others.

The *Medical News* refers especially to the results obtained by Dr. Edward P. Davis, who made an exhaustive study of the effects of the use of sterilized milk. The results at first appeared to be good, but after a time serious disorders supervened, emaciation set in, grave intestinal troubles followed, and, finally, death ensued from non-nutrition.

These evil results are due to the changes which take place from the heating of the milk which is necessary for sterilization. The soluble albumen is converted into an insoluble modification which is difficult to digest. Other changes take place, but are not so important as the one referred to. As a matter of fact, cows' milk should not contain bacteria; but, as it is given to the consumer by the milkman, it frequently does, and much evil results therefrom. The proper way to avoid such contamination is to observe strict cleanliness in handling the milk.

According to the *News*, Leeds and Conn recommend that "market milk should be Pasteurized, and not sterilized. Instead of heating to 212°, the temperature of milk during Pasteurization is brought only to 155° F. At this temperature the bacilli themselves are mainly, if not quite, destroyed; and whilst the spores of the bacilli are more resistant and require the higher temperature for their destruction, the period of their development is delayed. Market milk, after Pasteurization, keeps fresh and sweet for 36 to 48 hours longer than the same milk as at present handled. Most forms of disease germs also perish after this treatment. As for those that are not killed, it is wiser to risk the remote contingency of their being present than to convert all the milk into an unnatural product in order to get rid of them." The problem of insuring a good quality of milk to all our towns, large and small, is a very important one, and worthy of all the careful study which it is now receiving.

UNIVERSITY REPRESENTATION IN THE MEDICAL COUNCIL.

We regret that a number of practitioners in Ontario hold extreme views with reference to university representation in the Medical Council. They will not be satisfied with anything less than the complete abolition of such representation. We think the universities are likely

to select men who would be of great service, especially in matters pertaining to the curriculum. If the representation were fairly balanced, and the territories had anything like their proper proportion of members, the universities would be unable, under any circumstances, to hurt the profession.

Take, for instance, the University of Toronto. Is it likely that a representative from that institution will do any injury to our great body of practitioners, or the cause of higher medical education? We think it improbable that many will answer, Yes. The records of the other working universities (and only such should be considered in this connection) show that their aim is to assist in raising the standard and the status of things medical.

However, apart from such considerations, the universities have still a stronger argument in reserve. They claim vested rights which cannot be ignored. When the College of Physicians and Surgeons was organized, they gave up their licensing powers with the distinct understanding that in consequence thereof they would have representation in that body.

FUNERAL REFORMS.

Much has been written in recent years about the dangers of standing bareheaded at funerals. The London *Lancet* states that the fashion is losing ground. It is supposed that exposure of this kind caused the death of the Duke of Clarence. Many other cases are reported where fatal results followed from the same cause. These sad lessons are said to have produced a good effect in England, and, as a consequence, the funeral customs are changing. The *Lancet* editorial aptly says that the evils are not confined to the winter months, but exist also in summer, when it is dangerous to expose the bared head to a broiling sun.

Such dangers are even more potent in our climate, with its greater extremes of heat and cold, and are probably more fully appreciated, especially in our larger cities, than they were a few years ago. We fear, however, that reform in our funeral habits is not making very rapid progress, and that many valuable lives are sacrificed through needless exposure during the burial service.

SUBSTITUTION BY DRUGGISTS.

We publish in this issue an article (Dr. Aulde, in the *Journal of the American Medical Association*) which discusses the evils attendant upon substitution and sophistication of remedial agents by druggists. Whether we have much of this sort of thing in Toronto we know not, but we certainly have a certain amount of it.

We have received a communication from the Drivet Manufacturing Company to the effect that some physicians in Canada find it almost impossible to procure Marchand's peroxide of hydrogen, inasmuch as a commercial article, sold in bulk at a low price, is supplied when the "Marchand" is prescribed. Conduct such as this is a base fraud on the manufacturer, the physician, and the patient. We hope the profession will put forth strenuous efforts to stop such iniquitous proceedings.

Meeting of Medical Societies.

PATHOLOGICAL SOCIETY OF TORONTO.

Annual meeting, May 28th, 1892.

The society met in the Biological Department, the president, Dr. J. E. Graham, in the chair.

Dr. Wishart presented the following specimen and gave the following history :

CASE OF SYMPATHETIC NEUROSIS.

(Presentation of irritating eye, by Dr. Wishart): Mrs. H., æt. 55, referred by Dr. O'Reilly, Fergus. Right eye blind as long as she could remember. No pain or trouble till February, 1892, when pain set in around and in right eye very violently, only relieved by morphia. This attack lasted from two to four days, and returned frequently. Left eyesight began to fail, and darting pains were felt in it from time to time. Both eyes became tender to the touch. On examination, right eyeball was shrunken. T + 2, pupil immobile anterior inferior synechia, and cornea opaque in lower half. No pain on pressure. Large scar seen in sclera about 4 mm. from corneal margin in upper and outer quadrant. L.E.V. 1892. Scleral vessels enlarged. Anterior media clear. Slight tenderness in

ciliary region. Fundus arteries small. Floating opacities in vitreous.

Removal of the irritating eye gave complete relief from pain, and improved vision in left eye. The eyeball was shrunken, and showed clearly the scar of the penetrating wound on being opened. The degeneration was very extensive. Sections were being prepared.

Dr. Wishart said there had been an injury over fifty years previously, and the case was interesting in view of the great lapse of time between the injury and the onset of irritation. The symptoms were plainly those of irritation, as the results of enucleation proved.

If we accepted ophthalmitis sympathetica and sympathetic irritation as the same disease, the second being the precursor of the first, which is the theory held by Carmalt in the article in the "Reference Handbook," then this was a case where the irritation could not possibly have been due to other than reflex action. If there were really two affections, then this was a sympathetic neurosis.

Dr. Graham asked if there was any satisfactory explanation of the secondary degeneration and ophthalmia in such cases.

Dr. John Caven asked if there were any other parts where inflammation was set up by nerve irritation. It was said that asthma was sometimes caused by nasal trouble, but he did not think the two cases parallel.

Dr. Primrose thought the inflammation might travel up one optic nerve to the chiasma and along the other, and the ciliary region was more likely to be affected on account of its greater vascularity.

Dr. Wishart replied that when the injury was in the ciliary region, the irritation was transmitted along the ciliary sympathetic nerves to the other eye, and remarked that although the question had not been definitely settled by *post mortem* examination, yet it had been pretty conclusively proved that the inflammation did not travel along the optic nerve.

In connection with this, several members spoke on the manner of the production of optic neuritis in cases of cerebral tumors and other brain lesions, some holding that it was due to increase of intracranial pressure; others, that it was caused by the inflammatory process extending along the meninges.

FATTY HEART FROM CASE OF ACUTE PERNICIOUS ANÆMIA.

Dr. Graham reported a case of fatty heart in pernicious anæmia. The interesting point in connection with this case was the occurrence of a mitral systolic together with a diastolic and presystolic murmur, the latter two being present at different times.

On *post mortem* examination the typical fatty heart of pernicious anæmia was found, but the mitral valve was in a fairly healthy condition. There was incompetence, owing to the dilatation of the heart, but no narrowing or thickening of the valves. They were free from atheromatous change as well. Some distinguished authorities assert that a presystolic murmur is a sure indication of a contracted mitral orifice. That opinion was certainly not borne out in the present case.

GENERAL TUBERCULOSIS.

Dr. J. Caver presented the heart, lungs, and liver, with microscopic sections, from a case of general miliary tuberculosis.

Dr. Graham had seen this patient some time before death. He was very much emaciated, of a dark-yellowish complexion; had dyspepsia; liver was enlarged; marked dullness over lower part of right lung, and fine crepitation over the whole of the lower part of the right chest. The temperature chart was characteristic either of general tuberculosis or pyæmia. No tubercle bacilli had been found in the sputa. His diagnosis was that of some suppuration about the liver.

Dr. Acheson asked if it was not the rule that, in acute miliary tuberculosis, tubercle bacilli were not to be found in the sputa.

Dr. J. Caven said they were very rarely found.

SPINAL CORD FROM ACUTE SPINAL PARALYSIS.

Dr. Graham reported a case of acute poliomyelitis in which death took place from involvement of the medulla after four days' illness.

Specimens of the spinal cord prepared by Dr. Barnhart were exhibited. The capillaries in the gray matter were distended with blood corpuscles. Small extravasations were found in the anterior horns, and some destruction of nerve cells in the same situation. The changes were most marked in the cervical and lumbar regions.

TUMOR OF SPINAL COLUMN.

Dr. Graham presented microscopic sections of the tumor described by him at the last meeting.

CARD SPECIMENS.

(1) By Dr. Wishart : Larynx, trachea, and lungs, from case of diphtheria.

(2) By Dr. Thistle : Cerebral tumor. Microscopic sections.

(3) By Dr. Peters : Tubercular knee-joint.

The following officers were elected for the ensuing year : President, Dr. A. McPhedran ; Vice-President, Dr. I. H. Cameron ; Council : Drs. A. B. Macallum, G. A. Peters, and J. Caven.

The society then adjourned.

Correspondence.

Editor of THE CANADIAN PRACTITIONER :

DEAR SIR,—I sent you yesterday a *British Whig*, containing the standing advertisement of this man Bessey. During the afternoon two copies of the accompanying dodger were left in my office by a bill boy who, with an armful of them, was distributing them throughout the town :

“Visiting Kingston! Radical cure of rupture, piles, rectal diseases, womb diseases, urinary and sexual troubles, chronic and nervous affections, stomach and intestinal disorders, including dyspepsia and chronic constipation, and chronic diarrhoea, by an entirely new and painless method of treatment. Dr. Bessey, surgeon and specialist, of Toronto, is here for two days only, Friday and Saturday. May be consulted at City Hotel. Will visit Kingston every fourth week for two days. Next visit, Friday and Saturday, August 12th and 13th.”

This is the second time I have been treated to this sort of thing, and I suppose that for the future my information regarding “Dr. Bessey’s” performances and movements will not be neglected. As you will learn from the *Whig* I sent you, justice, though tardy, yet got on the track of the advertising frauds who had rioted on the people’s ignorance here for between three and four months, and compelled them to seek other spheres of action without delay, so

we hope that proper attention will at last be drawn to this gentleman, and will quietly yet firmly request him to follow a line of professional conduct or cease to call himself “doctor.”

I am sorry that you have not room enough to print the cards of these medical tramps, who seem to be very numerous, for it is only by bringing this abuse constantly to the eyes of the profession in Ontario, and especially of the Council, that a suppression of this practice of advertising can be looked for. The Government of the province, left to itself, cares nothing about it; one or two medical men in any town do not wish to make themselves conspicuous at home by turning informers or prosecutors, however just their cause may be; the Council seems somewhat apathetic in this matter; and, hence, only by a general exposition of the evils and a diffusion of a knowledge thereof amongst the whole profession can a united action that will result in a thorough reformation be expected.

If you can insert this circular, please do so, and let the numerous readers of THE CANADIAN PRACTITIONER learn the state of affairs medical in Kingston, that each may compare it for better or for worse with that in his own locality.

Thanking you for past favors, I remain, as ever,

Yours truly,

THOS. R. DUPUIS.

DEAR SIR,—It is rather amusing to the practitioners of Kingston to see Dr. Dupuis posing as a defender of the profession against quacks and their advertisements.

The following sample of his own advertising among many which have appeared lately in the *Kingston Whig*, will give an idea of how some of our profession seek notoriety. Perhaps this is what he means by the closing paragraph : “The following are not the only advertisements that fill the newspapers” :

“On Tuesday the difficult operation of trachelorrhaphy was performed on a lady living in the western end of the city. Dr. Dupuis did the work, assisted by Drs. Campbell, Chown, and Bell. The patient is doing well.”

Yours,

M.D.

Book Reviews.

Transactions of the Southern Surgical and Gynecological Association. Vol. IV. Held at Richmond, Virginia, Nov., 1891.

This young and vigorous society continues to do good work. Our readers will remember that we published a short report of this meeting, written by Dr. James F. W. Ross, in December last, and also the able address of Dr. Louis S. McMurtry, of Louisville, Ky., the distinguished president of the association—his subject being, "A Plea for Progressive Surgery." The success of the association is largely due to the untiring zeal and great executive ability of the secretary, Dr. W. E. B. Davis, of Rome, Ga. This volume is a credit to the society, the secretary, and the printer. Among the papers especially worthy of note, in addition to the president's address, before referred to, are one on "Complications in Pelvic and Abdominal Surgery," by Dr. Jos. Price, of Philadelphia; "A Medico-Legal Aspect of Pelvic Inflammation," by Dr. W. W. Potter, of Buffalo; "Hand Disinfection," by Dr. Howard Kelly, of Johns Hopkins, Baltimore; "The Pedicle in Hysterectomy," by Dr. J. S. Stone, of Washington; "Injury to the Pelvic Floor," by Dr. T. A. Emmett, of New York; "The Growth of Fibroid Tumors of the Uterus after the Menopause," by Dr. J. Taber Johnson, of Washington; "The Surgical Treatment of Anterior Displacements of the Uterus," by Dr. Charles A. L. Reid, of Cincinnati; "Thinness of the Uterine Wall during Pregnancy Simulating Extra-Uterine Fœtation," by Dr. Geo. J. Engelmann, of St. Louis; "The Removal of Necrotic and Carious Bone with Hydrochloric Acid and Pepsin," by Dr. Robert T. Morris, of New York; "Some Complications of Psoas Abscess," by Dr. J. McFadden Gaston, of Atlanta, Ga.; "The New Field in Abdominal Hysterectomy," by Dr. James F. W. Ross, of Toronto; "Acute Oophoritis Complicating Pregnancy," by Dr. Henry C. Coe, of New York; "A Case of Cholecystotomy for Stones in the Gall-Bladder and Cystic Duct, with Remarks on Gall-Stones," by Dr. W. E. B. Davis, of Rome, Ga.; and seventeen others. A full report of the various discussions is also given.

The Science and Art of Midwifery. By William Thompson Lusk, A.M., M.D., Professor of Obstetrics and the Diseases of Women and Children in the Bellevue Hospital Medical College, etc. New edition, revised and enlarged, with numerous illustrations. New York: D. Appleton & Co., 1892. Pp. xviii-761. Toronto: J. A. Carveth & Co.

This is an admirable work, well suited to the student and practitioner. Dr. Lusk is well known as an able, conscientious, and conservative workër in midwifery. He keeps thoroughly abreast of the times, and shows good judgment in choosing the best among new things, and throwing out the chaff. We have noticed that each edition after the first was an improvement on the preceding one. The fourth edition is certainly the best of the lot; and a comparison of it with its predecessor shows that a vast amount of labor has been expended, many changes have been made, and much new matter has been added.

Therapeutic Notes.

SULPHUR IN CHLOROSIS.—In the June number of the *Practitioner* we find an abstract of a paper by Professor Schulz, published in the *Berliner klinische Wochenschrift*, No. 13, 1892, in which he again draws attention to the value of sulphur in certain cases of anæmia. After alluding to the prominent part played by sulphur in the life of the cell—a part analogous to that of hæmoglobin in the blood—and to the excellent results obtained by the use of sulphur waters in malarial cachexia, he comes to these conclusions: (1) In cases of pure chlorosis in which iron proves inefficient, the general condition is decidedly improved by sulphur; (2) after the administration of sulphur has gone on for some time, treatment with iron can be commenced and continued with success; (3) in cases of chlorosis complicated with catarrhal and inflammatory conditions of the digestive tract, sulphur is not borne. Schulz relates a case illustrating the advantage of the sulphur treatment. The patient, a woman, thirty-four years of age, showed an extreme degree of anæmia, and had loud cardiac bruits. She complained of headache, giddiness, shortness of breath, palpitation, and complete loss of appetite, with pain in the epigastrium after food.

Rest in bed with bland fluid diet was ordered, and this, with bismuth and morphine and occasional doses of Carlsbad salt, relieved the pain. Iron was tried in the form of the saccharated carbonate, but vomiting immediately set in, and its use had to be discontinued. Other preparations of iron were tried with no better result. Sulphur was accordingly given, and this she bore very well. Great improvement ensued; the anæmic appearance lessened, and the headaches and palpitation disappeared. She was discharged from hospital greatly bettered; but she still complained of some palpitation on considerable exertion. Iron was again given as the saccharated carbonate, and this time was tolerated without difficulty. The sulphur was used in the form of flowers of sulphur mixed with sugar of milk, as much being taken three times a day as would lie on the point of a knife.—*New York Med. Jour.*

PHYSOSTIGMA IN HICCOUGH.—Dr. Shallengberger, of Rochester, Pa., writes: "In a recent issue of the *Edinburgh Medical Journal*, Mr. Smart calls attention to a case of obstinate hiccough from chronic alcoholism, so persistent as to prevent sleep and the ingestion of food. No relief followed the use of any drug except from the administration of dangerously large doses of morphine, persisted in for six days. My object in this note is to assure the profession of the value of physostigma in these cases of obstinate hiccough, from whatever cause. The cases that I have seen have yielded to its influence within two or three days. The last case was precisely like the one reported by Mr. Smart, and forty-eight hours' use of this drug settled the hiccough. Another case of hysterical hiccough, of three months' duration, that had resisted all other agents, was speedily controlled in the same way. A good fluid extract was the form given. The dose is four to eight drops every two or three hours, pushed to the point of causing toxic symptoms."—*Med. Record.*

IN Germany a lecture on homœopathic medicine is added to the curriculum of the regular schools, and in that country the distinctive school of homœopathy is as thoroughly done away with as could be wished. The latest statistics give only thirty-seven homœopathic practitioners in the whole of Germany.

Miscellaneous.

HEALTH OFFICERS' ANNUAL MEETING.—The seventh annual meeting of the Association of Executive Health Officers will be held at Niagara Falls Town on August 16th, 17th, and 18th. Among the papers which will be read are the following: "Organic matter in its relation to Asiatic cholera, cholera nostras, and other diseases," by Allan Cameron, M.D., medical health officer, Owen Sound; "The causation and prevention of typhoid fever, and the duty of municipalities in relation thereto," by John Herald, M.D., chairman Board of Health, Kingston; "A sporadic outbreak of diphtheria, caused by an open sewer," by Aian Macdougall, C.E., consulting engineer, Toronto; president's annual address, by Charles McLellan, M.D., Trenton; address by Hon. Richard Harcourt, M.P.P.; "Methods of sanitary work in Brantford," by Egerton Griffin, M.D., medical health officer, Brantford; "The disposal of Toronto sewage," by J. J. Cassidy, M.D., Toronto, chairman Provincial Board of Health; "Regarding the proper methods of sewage filtration," by E. H. Ball, C.E., Toronto, chief sanitary engineer of Medical Health Department; "The best means for disposing of city sewage and garbage," by J. D. Macdonald, M.D., Hamilton, member Provincial Board of Health; "Pollution of Niagara River in relation to public water supplies," by Dr. Oliver, Niagara Falls; "Air of public assembly rooms and its examination," by A. McGill, M.A., Ottawa, analyst, Inland Revenue Department; "Isolation hospitals, their uses and methods," by Norman Allen, M.D., Toronto, medical health officer; "Some points relating to the artesian water supply of Chatham," by R. Hall, M.D., Chatham, medical health officer; "Vital statistics in their relations to public health work," by P. H. Bryce, M.A., M.D., Toronto; "The practical advantages of having medical health officers for counties and districts," by Francis Rae, M.D., Oshawa, member Provincial Board of Health; "The factors necessary to a practical diagnosis of tuberculosis in cattle," by J. J. Mackenzie, M.A., laboratory of Provincial Board of Health, Toronto.

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