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W.C.XX

September, 1919

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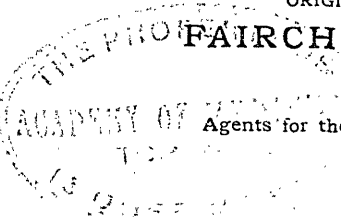
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THE MARITIME MEDICAL NEWS

VOL. XX., SEPTEMBER, 1908, No. 9

The task of delivering the Croonian lectures this year devolved upon A. E. Garrod, who chose as his title "Inborn Errors of Metabolism." In the second of his lectures, which appears in the *Lancet* for July, Garrod takes up the subject of alkaptonuria. When freshly passed the urine of an alkaptonuric is usually normal in tint, but it quickly begins to darken in contact with air, and finally becomes actually black. Alkalinity of reaction greatly hastens the change. On heating the urine with Fehling's solution a deep brown colour develops and copious reduction occurs. The most striking reaction is observed when a dilute solution of ferric chloride is allowed to fall drop by drop into the urine. The fall of each drop is followed by the appearance of a deep blue colour which lasts but for a moment. Alkaptonuria is a very rare phenomenon. In the great majority of cases it is present from birth, and persists throughout life giving rise to no symptoms save occasional dysuria with undue frequency of micturition. A few alkaptonurics are attacked in later life with the condition known as ochronosis, the essential feature of which is the staining of the cartilagenous structures of an inky blackness. Surface or subsurface pigmentation is sometimes present and renders possible the recognition of the condition in living subjects. The blackened auricular cartilages may show through the skin, and black flecks appear upon

the conjunctiva, the skin of the face, and the knuckles.

❖ ❖ ❖

Pulmonary Tuberculosis. Sir W. Whitla, in his Cavendish lecture, appearing in the *British Medical Journal* for July 11, discusses the aetiology of pulmonary tuberculosis, and gives the details and results of experiments which go to show that the intestinal route plays a far more important role in the production of human pulmonary tuberculosis than has been hitherto recognized. The lungs of guinea pigs, fed on an emulsion of India ink for four days, are engorged with carbon; the same thing happens when the emulsion is injected into the peritoneal cavity. The tubercle bacillus passes through the intestinal mucosa like the fine particles of India ink, without causing any lesion or leaving any local evidence of its point of entrance. Though we still are hardly justified in assuming that pulmonary tuberculosis never occurs from the inhalation of dried sputum dust, or from breathing of the spray ejected at the moment of coughing, it appears to be conclusively proved that the alimentary tract is a frequent portal of entry for the tubercle bacillus; that this event is especially frequent in children, and that the milk of tuberculous cows is the common source in these cases. Probably at no distant date the contention of Calmette will be accepted that in the immense majority of cases pulmonary tuberculosis is not contracted by inhalation,

but, as taught by von Behring, the germs enter through the intestinal tract. Future research will have to explain how in China,⁵ where practically no bovine milk is used, tuberculosis is everywhere prevalent among the natives.

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Autochthonous Urethral Calculi.

Writing in the *Medical Record* for August 1, under the caption "Autochthonous Urethral Calculi; Report of a case," Harry Atwood Fowler says that cases of urethral calculus are somewhat uncommon. In the majority of cases the calculus is formed above the stricture and slips down to it becoming impacted, thus being secondary. It is generally found in the fossa navicularis, bulbous portion of the urethra, or prostatic portion. The trouble may begin with sudden excruciating pain which demands immediate relief. Again the calculus is well borne for a long time, and then severe symptoms supervene. In a third group of cases the calculus grows gradually after reaching its place until it becomes very large. Again it lodges in the urethra, and slowly penetrates the periurethral tissues until it lies outside the urethra. Primary urethral calculi develop in the urethra or in a diverticulum of it. The diverticula may be congenital, in which case the calculus occurs in a child; or acquired, from dilatation of the urethra or injury of it; these occur in adults. To indicate the origin of the calculus the author proposes to use the terms autochthonous, heterochthonous, and amphiochthonous. Symptoms vary with position, origin, and size of the calculus. They are due to the foreign body blocking the urethra. Treatment consists of operative removal.

H. D. Arnold contributes a paper to the *Journal of the American Medical Association* for August 1, in which he criticises the modern teachings as to physical signs in the textbooks, as failing to discriminate between unfounded theories and established facts and ignoring the physical laws on which their explanation should be based. There are, it is true, many points that we cannot thus solve at present, but we can be more truly scientific and less traditional in our ideas. To illustrate his views, he takes up the subject of the respiratory murmur, in regard to which there are contradictory opinions as to the reason why there should be two types of breathing sounds, a question that can be solved by physical experiments more easily than the physiologist can investigate the digestive processes. The respiratory murmur with its modifications, he shows, is rationally explainable according to the laws of physics by recognizing it as originating at two points, the glottis and the point where the minute bronchus opens into the air sac. From these its transmission depends on the structures and passages through which the vibrations are conducted, and with a knowledge of the physical laws of sound conduction and of the structural and gross anatomy, one obtains an understanding of the complex combinations of sounds in health, and readily translates the variations that come with disease into terms of changes in the texture of the lung tissue. This is the real aim of auscultation of the respiratory murmur—to learn the texture of the lung tissue. Arnold gives his explanation in detail of the physical mechanism of the different changes in the respiratory sounds, and while he does not claim that it is necessarily

correct, as it has not been experimentally demonstrated to be so, it is consistent with the laws of physics and offers an intelligent basis from which to carry out further investigations which shall confirm or disprove it.

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Splenectomy. G. B. Johnston contributes to the *Annals of Surgery* for July, an article entitled "Splenectomy. Report of Six Cases together with a Statistical Summary of all the Reported Operations, up to the year 1908." He quotes Vulpinus as to the results of this operation, as follows: (1) Extirpation of the spleen produces a transitory decrease in the number of red and an increase in the number of white corpuscles. (2) The thyroid gland cannot vicariously assume the function of the spleen. (3) The lymphatic glands and the bone marrow show an increased blood forming activity after removal of the spleen. (4) The regeneration of the blood after the loss of blood is probably less rapid in individuals from whom the spleen has been removed. The author collected 708 operations, with 514 recoveries. In the period from 1900 to 1908 there were 355 splenectomies, with 289 recoveries and a mortality of 18.5 per cent., against 27.4 per cent. for the entire series. Excluding splenectomies for traumatism, there remain 242, with 210 recoveries. The contraindication to splenectomy in leuchæmia would exclude seven additional cases, leaving the mortality for the remaining 235 cases only 11.5 per cent.

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Ammonia Co-efficient in Urine. In a paper contributed to the *Bulletin of the University College of Medicine* (Richmond, Va.) for July, E. Guy Hopkins describes a method of determining the ammonia co-efficient

by direct nesslerization. The ammonia is determined by diluting the urine volumetrically until the ammonia nitrogen in the dilution is between .001 and .02 milligrams per c.c. A definite portion of the dilution is nesslerized, and the ammonia nitrogen in 1 cc. of urine computed. The total nitrogen is estimated in the same manner, first reducing the organic nitrogen to ammonium sulphate by the Kjeldahl process. The ratio between the amount of ammonia nitrogen and total nitrogen thus determined is taken as the ammonia coefficient. As there is a possible error of ten per cent. in the method, he concludes that it is applicable to the determination of pathological variations only. For this purpose it answers the requirements. It is sufficiently accurate to determine variations of clinical importance, and has great advantages in its rapidity and in the simplicity of technique and apparatus used.

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Injuries of Cranial Nerves. The frequency of injuries of the cranial nerves in fractures of the skull is noted by J. J. Thomas in the *Journal of the American Medical Association* for July 25. Thomas has searched the records of fracture of the base of the skull in the records of the Boston City hospital, and finds evidence of such involvement in 12.75 per cent. of the cases. The most frequent nerve injury is that of the facial, which was seen in forty-four cases, in two of which the injury was bilateral. Of course functional defect of this nerve would be most readily observed in unconscious or semi-conscious patients. The next in frequency was the abducens, which was paralyzed in twelve cases, once bilaterally. The auditory was affected ten times, and probably more, as cases of only

moderate deafness were excluded on account of its being possibly due to injury of the cochlea or tympanum. The third nerve was involved nine times, the optic nerve eight times, and the olfactory, patheticus, trigeminus and hypoglossal, each once. The combinations of nerves injured were not very frequent. Once the second, seventh and eighth were affected together. Both eighth nerves twice; both seventh nerves once and both seventh nerves and left sixth once. Both olfactory nerves, with the left fourth and partial left third was another combination. The second, third and sixth on one side, once; the third and sixth once; the third and seventh twice, once on the same side; the right optic and both sixth nerves once; the optic and auditory twice, once on the same side and once crossed. The seventh and eighth together twice, the seventh and sixth twice, and the seventh and twelfth once. In eight cases nerves on both sides of the skull were affected. Several illustrative cases are reported and Thomas quotes authorities, especially Cushing, in regard to the usual or probable course of fissures of the base in skull fracture and the relative liability of special nerves or combinations of nerves to be involved in the injury. The only inference he thinks we are justified in drawing in regard to this latter point is that, aside from the combinations of nerves lying close together, so as to be liable to injury from a single fissure, the frequency of multiple fissures makes the groups, both as to the nerves involved and the side affected, much more irregular than might be expected. We probably have to do with varying casual conditions in these injuries, meningeal hæmorrhage or simple increased cranial pressure, as well as direct laceration, may be factors. The prog-

nosis differs markedly in these cases. In some the cure is rapid, and in these we have probably only an œdema of the nerve sheath as a cause. In others, recovery is very slow, and in many incomplete. This is especially true in injury of the optic nerve and possibly also of the auditory. The severer cases of injury of nerves that pass through a long canal in the bone, with consequent greater liability to displacement of bone, are more likely to be unfavourable. The treatment, aside from the use of drugs such as strychnin for the arrest of atrophy, consists in the use of electricity and massage where practicable. In the very resistant cases, as of the facial nerve, anastomosis with an uninjured nerve such as the hypoglossal is suggested as most promising.

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**Treatment of
Gonorrhœal
Arthritis.**

A paper entitled "An Improved Treatment of Gonorrhœal Arthritis (So-called Gonorrhœal Rheumatism)," from the pen of Edward C. Titus, appears in the *Medical Record* for July 25. Titus advocates the use of the static current in the treatment of gonorrhœal arthritis. He was led to this by finding that the gonococcus was eliminated by this current when used for gonorrhœal urethritis. The oscillations of the current produce deep wave-like contractions in the tissues, which act as tissue gymnastics, relieving local stasis, inducing circulatory drainage, and restoration of normal metabolism. The author had constructed an insulated vacuum tube for use in the rectum. The actinic action of the tube causes a direct bactericidal effect on the deep-seated gonococci. Nascent nitrous acid and ozone are generated between the tube and the lining of the cavity and penetrate the tissues so as to act on the germs. The tube is inserted into the

rectum in the Sims position. A small spark-gap is at first used, and the size increased. The application should be painless and brings about a feeling of relief. The germs disappear from the discharge and the glands are reduced to their normal size and consistency.

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Cardiac Arrhythmia.

G. W. Norris, in a paper contributed to the *American Journal of the Medical Sciences* for July, states that to explain satisfactorily and study the different forms of arrhythmia we must classify and group them according to the five fundamental properties of the heart muscle. The myogenic theory of cardiac activity is practically necessitated as a working basis. The first type of pulse irregularity in this study is juvenile arrhythmia, affecting the diastolic period, the pulse slowing down after fever, especially between the ages of eight and fifteen. The second is extrasystole, with an intermittent pulse from irritation of the ventricle, from heart block, or from diminished excitability. The third is perpetual arrhythmia in which no regular rhythm can be made out for weeks or months. The fourth is heart block, which is due to depression of conductivity, which the dropping of the ventricular beat or complete dissociation of the auriculoventricular rhythm. The fifth form is that of depression of contractility, the so-called pulsus alterans. Arrhythmia of muscular origin is more serious than that which is due to nervous causes. The time and cause of it will greatly modify or influence the opinion as to its seriousness.

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Chronic Pancreatitis.

J. B. Deaver, writing in the *Journal of the American Medical Association* for August 1, first remarking on

the comparatively recent development of pancreatic surgery, says that for the purpose of the surgeon it is sufficient to state that the most frequent form is the interlobular, and that it is this with which we have to deal in the pancreatitis complicating disease of the biliary passages. The interacinar form is due to systemic conditions not yet understood, and is correspondingly less amenable to direct or local attack. The most frequent cause is doubtless some obstruction to the free discharge of the pancreatic secretion, accompanied or not with an ascending infection. Either factor alone is enough to produce it. Infection alone will account for those cases of chronic pancreatitis following long-standing gastroduodenal catarrh, and it happens that most of Deaver's cases were, contrary to the usual rule, in patients in whom no gallstones were found, though in almost every case evidence of infection was found. Many other causes of chronic pancreatitis have been claimed, cardiorenal disease, tuberculosis, syphilis, etc., and Deaver thinks that microscopic examination would reveal many cases of beginning change in normal appearing organs. Though a somewhat definite syndrome has been established, he can not agree with Mayo Robson that the disorder is easy to diagnose. Most cases still go unrecognized till revealed by operation or autopsy. The local symptoms are not very significant and may be practically absent, the examination of the feces is sometimes inconclusive and sometimes demands skill not always easy to command. The symptoms depending on the derangements of metabolism, due to interference with the internal secretion of the pancreas, are most distinctive. Diabetes is often too late a symptom to be of practical value, but Deaver regards the Cam-

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would be many present at this meeting to whom I could not presume to offer any remarks that would either prove of interest or profit, but it seemed certain that the bulk of those attending the congress would be men busily engaged in the toils of general practice, with but little leisure for reading. Much as you may be interested in the scientific investigations of the age, and the great discoveries that are constantly being made, you naturally wish to know how far the results obtained by these researches may be utilized by you in your endeavours to minimize the sum total of human suffering and to promote the general well-being of the community.

I cannot help feeling that those of you who have perused the literature that has grown up around the subject of the reflexes must be inclined to doubt the value which attaches both to the tendon-jerks and the superficial reflexes in diagnosis, for, fresh from reading a paper in which the author insists on this or that phenomenon as a sure sign of organic disease, you take up another in which the writer as confidently asserts that certain alterations of the reflexes have not the value that has been ascribed to them, as he has met with the abnormal sign in functional as well as in organic conditions of the nervous system. You accordingly find it difficult to decide which of the conflicting statements to believe, for the opportunities of putting these matters to the test do not occur sufficiently often in your practice to permit of your coming to any satisfactory conclusion from your own observations.

It is, therefore, natural that you should look to those whose work brings them into daily contact with these problems, and who have endless opportunities of testing the con-

flicting views expressed by different authors, to assist you to decide what is true, and what is not; on what evidence you may place confidence, and what you should mistrust and discard.

It thus seems probable that no better use can be made of an opportunity like the present than to attempt to show that, in spite of much that you may see written to the contrary, the reflexes are of the utmost value in the diagnosis of affections of the nervous system.

Time will not permit me to quote cases in support of what I have to say, but I can assure you that all the facts to which I propose to call your attention are based on practical experience of these matters, and that actual cases which substantiate the statements occur to me as I recount the facts which I deem worthy of your acceptance as likely to prove helpful to you in the problems that confront you from time to time in the routine of your practice.

An attempt will be made to show that the reflexes are of value:

1. In the diagnosis of organic from functional affections of the nervous system.
2. In the diagnosis of one organic disease from another.
3. In localizing the seat of the morbid process.
4. In determining the extent and severity of the mischief.
5. That there are limitations to the value of the reflexes.
6. What part they play in the diagnosis of maladies outside the realms of neurology.

It will, of course, be impossible to deal with all of the reflexes in the time at our disposal, and it will be equally impossible to discuss more than some of the more important aspects

of the subjects I have outlined, without pretending that any exhaustive consideration of them in their many bearings is at all possible.

I.—DIAGNOSIS OF ORGANIC FROM FUNCTIONAL AFFECTIONS.

One is inclined to question either the observation or the judgment of the author who, having elicited the extensor type of plantar reflex after an attack of convulsions, nevertheless concludes that the attack has been hysterical and not epileptic.

That true epilepsy may occur in a person otherwise hysterical, and that an epileptic attack may be followed by an hysterical state, are facts too well recognized to call for more than passing notice; but it is difficult to refrain from a desire to have the opportunity of observing the attack from its inception to its conclusion, before accepting the statement that hysteria was alone responsible for the convulsions which permitted the extensor type of plantar reflex to be elicited in the subject of the fit.

Abolition of the knee-jerks, followed by their exaggeration, coupled with ankle clonus, and supported by the extensor type of plantar reflex form a combination which we have good reason to agree must be aids to the diagnosis of genuine epilepsy, as contrasted with either hysteria or malingering.

It is equally difficult to accept the opinion of the observer who asserts that the paralysis from which the patient suffered was hysterical, and yet the plantar reflex was of the extensor type, especially when he has no better proof to offer than that the patient got quite well, and that this phenomenon, like all the other abnormal signs, disappeared.

The names of such distinguished authorities are associated with state-

ments of this kind, that the only way which seems possible to reconcile their views with one's own experience is to suppose that certain types of disseminate sclerosis, so common with us in England, must be rare in other countries, so that the vagaries of these varieties of the malady so much insisted on by Dr. Thomas Buzzard in his writings on the subject, have not as yet been recognized by observers who are mistaking for hysteria cases that are in reality examples of disseminate sclerosis. That this is so in some instances is evident even from the information given of the clinical history of the patient's illness. The remarkable way in which the clinical picture may clear up in a case of this disease after the most pronounced signs of organic change have been determined, makes it difficult to believe otherwise than that there is a time in the course of the malady when the lesion is of a kind that permits not only of restitution of function, but also of repair of structure, so that the nervous system is not only able to perform its work again in a normal manner, but is also free from any evidence of persisting structural damage.

These considerations open up a most interesting question that I dare not do more than touch on in connection with the diagnosis of neurasthenia. May not a functional condition of the kind occasion nutritional changes in the nervous system sufficiently profound to lead to alterations in the reflexes that are indistinguishable from those produced by organic disease?

Time will not permit me to discuss this matter in the way that its importance demands. Let me but say that from the practical standpoint it matters but little, for the majority of cases of neurasthenia present no such

difficulty in diagnosis, and if such a condition of things as has been suggested be possible, there would be every reason to regard with as much concern the nervous system of such a patient as that of one suffering from some known organic disease, for such a condition cannot but be attended by grave consequences if unchecked by treatment.

2.—THE DIAGNOSIS OF ONE ORGANIC DISEASE FROM ANOTHER.

Let us take a common example. A patient experiences difficulty in walking owing to the inco-ordinate condition of his lower limbs. Two of the most common diseases likely to be responsible for this are tabes dorsalis and disseminate sclerosis.

How quickly it can be determined which of these diseases exists! No knee jerk, no ankle jerk, and the plantar reflex not altered to the extensor type in tabes make striking contrasts to the exaggeration of the knee jerk, exaggeration of the ankle-jerk, amounting, it may be, to clonus, and the plantar reflex of the extensor type in disseminate sclerosis.

Even if, in the latter disease, the knee and ankle-jerks fail us by being absent instead of being exaggerated, the plantar reflex is not likely to play us false. And if it does, is there not still the pupil reflex on which we can fall back for assistance? The pupil which fails to react to light while it preserves the possibility of reacting to accommodation, is a phenomenon sufficiently rare in disseminate sclerosis, and common in tabes, to make it a further point of contrast between these two diseases.

Take another example. The patient has atrophy of the small muscles of the hand. One of the first things we are anxious to know is whether or not the reflexes are alter-

ed, for much depends on whether they are, both in regard to diagnosis and prognosis. Exaggerated knee-jerks, ankle-clonus, and the extensor plantar reflex tell their tale, for it is clear from them that the spinal cord is involved by the morbid process that is responsible for the muscular atrophy. Thus, by testing these reflexes, we at once glean information that is of the greatest import. By testing the arm-jerks and the jaw-jerk, the diagnosis may be carried a stage further, for in the presence of an exaggerated jaw-jerk or clonus there is little likelihood that any condition other than amyotrophic lateral sclerosis is to be held accountable for the muscular atrophy. Although the Rontgen rays have done much to facilitate diagnosis under these conditions, it cannot be said that they have in any way robbed the reflexes of the value that attached to them before the rays were put to such use. It may be safely said that the rays have supplemented, not supplanted, the reflexes in this sphere of their usefulness, for while they may reveal an accessory rib, caries or other disease of the cervical vertebræ to account for the muscular atrophy, in the absence of these conditions they cannot tell us whether the atrophy is of central or of peripheral origin, nor can they further give us the good idea the reflexes can as to which of the several affections of the spinal cord is likely to be responsible for the condition.

Two affections that may easily be confounded, and that present considerable difficulty of diagnosis at times, although at other times the clinical pictures are so widely different that there is no possibility of confounding them, are cerebellar tumour and disseminate sclerosis. A proper appreciation of the different behaviour of

the reflexes in the two conditions will go far towards clearing up the question that is in doubt; indeed the diagnosis may largely, if not entirely, depend on what, if any, alterations are determined in the reflexes. While various alterations of the tendon-jerks obtain in tumour of the cerebellum which may accord with what is found in disseminate sclerosis, the superficial reflexes prove of distinct service in differential diagnosis, for the plantar reflex commonly assumes the extensor type at an early stage of disseminate sclerosis, while it only does so as a late event in a case of tumour of the cerebellum, and is then to be ascribed to some complication rather than to the morbid condition of the cerebellum itself.

The reservation that has had to be made in regard to the plantar reflex does not apply to the other superficial reflexes on which a diagnosis may be based, for, assuming that the local conditions of the abdominal walls be such as to permit the abdominal reflexes to be obtained, their absence may be regarded of considerable importance in diagnosis, for, while they are unaffected in cases of tumour of the cerebellum, they are absent in a large proportion of cases of disseminate sclerosis. The reflexes may thus serve to determine whether we are in the presence of an affection in which operative intervention may be expected to bring relief, or whether the morbid condition is one in which operation would not only be useless, but actually harmful.

It is impossible to leave this part of our subject without referring to the value that attaches to the extensor plantar reflex in the diagnosis between multiple peripheral neuritis, in which it is absent, and that fatal disease, subacute combined degenera-

tion of the spinal cord, in which it is present, for, while the former condition may be expected to result in the recovery under appropriate treatment, the latter runs its course to a fatal termination with unerring certainty in most, if not in all, cases.

3. LOCALIZING THE SEAT OF THE MORBID PROCESS.

The abolition of the reflexes in affections of the peripheral nerves, the variety of ways in which they may be affected in diseases of the spinal cord, and their unilateral exaggeration, diminution or special modification in affections of the brain, need no more than passing notice. It is impossible, however, to leave this part of our subject without a word of comment in regard to the part the reflexes play in the early diagnosis of morbid conditions of the brain and spinal cord, for it repeatedly happens that some departure of the reflexes from the normal standard is the first indication that we have not only that organic disease exists, but as to what part of the nervous system is affected. Special note must also be taken of the important *role* they play in the localization of focal lesions of the spinal cord, in which connection nothing is more important than the aid to be derived from them in the diagnosis and localization of tumours of the cord.

The abolition of the reflexes which correspond to certain segments of the cord, the escape of all the reflexes above this level, and exaggeration or other modification below it, must be regarded as the most valuable indications we have in determining the position of a focal lesion.

Similarly, unilateral alteration of the reflexes may be the first indication of which hemisphere of the brain is affected, and, while it may happen

that hemiplegia or some other condition makes it superfluous for us to seek assistance from the reflexes, there are cases in which there is so much uncertainty that every source from which information can be gleaned must be welcomed, and then it is that the reflexes may prove invaluable. No better example of this can be found than what obtains in tumours of the frontal lobes of the brain. The difficulties of localization in such cases may prove well-nigh insurmountable, so that unilateral exaggeration of the knee-jerk or the appearance of ankle clonus on one side is welcomed. Of similar significance is the appearance of the extensor plantar reflex, or, as my colleague, Dr. Grainger Sewart, has shown, diminution or abolition of the superficial abdominal reflexes on the side opposite to that on which the tumour is situated.

Another class of case in which the reflexes may prove helpful is that in which the question to be decided is whether the disease is in the cerebellum or pons. The determination of this point becomes particularly important when a tumour is responsible for the symptoms, for, while those which occupy the pons are inoperable, no more successful class of intracranial tumour is met with from this standpoint than many of those which involve the cerebellum. They supply us with some of the most brilliant results of modern surgery. While there are many points on which the diagnosis must rest, it is not too much to claim for the reflexes that they play an important part in deciding the question at issue, for the earlier they become affected in the clinical history of the case, the more likely is the tumour to be situated in the pons, while the longer they remain unaltered the greater is the like-

lihood that the seat is the cerebellum. The knee-jerks cannot be said to be of material assistance in this connection, for, as already noted, they may become altered in uncomplicated cases of tumour of the cerebellum. It is, however, otherwise as regards ankle-clonus and alterations of the superficial reflexes, for unilateral diminution or abolition of the abdominal reflexes, or alteration of the plantar reflexes to the extensor type, cannot be regarded otherwise than of importance in diagnosis, if they are determined sufficiently early in the clinical course of the patient's illness to make it improbable that they are the outcome of some complication rather than due to the original malady.

4. THE EXTENT AND SEVERITY OF THE MISCHIEF.

It would appear to be self-evident that, inasmuch as the various reflexes have different segments of the spinal cord on whose integrity they depend, the fewer that are lost the less extensive the lesions, and the wider the extent of their affection, the more widespread the distribution of the morbid process. It must be clearly recognized, however, that this is by no means necessarily the case, for in reality, this only applies in some instances, for a very limited lesion may give rise to widespread alterations of the reflexes. Take, for example, a case in which the lesion is limited to the cervical region of the cord, and abolishes the scapulo-humeral and other arm reflexes. Many other reflexes will also be altered, though not necessarily abolished, so that among the abnormal phenomena to be looked for are exaggeration of the knee-jerk, ankle clonus, and the extensor type of plantar reflex.

No better example of the value of the reflexes in determining the sever-

ity of a lesion can be suggested than is supplied by the knee-jerks in cases of transverse lesions of the spinal cord above the lumbar enlargement, for when, instead of being exaggerated, they are abolished and remain absent, the gravest fears are justified. When the knee-jerks do not return there is every reason to fear a severance of the cord so complete as to preclude the possibility of re-establishment of the paths through the damaged segments of the cord. Ankle clonus, a phenomenon that we view with concern under other conditions, would now be welcomed, as this would indicate possibilities of recovery which would not have been justified had the knee and ankle-jerks remained absent.

5.—LIMITATIONS TO THE VALUE OF THE REFLEXES.

There are instances in which the reflexes only partly clear up the diagnostic problem. Take, for example, a case of myelitis with paraplegia as the result. From the reflexes alone the diagnosis may be made as to whether ordinary myelitis or polio-myelitis exists, but further than this they cannot take us. The X-rays may reveal tuberculous disease of the bone, which has not as yet produced spinal deformity, or the opsonic index may raise the suspicion of a tuberculous origin of the paraplegia in a way that is impossible to the reflexes.

Similarly, syphilitic pachymeningitis may not as yet have occasioned any alteration in the reflexes by which an organic condition can be diagnosed, and yet lumbar puncture may permit the determination of a leucocytosis that allows a positive diagnosis to be made. Or the behaviour of the superficial reflexes may justify the diagnosis of an organic hemiplegia, while it requires the ophthalmoscope

to say that a tumour is responsible for it, or lumbar puncture to indicate that the thrombosis which underlies it is of syphilitic origin.

Furthermore, it must be remembered that there are some affections of the nervous system in which a diagnosis is to be made without any necessary assistance from the reflexes. Chorea supplies an example, for, although in this affection the special alteration of the knee-jerks, to which Gordon, of Exeter, called attention, may be present, in which the limb remains suspended in mid-air too long in response to a blow on the *pælla tendon*, the diagnosis has to be made without any such assistance from the reflexes in the majority of cases. The extent of the response, and special alterations of the superficial reflexes to which Babinski called attention, are too infrequent to justify any reliance being placed on them.

The fact must not be lost sight of in this connection that the negative may be of little less value than the positive in some cases, and that, accordingly, there are instances when the fact that the reflexes are not affected in a case proves almost as helpful as if they were, for this serves to distinguish the malady from one in which alterations of the reflexes were to be expected.

5.—THE PART THEY PLAY IN THE DIAGNOSIS OF GENERAL DISEASES

The question that next arises is as to whether the reflexes give any assistance in diagnosis in realms outside those of neurology. There can be no doubt that there are many cases in which, in the absence of any known disease of the nervous system, the reflexes are altered in the course of some general disease or special affection of some other organ of the body.

It will be remembered that in an affection like diphtheria, absent knee-jerks may give the first clue to the nature of a sore throat that ought to have been long since determined by bacteriological examination of secretion from the fauces. Similarly, absence of the knee-jerks may call attention to the possibility of glycosuria, which routine examination of the urine should have forestalled.

Some attempt has been made to derive direct advantage from alterations of the reflexes as in favour of one as opposed to another disease in which the nervous system plays no part, except that the toxins of the one malady have a more profound effect on the nerve centres, and occasion alterations of the reflexes in consequence, in a manner that does not obtain in the other disease. Thus, the knee-jerks have been found absent in a large proportion of cases of pneumonia due to the diplococcus or the diphtheria organism, while they are not affected in septic pneumonia and are found exaggerated in tuberculous cases (Stanley Barnes).

The chief value, however, that attaches to these observations in the present state of our knowledge is that they prevent us from concluding that some organic condition, as, for instance, myelitis or meningitis, has of necessity developed because these alterations in the reflexes are determined. Those interested in the welfare of

the patient are thus spared the anxiety that would be caused by the opinion that might have been expressed in ignorance of the fact that the alterations noted are compatible with transitory effects due to toxic conditions without any permanent organic change.

In conclusion, Mr. President, ladies and gentlemen, let me thank you most sincerely for the patient hearing you have given me. No one is more conscious of the shortcomings of this address than I am. I wish it had been possible for me to prove more worthy of the trust that has been placed in me, and the honour which that trust implies. I can only take comfort in the fact that I have spared no pains to make the address a success, so that any failure to do so cannot be ascribed to a lack of appreciation of the great responsibility which I have accepted, and of which I have been only too painfully conscious. One other consideration brings me comfort in my ordeal; that is, that I am in the midst of friends who will deal leniently with my shortcomings. In his letter of invitation your worthy secretary, Dr. Hackney, told me that I would meet many friends who would be ready to welcome me to Canada. I have, indeed, met with friends, and have been overwhelmed with kindness. Let me take this opportunity of thanking you all most cordially for the welcome you have so generously extended to me.



SCARLET FEVER: SOME OBSERVATIONS UPON THREE HUNDRED AND TWENTY- FIVE CASES.

By JOHN McCRAE, M. B. (Tor), M. R. C. P. (Lond.),

Physician to the Alexandra Hospital for Infectious Diseases, and Associate in Medicine, Royal Victoria Hospital; Lecturer in Pathology, McGill University, Montreal.

The Address in Medicine to the Maritime Medical Association, Halifax, July 2nd, 1908.

MR. President and Gentlemen: I need scarcely say how much honoured I feel in being asked to deliver to you the Address in Medicine, because to do so generally falls to someone more advanced than I am in the profession, but in view of your extending to me the courtesy, the least I can do is to reduce to the briefest my apologies and explanations, and proceed at once to justify you, and myself. I have chosen a subject that is thoroughly well known, and I cannot hope to add anything material to it, yet the observation of a goodly number of cases must carry with it some knowledge that is usefully transmissible. Unfortunately for me, Dr. John H. McCollom, of Boston, overshadows us all in the matter of scarlet fever, and it is a species of impertinence to produce three hundred cases within a radius of a few hundred miles of his five thousand, but it is a kind of assumption that he will be the first to forgive.

These cases form the first series in the wards of the Alexandra Hospital for Infectious Diseases, Montreal, and are taken exactly as they come. They represent no special epidemic, although the winter of 1907-1908 is considered to have suffered a more than usual prevalence of the disease. I have heard it said that there is a regular recurrence curve of scarlet fever, and that 1908 is a "scarlet

year," but I have not been able to find anything definite upon this supposition. Females were more numerous than males in the percentage of 54 to 46, and the ages at which patients were attacked fall exactly into the average order, viz., that the fourth year of life has the most cases. The numbers of cases rose rapidly, as we had only three in the first year, and the liability declined rapidly after the ninth year; nearly ten per cent. of all our cases were in children who were three years of age; the youngest was three months, and the oldest forty-two years; 58 per cent. of the cases were between the third and tenth years. In 325 cases we had twenty-three deaths, that is seven per cent. This is a fair, even a good hospital death rate, but on its behalf I make no claims. The hospital series of Philadelphia and Boston give 9.72 and 9.28 respectively. Statistics of cities and countries at large are generally considerable higher, and of private practice among the better classes much lower.

THE MODE OF INFECTION.

It is a matter of popular knowledge that the first attack generally confers immunity; in this series there are but two cases of a reputed second attack, one child having previously been treated for scarlet fever in an infectious hospital. In one case, if the symptoms may be trusted, a relapse

occurred on the thirty-first day; the primary symptoms were complete and the disease was definitely determinable; with the relapse the rash reappeared typically, on the face, neck and body, deeper over the folds; there was vomiting, headache, a fever of 103 and desquamation after both attacks. A recurrence of the rash happened in four patients, in one of them twice. The onset after a few days of well marked symptoms in patients who had been admitted with ill-defined symptoms, occurred four times, and these cases I think must have been cases wrongly diagnosed, who contracted the disease after admission to the wards. I admit no blame to the staff, nor to myself, because in a doubtful case it is a grave responsibility to take if one says that a case is not scarlet fever and sends it home; like the archer whose grandsire drew a good bow at Hastings, a man can do but his best. Where our responsibility does come home, however, is in the matter of so-called "return cases"—that is, where children contract the disease from patients discharged from the hospital; there are ten cases (3 per cent.) in which we lie open to this charge—an unusually high percentage. One to two per cent. is the figure in many hospitals. It must be admitted in fairness, however, that oftentimes clothes are packed away after a perfunctory disinfection, to be opened when the child returns from the hospital, and it is notorious that in clothes folded away the infection can linger for a long time. Leaving this possible excuse aside, cases yet remain. The discharges from the ear or from the nose or mouth, probably are liable to cause infections, because the cases are always kept till desquamation is quite complete. It is hard

to understand that a discharge from the ear (with staphylococcus, for example), that recurs but faintly at intervals, can be infective three months after the disease, but I am afraid that in our present knowledge, the safest procedure is to admit it, and be governed accordingly.

In view of return cases, we have gone very thoroughly into final disinfection of the patients from the time at which the hospital was opened; the fact remains—and I have heard the statement from practitioners also—that if a child be discharged at the completion of desquamation, and lives intimately with other children without the lapse of an interval of a couple of weeks, some of those children are sure to contract scarlet fever. We embody this belief in a printed form which goes with every case discharged. To guarantee the disinfection is an absolute impossibility.

Of the onset of the disease the common symptoms are sore throat, headache and vomiting; of 210 cases in which history of the onset is obtainable, I find sore throat in 170 (81 per cent.), headache in 113 (54 per cent.), nausea and vomiting, nearly always the latter in 112 (54 per cent.), and all three together in 53, or 25 per cent. Indefinite symptoms, such as malaise, are not often volunteered by children; malaise was noted in 9 per cent. of cases, chills in 3 1-3 per cent., convulsions only twice, *i.e.*, less than 1 per cent.; coryza, pains in the back, ears, eyes, abdomen, and in the glands of the neck were all occasionally noted.

I have said nothing of the infection of the conjunctiva, a symptom which is often observed, but which is quite untrustworthy as a sign of the disease; it has been observed in about

in 64 per cent. of all the cases, and exact), and occasionally there has actually been a purulent conjunctivitis, but this must be a complicating disease rather than a state dependent on the scarlet fever. Photophobia is a rare complaint.

The symptoms which one is in the habit of impressing upon students are the rash, the sore throat, the appearance of the tongue, and the glandular enlargement. The most important of these are the rash and the tongue; although the throat is a feature that is practically ever present, yet there are so many circumstances that interfere with the throat presenting a characteristic appearance that its real diagnostic assistance takes a place third to the two others. Of 218 cases in which I have notes of the date of appearance of the rash it was most often seen on the second day of the disease, the first symptom marking the first day of the malady. In 45 p. c. it was the second day, in 24 per cent. the first, in 22 per cent. the third, in 5 per cent. the fourth, and rarely on the fifth and even the sixth day. In more than 92 per cent. of the cases, the rash appeared in the first seventy-two hours. The extent and site of the rash is very variable, and the face is not generally affected; in my own series there is a definite rash noted on the face only thrice in 279 cases, a figure which is due to the deficiency of the notes, although my own idea is that the face escapes in a large majority of cases. The flushed cheeks are doubtless due to fever, but the forehead can usually be relied upon to show it if it be present. The neck is frequently affected, but I am afraid is also apt to escape mention in case reports.

The rash was noted as being on the body and limbs, oftenest the legs.

in 64 per cent. of all the cases, and on the body alone in 8 per cent. When it lies over a fold of the body or a limb, it is apt to be intensified, and on the other hand, its total absence from the lips has given rise to the characteristic "circumoral" pallor, which is often very marked.

Six times the rash was hæmorrhagic and three of these died. A light rash is desirable rather than otherwise as indicating a slight attack of the disease, although very severe attacks are sometimes fatal before the rash shows. It may be said that the popular superstition of the "rash going in," or "striking in" is a fallacy, but it has this degree of reason with it. The rash depends upon the activity of the superficial circulation; when the heart is failing it is at times to be observed that the rash fades, so that the disappearance of the rash may be a prognostic sign of the gravest moment.

As to the diagnosis of the rash, I am not fitted to speak from my own experience, and I will not burden you with the dicta of others. We have had exact simulation of the scarlet fever rash by the ingestion of turpentine twice, and by the so-called toxic erythema, at least once; the erythema following diphtheria antitoxin has closely simulated it many times, and one is, perhaps, too prone to dismiss as antitoxic any rash that appears in a case where serum has been administered. Though I have not knowingly seen them myself, I may remind you that quinine, strychnine, corrosive sublimate and iodoform may be accountable in this way. One case has never been cleared up in my mind: it was either scarlet fever followed immediately by typhoid, or typhoid fever with a toxic eruption, in which the reddening of the throat was merely a pharyngitis. At any

rate, the tongue was not definite, and he went through his course with a slight subsequent desquamation.

The sore throat, a kind of interior manifestation of the external erythema, may be in the less severe cases, a useful guide: the bright reddening of the pillars and of the tonsils is useful, but less so than the punctate reddening of the soft palate or even of the posterior part of the hard palate; and a routine examination of Canadian throats makes one a little sceptical of the accuracy of the sign on the tonsils and pillars save in well-marked cases. Dr. McCollom's experience has led him to lay great stress upon the punctate eruption of the palate.

Of 255 cases with notes on the appearance of the throat, one showed no change; 80 per cent. showed a diffuse reddening, often with the special peculiarity of the palate noted above, and 20 per cent. showed membrane or fibrin in addition: in six of these diphtheria was actually present, but it leaves 14 scarlatinal throats (17 per cent. of all the cases), in which membrane, not diphtheria, was present. I cannot say that there seemed to be much danger of confusing these cases with diphtheria; those whose sense of smell is very acute believe that they can distinguish diphtheria by the odour, but for my own part, the odour has very often led me to call for bacterial examination which has failed to establish the existence of diphtheria. Therefore, I cannot dogmatize in this matter.

The tongue is, perhaps, the most trustworthy of all the signs of scarlet fever. Strangely enough, no one can tell just what was originally meant by a "strawberry tongue." Authors are at variance upon the subject, for some describe the strawberry

tongue as white, others as red; the commonest form is that in which there is a white coating on the dorsum, which contrasts strongly with the bright red edges and the tip; standing out in the fur are the more than usually prominent papillæ which are yellow or yellowish red, this appearance may well be called the strawberry tongue from its resemblance to an *unripe* strawberry. Next to this, the most frequently found appearance is the bright red glazed tongue, without coating, with the prominent papillæ which is not unlike a ripe strawberry, or better, a raspberry. The main character that concerns us is that the papillæ on the tip and for the anterior half-inch or inch of the edges are markedly enlarged and prominent, and this characteristic is not really or rapidly lost, so that in a doubtful case, after eruption has disappeared, this character may enable one to determine the nature of the disease. Of 235 cases with notes upon the tongue, I find two in which the tongue was unchanged; 165 (70 per cent.) showed the coated tongue, and 68 (29 per cent.) the red tongue, papillæ in both being enlarged and prominent.

The tongue is, perhaps the most to me to be a weak point for diagnosis; there is little difficulty in any case in determining the enlargement of the cervical and sub-maxillary glands; the lymph nodes throughout the body elsewhere, stand on a different footing and they are enlarged in the same sense in which they are in typhoid fever, that is, but slightly: to so small an extent, indeed, that I have never succeeded in persuading myself that the point is a very useful one. In 251 cases of the series, a general glandular enlargement, was reported: in 183 (73

per cent.); a partial enlargement, that is, the cervical groups, in 53 (21 per cent.); and it was stated that no enlargement was present in 15 (6 per cent.). I give these data for what they are worth, which I am afraid, is very little. The spleen has been palpated very rarely indeed; I find it noted in but two cases, and it is examined in every case.

It may be well to digress here, to say a word as to the responsibility of the physician in the recognition of scarlet fever; it must be recognized every time it is humanly possible to do so, not because the law says it, but for the patient's sake. I think my earliest medical recollection is of a girl, a relative of my own, falling over in a convulsion after a trifling attack of scarlet fever; the days in which her life hung in the balance are yet vividly in my mind. There lies the risk. Many times a difficult case appears in your practice; do not wait a minute longer than you can help in making up your mind; it is easy to say, "The symptoms are obscure to-day; the rash may be brighter to-morrow;" and to-morrow, if it is not so, to say, "I probably overestimated the rash yesterday." Remember that you can but do your best, and this is so dangerous a disease that a few weeks of quarantine is a little thing compared with a short life, full of albumen and caste. If your mind is made up now, do not in the future let yourself reconsider the evidence; obstinacy of purpose in this thing is a virtue.

The course of the disease in one hundred and twenty-eight complicated cases averaged seven days; this is not much shorter than the average duration of fever in all cases, complicated and otherwise, which was but 8.76 in 298 cases; the uncomplicated cases averaged 50½ days until de-

squamation was complete, although this is calculated upon the basis that desquamation was completed two days before discharge, which is not very accurate, but the only means at my disposal.

The degree of fever, too, is a comparatively low one, as in the majority of cases it has its maximum below 103°. In only six per cent. of our series did it reach or surpass 105°, and it is a significant fact that of seventeen cases in which the fever reached 105° or over, ten died.

The maximum of fever was as follows:—

106° or over	2 cases
105°—106°	15 cases
104°—105°	43 cases
103°—104°	43 cases
102°—103°	67 cases
101°—102°	69 cases
100°—101°	42 cases
99°—100°	6 cases

The general rule in a hospital chart is that the admission fever is the maximum, and it gradually descends with morning remissions until the normal is reached. With this, however, we are not yet finished with the thermometer, for seventy-eight cases showed a subsequent noteworthy fever. This was attributed fourteen times to the ears, thirteen times to the glands, seven times to albuminuria, four times to exacerbation of the inflammation of the throat, thrice to the joints, and ten times to evident inflammation elsewhere, but twenty-seven times, or in more than one-third of all the cases, no adequate cause could be found. I feel sure that there is an inflammation somewhere to account for these, but one is often unable to find it. These figures do not take into consideration at all the cases in which the fever of the attack does not subside, but remains on account of the persistence of some

complication after the rise of temperature due to scarlet fever might reasonably be supposed to be past. It is to be remarked here that one becomes accustomed to finding a very considerable glandular swelling, apparently the only cause for a considerable rise of temperature; on the other hand the fever of children is easily excited, and on the other, it may be that the palpable gland is the only outward manifestation of a much greater lymphoid reaction than we expect.

COMPLICATED DISEASES.

Favouring the belief in a personal devil, one child three and a half years came in with diphtheria, caught scarlet fever, had chicken-pox, got œdema of the glottis, was intubated a number of times, coughed up the tube one night, it rolled under the bed and could not be found; it was supposed she had swallowed it, tracheotomy saved her life; she developed bilateral otitis and mastoiditis, had her mastoids trephined, and finally departed on the 116th day cured, but disconsolately wailing. The hospital staff bore the separation well.

Diphtheria.—Nineteen cases had diphtheria with scarlet fever, of whom four died; of the nineteen I can be certain only with regard to two that they contracted the disease in the hospital, and for our peace of mind those recovered.

Measles.—Measles complicated the disease but twice in the series, breaking out on the eighth and twelfth days, when the scarlet fever rash had disappeared.

Erysipelas.—Occurred thrice in the series, but there was no suspicion in any case that it was a hospital cross-infection.

It is timely here to refer to the question of hospital "cross-infec-

tion;" the above cases include all in my series in which the staff could carry the disease from one ward to another, as we admit in the Alexandra Hospital only the four diseases, and the erysipelas ward is small and often closed. While these cases are few in number, I am well aware that the greatest danger is not of other diseases being carried to the scarlet fever wards, but of scarlet fever being carried to the other wards. Of the occurrence of this I have no figures, but it has not at any time become a serious defect. The only persons who are exposed to the possibility of carrying infection from ward to ward are the medical superintendent, and the day and night superintendents of the nurses; they wear caps and long gowns which cover them completely, and wash the hands and face on leaving the ward, putting on a fresh gown and cap every time they enter the ward. For a time we adopted the wearing of an overshoe in the scarlet fever ward, but this is not at present observed.

Chicken-pox.—We had a small epidemic of seven cases of chicken-pox, which necessitated a rapid removal from and sterilization of the ward concerned.

Other complicating diseases were tuberculosis (2), typhoid fever (1), and cerebral tumour (1). Again, six cases were suffering from burns of the skin, five had had recent operations, and three had been vaccinated, a total of fourteen which came under the heading, not of surgical scarlet fever, but of "scarlet fever in the wounded," as it is termed.

Complications.—The most important of these is nephritis, the most common otitis media and adenitis; tracheitis, alone or combined with bronchitis is common, but frequently

of so slight importance as to be negligible.

Otitis media.—Including cases of all degrees of severity we have had eight-three, a percentage of 25½. Of these, however, no discharge occurred in twenty-six, leaving an actual occurrence of fifty-seven suppurative cases (17½ per cent.). These cases appear to group themselves, so that at times it would seem as if a ward were "all ears." It is generally communicated directly from the mouth cavity by the Eustachian tubes, though occasionally it may be a blood infection. Is there any way by which the prevalence of this infection can be lessened? We have most strenuously sought to keep the naso-pharynx clean by many different means, including sprays, gargles and irrigations. "Irrigation of the nose," says McCollom, referring to young children, "on account of the danger of causing middle ear disease, cannot be too strongly deprecated." If an irrigation can be used at all, the mouth and nose are not closed, and in the absence of any heightened intra-buccal pressure, the tube, if closed, will protect itself. Young children, however, cannot be got to understand the process as a rule; they struggle and gasp, and whenever the act of swallowing is induced, the Eustachian tube opens. At such a moment there is, of course, danger that the solution may carry infection into the tube. Nevertheless, wherever there is a good chance of the proper behaviour being learned by the child it ought to be carried out. The form of medication used matters scarcely at all, for the water and its mechanical effect is the principal thing. In view of the amount of mucous often present, salt solution is useful.

Of the subsequent results as to the hearing of these fifty-seven cases I know nothing.

Our routine in the wards is to examine the ears very frequently by means of the speculum; it is surprising how often the eye of one who is not a specialist fails to receive warning of an impending perforation. The onset of otitis may be very variable; the danger exists from the outset.

The time at which the otitis began in sixty-seven of these cases is to hand; twenty-four times it was in the first week, twenty times in the second, and from the third to the seventh week, the figures were six, seven, four, three and two respectively, one case occurred on the one hundredth day. Of the twenty-four cases in the first week, they are very evenly divided among the seven days; three cases seemed to happen with the very onset of the disease, and are counted as on the first day. These figures give a greater liability in the first week of the disease than any of the series I have seen published.

Of the eighty-three cases, both ears were affected in twenty-five, the right alone in thirty, the left alone in twenty-eight.

Adenitis.—Adenitis, as a complication, refers to those inflammations of the cervical and submaxillary glands which occur either after the acute throat symptoms have subsided, or which persist after the time that the angina might reasonably be expected to subside. As would be expected, the appearance of a swollen node is not necessarily attended with an exacerbation of the inflammation in the throat; the glands become large, generally firm, smooth, and tender. Those at the angle of the jaw are the most often affected.

Our series shows sixty-nine cases (21 per cent.), of which I can find but three which required incision, and drainage. My memory would have inclined me to say more than

three, but such at least is the statement of the figures; the glandular inflammation is practically always accompanied by fever.

Rhinitis.—This is a very troublesome accompaniment of many cases, and it is noticed in this series thirty-three times, *i.e.*, about ten per cent. In the cases in which it is severe, the secretion is free and purulent, and the result is excoriation of the nostril-edge and often a kind of impetigo on the upper lip and the adjoining parts, as well as infection of the nail edges of the fingers.

Tonsillitis.—It happens often that, after the throat has begun to get better, and the attack to disappear, an exacerbation of the infection occurs, which may partake of many of the characters of tonsillitis or which may be merely pharyngitis. I have seven such cases, to which I add eight others that I have called stomatitis. This infection of the entire mouth is one of the most dreadful complications of the disease; the throat becomes dirty, the tonsils ulcerated, muco-pus streams down from the nasal vault, the lips are eroded, and fissured, the mouth can be but slightly opened on account of the lips, which bleed, and may be herpetic or impetiginous as well; the tongue is coated, the breath foul, and, in my experience Klebs-Löffler bacilli are not present. Five minutes after washing the mouth, the child is once more drooling thin bloody slime from the half shut lips. The systemic disturbance is great and the toxic state of the patient extreme. One of these cases became a real noma in its clinical features; and yet another made a tragic end by erosion of the tonsillar artery. This unusual accident occurred in a boy of six years, on the twentieth day after the onset of scarlet fever; the attack had really appeared to pass off, but about

the end of the second week, secondary infection of the mouth and throat appeared, grew bad, then better. The day before death, and the third day before, cultures failed to find diphtheria in bacilli; the child was apparently getting well, when hæmorrhage began from the nose and mouth; death occurred in about two minutes, without much external bleeding. At autopsy the stomach was full of blood, and the cause was determined as above. What bacterial examinations we have made generally show streptococci among other forms, and in all the severe cases, I have tried antistreptococcus serum; I am afraid I have not given it a fair trial, because too often it is not administered till the case is desperate, or at least well advanced. Peritonsillar abscess occurred once.

Tracheitis, occurs frequently, no doubt often allied with a slight degree of bronchitis; it will be evidenced by cough and expectoration; as an exception, thoracic examination may disclose crepitations. Seventy-eight cases (24 per cent.) fall in this category. Aphonia occurred thrice, once after diphtheria, and twice in neurotic girls.

Pneumonia.—Four cases showed this, one of them having appeared to catch scarlet fever while suffering an attack of lobar pneumonia; though very ill, he recovered; the three others in which broncho-pneumonia was a true complication, died. Pleurisy was found twice, both times without effusion, and empyema, though at times suspected, has never eventuated.

Alimentary tract.—Vomiting is noted as a frequent sign of onset, but it was further noted during the course to an extent sufficient to deserve comment in thirty-five cases (10 per cent.). In the severely toxic cases, it

is a most intractable symptom. The bowels in general suffer but little from the disease; the rule is constipation, but I think this is due to the confinement to bed; it has been my own rule to treat the bowels as one would in a case where no other disease existed; purgatives can be freely administered, if it is thought necessary. As exception to the above statement a bad attack of scarlet fever in the very young is sure to be attended by an enterocolitis, with green stools, frequently with mucus and occasionally with blood; bowel irrigation is suitable for its treatment. Thirty-six cases (11 per cent.) occurred in this series.

The Nervous System.—Convulsions have been present in but two cases; delirium in but twelve; doubtless slight degrees of mental wandering at night are not reported, but it certainly is not very marked, even in moderately severe cases.

Meningitis.—This happened but once, although one other case gave the symptoms pretty completely. Recovery was so rapid that we were probably dealing with the condition aptly called "toxic meningism," so well seen at times in typhoid fever. The undoubted case lived three weeks, under daily lumbar punctures; on the fifteenth day there were several convulsions, and I blame myself that I did not urge a decompressive operation, as when the final convulsions occurred on the twenty-first day the only notable feature remaining was the hydrocephalus.

Cardio-vascular system.—The effect of scarlet fever toxin or of the toxins of the secondary infection upon the heart is of considerable importance; endocarditis as a direct result of the secondary infections is reported to be fairly common, but I cannot say that I have been certain of it more than once; myocardial degeneration, as

evidenced by dilatation and irregularity of the pulse is, in my experience, far more frequent. Some degree of a noticeable murmur has been noted in thirty-two cases at entry; these I shall not deal with, and I have no doubt they were not, as a general thing, indicative of organic change. But twelve cases gave undoubted evidence of a dilatation during the course of the disease, and in eleven other cases irregularity of the pulse was noted, but without any apparent enlargement; six other cases gave very definitely the signs of a sudden partial collapse, three with marked cyanosis. To sum up, there was in nearly nine per cent. of all cases some evidence of disturbance of cardiac mechanism, which, as far as I can recollect appeared to be the cause of death in two or three, and disappeared totally in the others. I am not able to state how far a secondary infection was responsible for these, but I suspect quite largely. Osler states that the myocardial changes are less common than the endocardial ones; it seems fair enough to estimate that the cases of dilatation, at least, were connected with some effect produced upon the nerves of the heart by the scarlatinal toxin. The treatment of the cardiac weakness and irregularity is of the usual kind; strychnine and whiskey are the agents most commonly used by us.

Athrits.—This is an interesting complication, which happened in seventeen of our cases (5.2 per cent.). Once a real acute rheumatism was present (a recurrence). The joint disturbance may be but slight, and transitory, but at other times the joints are swollen, red, painful and tender, just as in rheumatism. It is likely that there is a secondary infection of the joints in these cases, but luckily few of them go to suppuration. Many joints tend to be involved at the same

time; the order of frequency with us is knee, shoulder, wrist, ankles, elbows, fingers. The vertebral joints of the neck were affected twice, and of the back once. Fixation of the joints and cold applications are generally the only treatment required.

Among other complications, we have found orchitis, vaginitis (5) jaundice, herpes, purpura, eczema, and in four cases, abscesses of different parts, often the fingers.

Nephritis.—From this most important of complications we have been very free, and upon this hangs my story—at least the part of it that is most important. Ordinarily, the urinary changes to be expected are a febrile albuminuria: McCollom states that in one thousand cases, but twenty-eight per cent. were found free from albumen during the febrile stage—that is, what we call the “febrile albuminuria;” our own findings are at wide variance with this, and the urinary examinations have throughout this series been slavishly made: in three hundred and twelve cases only fifty-six (18 per cent.) showed albumen at any time, blood was found thirty-nine times, and casts twenty-one times; these phenomena were spread over the urines of seventy-six patients, so that only 24 per cent. of our cases showed any departure at any time from the urinary normal. Routine examination, twice a week, is kept up till the patient is discharged, and during the febrile period the urine is examined daily or every second day. The presence of blood and casts is not in this series of any value; blood was nearly always microscopic, was noted in however slight quantities, and only rarely over a number of days in succession; casts occurred generally in concert with albuminuria, twice as isolated instances, and five times in cases

which died; this leaves but fourteen instances of their being found, generally in connection with albuminuria. Two of these were previous cases of nephritis, so we have the appearance of casts in a dozen instances as being due to scarlet fever. It will, however, be less confusing if I deal only with the albuminuria. First of all, no case died of nephritis, and seven of the fifty-six observations were in patients who died, and two others were in cases who were chronic nephritis at entry, which leaves forty-seven. In thirty-two of these, albuminuria was found on one, at most on two occasions; of two others I have neglected the particulars, but there are thirteen cases left with what may be called nephritis, of which five cases lasted from three to ten days; of the remaining eight, three cleared up entirely before leaving the hospital; two others were slight in degree, but even without cutting out the last five, we have at most eight cases (2.5 per cent.) in which nephritis can be said to have happened as a result of scarlet fever. In seven cases, a late occurrence of albuminuria was attended by a sudden rise in temperature to a considerable height. Four times a very considerable degree of puffiness of the face occurred without any albuminuria; one case, a small child, presented a remarkable recurring puffiness of the hands, which came on suddenly and disappeared quickly, reappeared and again disappeared; this was thought at the time to be a phenomenon related to anglo-neurotic oedema

We have no instance of a nephritic convulsion. Oliguria has been observed but rarely—twenty-two times on various occasions. Let it be replied to this, that we have been exceptionally favoured with a light class of case; for our purposes, it does not

matter. What I wish to come to is treatment.

I have found it an excellent working rule that every case is kept upon milk diet for three weeks from the day of onset, and in bed for the same length of time. This is quite irrespective of the severity of the case; I explain to adults in many cases, the reason, and we have no complaints upon this score. It is the ward rule, and since there are no exceptions, there are no objections. Milk diet, too, means milk diet; this includes only junket and whey and ice cream, when procurable; fruit juices are allowed.

My reasons for this are that the kidney is to be relieved of every possible strain; take the substances that are supposed to entail work upon the kidneys—urea, hippuric acid, phosphates, alloxuric bodies, and so on; the end-products of nitrogenous metabolism are considered to be the most important irritants; meats, eggs, fruits of some kinds, and so on, contain one or the other; water, milk, and sugars are almost the only things left to us; the carbohydrates, flour, meals, etc., do not contain much, but some; a milk gruel contains much more than does milk. Therefore, for my part, I keep to the ones of which I am sure; it may perfectly well be conceded that the risk in a slight case is almost nil, but it is the exceptional case of nephritis one is most anxious to prevent. The hardship to the patient is but slight, and it is no exaggeration to say that our youngsters on discharge are generally very fat. You have all probably at some time or other, echoed the remark, that "we all eat too much;" for once, be brave enough to put the cure into practice. If the reasons appear good to you, practice the method; if not, leave it alone. For my own part, at present,

I fully believe in it, and without making any claim as to the results, there is in them nothing to make me desirous of change. The end of the second week is the time at which nephritis most often makes its appearance; it seems to me highly reasonable that at this time, more or less critical, the patient's chances are greatly bettered if he be in bed. During convalescence, too, as the patient's time is not valuable, we are hard-hearted enough to put them back to bed upon any alarm, a rise of temperature, or a threatening complication.

These two, *i.e.*, rest and milk diet, are the main points in our treatment. Cold applications are usually made to the neck in anginose and glandular inflammations of any severity; local applications of antiseptics to the throat internally and washings of the nasopharynx with Dobell's solution are used when the patients are sufficiently old or sufficiently tractable. The patients are encouraged to drink water as often and in as great quantity as they will, and it is with difficulty that this is carried out to a sufficient degree to be satisfactory to myself. Do not be misled by van Noorden's very sensible teachings with regard to water-restriction; the competent kidney fairly revels in water. With the onset of nephritic anuria we are dealing with a condition of affairs widely different.

For fever, and for the patient's comfort, sponges are in most frequent use, and packs, cold or tepid. The observation that cold bathing tends to cause albuminuria in the health, and to increase it in the albuminuric, need not be taken into consideration. Nor am I accustomed to measure the good effects of sponges or packs by the effect upon the temperature; in fact, I regard the taking of temperature for the pur-

pose of seeing the effect of a bath or a pack as a waste of time. Perhaps it comforts the nurse, but she has generally other distractions.

During desquamation we are not in the habit of using any inunction on the skin; probably its only efficacy is that it prevents a widespread diffusion of the particles of skin, which in a scarlet fever ward is of little consequence, in comparison with the saving of time and work and the increase of cleanliness.

A procedure that we followed at first, but have given up, is an administration of a prophylactic dose of anti-diphtheritic serum; this is the routine practice of the Boston City Hospital in the Infectious Department; we found the cost heavy in return for the advantage that was but doubtful. Of the one hundred and twenty-one cases in which it was used, a serum rash was observed in eleven, on an average on the tenth day.

It was an observation of much interest to me that this spring, by reason of the large number of patients in the department, we "over-worked" one of our two main wards. It had not been disinfected

nor completely cleaned for several months; infection after infection of a secondary kind sprang up, many of them very severe, and it finally was forced upon us that the ward was in all probability to blame, for it had, of necessity, good opportunities to acquire a thorough stock of pathologic germs. With the moving, the run of infection certainly ceased.

Have I succeeded in making clear to you some of my convictions, let me call them, with regard to scarlet fever? The important things are these:—Make the diagnosis at the earliest possible moment. Look at the skin, all of it, with the patient completely stripped if a child; look at the throat especially the palate, and the tongue, especially the papillæ. If you have made the diagnosis, do not later, for a moment, even mentally go back upon it. Lay down the law, as to treatment. If I seem to speak true things, lay down twenty-one days milk diet and twenty-one days bed. When you are tempted to weaken or recede from this position, just think how, when the patient dies of nephritis, they will say, "Dr. Blank was not very strict when he had the scarlet fever."



MORAN-AXENFELD CONJUNCTIVITIS.

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PERHAPS the commonest and most widely spread disease of the conjunctiva is what is known as diplo-bacillary or Morax-Axenfeld conjunctivitis. Described first in 1896 by Morax in Paris, and Axenfeld in Marburg, it has since been reported from the various parts of Europe. From Asia, Africa, and America too, its presence has been reported.

How common it is in Montreal, may be judged from this fact, that in the last two years, of 600 odd cases of conjunctivitis examined at the Montreal General Hospital, 300 have been of this form.

The clinical picture of Morax-Axenfeld Conjunctivitis, is in many cases characteristic. The subjective symptoms are mild. These cases come complaining of headache or pain in the eyes, or of epiphora. A typical case would present the following appearance. Both eyes involved, beginning as a slight catarrhal conjunctivitis, it increases in severity and in twenty-four to forty-eight hours there will be seen marked reddening of the lids, especially at the outer and inner canthi, some maceration of the skin, and in the conjunctival sac, a varied amount of watery discharge which gives the reddened lids a moist appearance. The blepharitis and the reddening at the outer and inner canthi, make the picture a marked one. It is especially a palpebral conjunctivitis with the superficial vessels prominent. The bulbar conjunctiva shows no chemosis, and is but slightly involved.

This is the picture of the classical

type, but Morax-Axenfeld conjunctivitis may be seen in any of the following forms:

(1) A mild catarrhal conjunctivitis, where the patient complains of pain in the eyes, especially when reading at night.

(2) A form of catarrhal conjunctivitis with some slight reddening at the outer and inner canthi. (angular conjunctivitis).

(3) A catarrhal conjunctivitis with accompanying blepharitis. (Blepharo-conjunctivitis).

(4) Acute purulent conjunctivitis.

In many cases, Morax-Axenfeld conjunctivitis shows the characteristic clinical picture of a mild catarrhal conjunctivitis, with reddening at the outer and inner canthi, and in these cases a temporary diagnosis may be made from the clinical signs. But it is to be remembered that many cases showing a like clinical picture will present themselves, where the etiological factor is a very different one. No disease of the conjunctival sac presents at times, such a typical clinical picture, but at other times the clinical picture will give you no indication that the infection is a diplo-bacillary one.

In many cases of blepharitis your bacteriological examination will give you negative results. Indeed I feel much more like advising a thorough refractive examination in all cases of blepharitis and eczema of the lids than I do a bacteriological examination, and I believe the results from your refraction will be more satisfactory. I have seen case after case of blepharitis and eczema of the

lids where thorough bacteriological examination gave negative results. In persistent cases, now slightly improved, now worse, only when the errors of refraction were corrected, were satisfactory results obtained.

Many cases of Morax-Axenfeld conjunctivitis show prominent follicles, especially of the lower tarsal conjunctiva, and in this way resemble trachoma. But treatment with the proper remedies for twenty-four to forty-eight hours will give you an entirely different picture, and will show catarrhal conjunctivitis without the supposed trachoma.

Diplo-bacillary conjunctivitis is seen very often associated with old cases of trachoma, also with many cases of ectropion and distichiasis. This form of infection will be found.

I have seen here six cases of phlyctenular conjunctivitis, where diplo-bacilli were found in the conjunctival sac, and where phlyctenular condition cleared up quickly when the diplo-bacillary conjunctivitis received proper treatment.

An analysis of three hundred cases of Morax-Axenfeld conjunctivitis seen here presents some points of more than ordinary interest. I have been struck with the number of acute cases which, clinically, were Koch-Weeks or pneumococcus, but where the examination of the discharge showed them to be diplo-bacillary. Cases were seen, too, in which clinically, the diagnosis would be follicular conjunctivitis, where the follicles in the palpebral conjunctiva were very prominent. Some of these cases resembled trachoma very closely. Many of them had severe subjective symptoms, with complaint of pain in the eyes which was worse at night.

Morax-Axenfeld conjunctivitis has been seen here often during cold wea-

ther. It is supposed to occur most frequently in the warm and dusty seasons of the year.

Of these three hundred cases, we had in January, seventeen per cent., July, thirteen per cent., June, twelve per cent., May, ten per cent., April, nine per cent., February, eight per cent., September, eight per cent., October, five per cent., November, five per cent., December, seven per cent., August four per cent., March, two per cent., that is, during the colder months of the year, November, December, January, February, March and April, forty-eight per cent. of our cases occurred.

Seven cases were complicated with ulceration of the cornea.

Morax-Axenfeld conjunctivitis is seen among all ages but most frequently among adults. Cases have been seen here in babies not a year old.

Of the three hundred cases the ages were as follows, up to ten years, nine per cent; from ten to twenty years, twenty-five per cent; over twenty years sixty-six per cent. Of more interest, perhaps, are the figures showing the nationality of these cases: Jews, fifty-four per cent.; Canadians, thirty-eight per cent.; Greeks, three per cent.; Italians, 5 per cent. Such figures show it is not only confined to our foreign colonies, and I have no doubt that this form of conjunctivitis is as common in other Canadian cities as it is in Montreal.

With clinical types so varied, and with such numerous associations as has diplo-bacillary conjunctivitis, it will be readily understood a diagnosis can only be made by bacteriological methods. The cause of this form of conjunctivitis is a diplo-bacillus, which has very characteristic morphological and cultural features.

From a case of Morax-Axenfeld conjunctivitis one takes with a platinum loop a little secretion from the conjunctival sac, and smears it well over a glass slide. It is then fixed and stained, preferably by Grams, using as a counter stain a weak solution of safranin. If the slide is now examined with the oil immersion lense, the etiological factor will be found. One finds over the slide numerous gram negative bacilli, lying chiefly in pairs. They will be seen to be two to three microns long by one and a half wide. The ends look square, but closer examination will show them to be somewhat rounded. They will be found lying chiefly free, but also within the pus cells.

The only organism likely to be mistaken for the Morax-Axenfeld, is the Petit diplo-bacillus. The latter, is, however, a very rare inhabitant of the conjunctival sac. It resembles the Morax-Axenfeld diplo-bacillus very closely. It is supposed to be a little smaller. But upon media, it is easily distinguishable. As both these forms require the same therapy, differentiation is unnecessary. From the diphtheria bacillus, the xerosis bacillus, Koch-Weeks, and the other conjunctival bacteria, it is easily distinguished. For practical purposes, the cultural characteristics of the Morax-Axenfeld diplo-bacillus are not so necessary. In the vast majority of cases, the diagnosis can be made from the smear preparation. When one wishes to differentiate it from Petit's diplo-bacillus, cultivation is necessary. While the diagnosis can be made from the smear preparation, it is much better in all cases to examine both by smear and culture.

The Morax-Axenfeld diplo-bacillus grows only on the blood serum or ascitic or hydrocele agar, serum agar

and serum bouillon. It has been cultivated, too, on glycerine agar. After twenty-four hours, we see over the surface tiny depressions, which have a moist appearance. These depressions gradually spread, increasing in depth and width, gradually liquifying the blood serum. The appearance on blood serum is characteristic. From no other organism of the conjunctival sac except Petit's diplo-bacillus, does one find this appearance.

The re-action of the media is of importance. It must be alkaline. On acid blood serum it will not grow; on neutral, only sparsely. In the initial tube the growth is generally found to be a mixed one. Either the different staphylococci, streptococci, or bacillus xerosis are present. Where the staphylococci are present, the growth of the diplo-bacilli is seen overgrown by the cocci. The rapid growth of the cocci changes the alkaline reaction of the media to acid, which reaction hinders the growth of the diplo-bacillus.

The diplo-bacillus of Morax-Axenfeld has been found in the lacrymal sac (Axenfeld), and in odd cases in the normal conjunctiva. This fact is of interest where operations on the eye are being considered.

I operated last fall on a case which I saw first in the operating room. The operation was an enucleation for a ruptured eye ball, and was performed in the ordinary way, followed by a thorough irrigation with some 1-5000 perchloride of mercury solution. The day following, upon dressing the case, I found discharge from between the lids, which, with the surrounding parts, were enormously swollen. Only then did I find out that the patient was the subject of Morax-Axenfeld conjunctivitis. How closely the diplo-bacillary infection

and the enormous post-operative swelling were associated, I am not prepared to say. It is now known that the diplo-bacillus of Morax-Axenfeld is frequently found in the noses of patients suffering from this form of conjunctivitis. In all cases where I have made smears from the nose, I have found among these cases diplo-bacilli, and when we consider how chronic this form of conjunctivitis is, and how full of diplo-bacilli we find the tears in the conjunctival sac, does it seem extraordinary that they should be carried into the nose?

Morax-Axenfeld conjunctivitis is a chronic disease, which, without proper treatment will last for years. It is an exceedingly persistent form of inflammation, and when treatment with the proper agencies is undertaken it is a disease requiring constant treatment for a period of four weeks.

The complication liable to occur is an important one—ulceration of the cornea. It is now known that the diplo-bacillus of Morax-Axenfeld can give rise to ulceration of the cornea as severe in type as the *ulcus serpens* of pneumococcus infection. It is luckily, however, not a common complication. Among these three hundred cases, in eleven only was ulceration of the cornea seen.

The treatment par excellence, in Morax-Axenfeld conjunctivitis, is irrigation of the conjunctival sac with

a solution of the sulphate of zinc. Thorough irrigation, with the instillation four or five times daily of drops of a half grain to the ounce will give results as satisfactory as any therapeutic measure in ophthalmology.

I have treated cases with argyrol and silver nitrate to no purpose. In no case of Morax-Axenfeld conjunctivitis have I seen the sulphate of zinc fail. I have seen cases return, especially in children, with no improvement, but there the failure was due to inability to instil the drops. For this reason, I always make it a point, in these cases, to thoroughly irrigate the sac myself.

When diplo-bacillary conjunctivitis is found associated with trachoma, I would advise treatment of the trachoma with silver nitrate or whatever measure is thought best. I can recall such cases treated only with silver nitrate, but the excoriation about the lids did not disappear until zinc sulphate was added to the treatment.

In Morax-Axenfeld conjunctivitis we have one of the most common affections of the conjunctiva, a disease chronic in every sense of the word, a form of conjunctivitis so varying in its clinical picture that it is diagnosed only by bacteriological methods, and a form of conjunctivitis which, when diagnosed, will be found to react quickly and surely to its specific, the sulphate of zinc.



NOVA SCOTIA PROVINCIAL MEDICAL BOARD.

REGISTRAR'S REPORT

1907-1908

DURING the past official year there have been held the usual four regular and one special meeting of the Board. The latter was necessitated in order to have the Officials of Tuft's College brought to Halifax and to enable the Board to dispose of the troublesome case of Ira E. Dyas. The attendance at these meetings has been fair. A vacancy in the membership was caused by the death of Dr. MacGillvary in April 18th, 1908, when the appointment of Dr. H. E. Kendall, of Sydney, was made. All quarterly meetings have been held on the third Wednesday of the respective months in accordance with the decision of the last Annual Meeting to revert to that day, as being on the whole more satisfactory than the corresponding Thursday of which a short trial had been made.

By the decision of the General Medical Council of Great Britain, of May 28, 1907, reciprocity in registration between Nova Scotia and the United Kingdom became an established fact and during the past year the first entry of Canadian Degrees was made in the British Register, being degrees from Dalhousie University and the Halifax Medical College. The success of Nova Scotia has stimulated the other provinces to move in the same direction, and letters have been received from different provinces enquiring as to conditions, etc., which enabled this province to attain British Reciprocity. By a communication from the General Medical Council, it appears that the province of Quebec has recently been declared under the provisions of the Imperial Act and the Council has agreed to

accept the degrees of McGill and Laval Universities when accompanied by the license of the Quebec Council, so that now, as stated by Dr. McAllister, the President of the Council in his last address, "the War Office authorities are prepared to offer to Quebec graduates registered in this country the same facilities in respect to commissions in the Army Medical Service as are enjoyed by registered graduates from Nova Scotia." As the President also remarked, "It is to be hoped that the recognition accorded to these two provinces may have the effect of inducing the other provinces of the Dominion to reconsider the question of reciprocity from a national rather than a local point of view." For in this way not only does each individual province secure the privilege for its graduates as regards Army and Navy appointments and practice in Britain or other British possessions, but as has been before pointed out, and what is of most immediate importance, it makes interprovincial reciprocity in the Dominion possible without the necessity of attempting, as by the Roddick Bill, to establish another examining Board.

Under the Penal Clauses of the Act, the only serious case that has occupied the attention of the Board is that of Dr. Dyas, above referred to. After a prolonged and troublesome investigation extending into two years, and necessitating the bringing of the officials of Tuft's College twice to Halifax, the Board, finally at the last Annual Meeting ordered the erasure of Dyas' name and qualifications from the Medical Register.

On the other hand as referred to more particularly in the minutes, Dyas has, by the Act passed last April, been granted an appeal against the decision of the Board.

The case against Dr. J. M. Roy has not been continued since the last annual meeting. At that time Roy asserted that if concessions were not made to enable him to secure registry through the Board, his friends would take steps to obtain registration through the legislature. No doubt the circular sent to the profession was the means of preventing the passage of such special legislation in favor of either Roy or Dyas.

The Board continues to experience considerable difficulty with regard to men holding college degrees attempting practice in some form or other before they have secured the Board's license. The difficulty is particularly increased by the fact that registered practitioners without sufficient thought frequently encourage this state of matters by employing such an unregistered person as an assistant or locum tenens. The attention of the regular practitioner should in some way be called to this matter, because by such action he makes himself liable to the charge of "covering," (a term, perhaps not familiar to many in this country, but in common use in Great Britain) on which ground his name may be removed from the Register.

The Preliminary Examinations have been held as usual with local examinations at Sydney, Yarmouth and Pictou. The following are the mere statistics of these examinations:

Date	Candidate	passed	sub.	Failed
Aug. 1907	10	6	4	0
May 1908	4	3	0	1
<hr/>				
Ttl., 07-08,	14	9	4	1
06-07,	11	6	5	0

The general results thus appear good as only one out of fourteen candidates actually failed. Including those who took the Board's examination and those exempted by virtue of recognized certificates, there were in all thirty-eight names added to the Student's Register, being an increase of fifteen over last year. With the close of the year, Rev. Dr. Currie, who has for so many years acted as Matriculation Examiner in Classics, retired from the position. His services, which have been most faithfully and conscientiously performed, have already been acknowledged by order of the Board.

At the Professional Examinations held in September, 1907, there were seven candidates, of whom five passed and two failed. In April, 1908, there were nineteen candidates, of whom twelve passed and seven failed, making in all seventeen candidates who passed all examinations and were accordingly granted the Board's Diploma. All of these, with one exception, have since been duly registered, together with the other two, who registered on British Certificates, thus making a total increase on the Register of eighteen names, being seven more than the additions for the previous year. During the same period, thirteen names were erased (being two less than last year) so that the total number on the register has been actually increased to the extent of only five names, whereas during the previous year the total number was reduced by four.

On June 30, 1907, the total number of names on the Register was 624: on June 30, 1908, the total number of names on the Register was 629.

Detailed results of the Preliminary and Professional Examinations will be found in the Examiner's Reports which are also herewith submitted.

Of the thirteen erasures, twelve names were removed on account of death, and one, that of Ira Everett Dyas, was erased on account of his having secured registration by means of certificates pronounced fraudulent by the College authorities. The deaths of the following were recorded during the year, viz.:

William Gordon Barton, M. D. University New York, 1858, died Pubnico, Yarmouth, N. S., March 25, 1908, age 88 years.

Frederick Newton Burgess, M. D.. Harvard 1865, died at Windsor, N. S., February 19, 1908, age 65 years.

Charles FitzHenry Campbell, M. D., University Pennsylvania, 1847.

Frederick William Goodwin, M. D., C. M., H. M. C., 1885, died at Halifax, N. S., December 18, 1907, age 50 years.

Charles Henry Munro, M. D., Harvard, 1862, died at Westville, February 6, 1908.

Charles Dickie Murray, M. D., C. M., Edinburgh, 1889, died at Halifax, December 12, 1907, age 43 years.

William Silver Oliver, M. D., University St. Andrew, 1857, died at Farmborough, E., April 1908.

Hon. Daniel McNeil Parker, M. D., Edinburgh, 1845, died at Dartmouth, Nov. 4, 1907, age 85 years.

John Leander Peppard, M. D., Dart. College, 1865, died at Great Village, N. S., September 20, 1907, age 70 years.

Arnold Sandford, M. D., Harvard, 1864, died at Brooklyn, N. Y., April 24, 1908, age 70 years.

Alexander McLeod Somerville, M. D., Harvard, 1872, died at Rôth-

saye, N. B., March 9, 1908, age 58 years.

James Venables, M. D., Harvard, 1867, died at Halifax, July 4, 1907, age 68 years..

In the above list is included the name of one, the Hon. Dr. Parker, who when he died was not only one of the oldest, but for long years, one of the most honored members of the profession. He was also one of the early Presidents of the Board and for three years, 1885-1888, most judiciously guided its affairs and fostered its interests through a troublous period of its existence.

Attention was drawn in last year's report to the straightened condition of the Board financially, and the necessity of adopting some means of preventing the deficit which had been increasing for several years past. Two methods to accomplish this were suggested, viz., the levying of an annual tax upon each registered practitioner or the increase of the registration and examination fees. The former has often been suggested, but has never met with favour. It is satisfactory to note, as will appear from the Treasurer's statement, that the increase made in the fees, viz., from \$35 to \$50 for Professional Examination Fee, and from \$20 to \$30 for registration without examination, has been of marked service. Instead of a deficit the balance on hand this year is reported as \$230 more than last year, although the expenditure was over \$300 greater than during 1906-07.

The money receipts for the year have been as follows:—

I.—FEES,—

6, \$35. Professional Exam. Fees .	\$210.00
17, \$50. " " "	850.00
6, \$ 5. " " (sup.)	30.00
Balance of \$50. Fee (\$35 pd. 19 6)	15 00
2, \$30. Medical-Registration Fees	60.00
1, \$ 2. Additional Qualification "	2.00
6, \$ 2. Special Reg. Certificate ..	12.00
8, \$10. Preliminary Exam. Fees.	80.00
5, \$ 2. Supplementary Exam. Fees	10.00
6, \$ 2. Local Exam. Fees.	12.00
25, \$10. Students' Regist. Fees... .	250 00

Total Fees.....\$1531 00
(being \$825 more than last year)

II.—ADDITIONAL RECEIPTS,—

Sales, Registers and Exam. Papers 10.50

\$1541.50

All of which being more than double the receipts of last year, has been transferred to the Treasurer and will be accounted for in his Financial Statement.

Respectfully submitted,

A. W. H. LINDSAY,

Registrar and Secy.

Annual Meeting,

July 15, 1908.



THE RÖNTGEN DIAGNOSIS OF URINARY CALCULUS.

By *PERCY BROWN, M.D.*

Boston, Mass.

(Read before meeting of Maritime Medical Association, Halifax, N. S., July 1, 1908.)

THE x-rays of Röntgen as applied to-day, have taken, and are holding, an important position in the successful diagnosis of urinary lithiasis. This importance is substantiated by the declaration of nearly all surgical operators of wide experience that without the intelligent employment of the Röntgen rays no diagnosis of the above affection is complete. Our increased knowledge of intra-abdominal abnormalities, as well as a more thorough understanding of the intrinsic pathology of the kidneys and bladder, often give rise to debatable situations as regards diagnosis in cases where urinary stone was formerly accepted as the etiological factor without question. Any added means to accuracy in diagnosis, especially that afforded us by so dependable a source as the x-rays, are, therefore, to be welcomed in such instances. It does not seem too radical to say that this agent can be well compared to the stethoscope of Lænnec, as to its power for correct observation. In the stethoscope, however, it is not the mere sounds we hear that help us to a definite understanding of the morbid process, but it is our interpretation of these sounds—it is our understanding of their meaning, by previous comparison and standardization, after they are recorded by our sense of hearing, that makes the situation clear. It is just so with the Röntgen rays as applied to certain urinary conditions: although the operative technique is a more compli-

cated matter than the simple application of the stethoscope, it is, after all, a more or less mechanical process, successfully accomplished by the observation of certain established rules. It is the recognition and understanding of the appearances revealed by the rays, in a given case, which requires both discernment and judgment. The diagnostic plate or so-called *röntgenogram*, as the end-result of an exposure of the affected area to the rays, instead of being a shadow picture, is, in fact, a record of densities, or resistances offered to the passage of the rays by the various tissues. This record of densities is properly to be interpreted, then, before a diagnosis by means of the x-rays can be made.

The history of the application of the Röntgen rays to conditions involving the genito-urinary apparatus dated back almost to the year of the discoverer's initial announcement. In 1896, MacIntyre, of Glasgow, employed the rays for this purpose with positive results, and this is believed to be the first recorded work. Chapius and Chauvel, of Paris, as well as Swain, of Bristol, were also in the field early, and the results of these observers were soon repeatedly duplicated by many others in all parts of the world. Leonard, of Philadelphia, was the first, among those in the United States, to publish a set of very complete personal statistics, which have given him a definite standing as an authority in this branch of Röntgen work.

It is easy to believe the fact that many diverse methods of technic have been evolved by widely-distributed operators, and there naturally arise as many differing opinions as to the power possessed by calculi of various composition to present, on the diagnostic plate, the evidence of their existence and whereabouts. It was early stated, somewhat empirically, that a stone composed pure'y of uric acid, could not, as the term goes, "cast a shadow." As time went on, however, and the operative technic became better understood and developed, it became clear that such factors as the age and bodily weight of the patient, the condition of his bowels, the penetrating power of the rays used at the time, and so forth, play a most important part in the question as to whether or not a suspected stone can be recorded. It seems the concensus of opinion at the present time is that the various concretions, as to their power to record themselves, may be arranged in the following order: (a) those composed of calcic oxlate, (b) the phosphatic stones, (c) concretions of uric acid or largely composed of it, and (d) biliary calculi. These four varieties preponderate in the statistics. It has also become evident, in the light of experience, that no stone, of whatever consistency, cannot be revealed if the right technical procedure be undertaken. By "the right technical procedure" is here meant the manipulation of one's apparatus in order to "temper the wind to the shorn lamb," or, in other words, not to use rays of such penetrating power that they will completely pass through a small stone of slight density only, so that no record of its shadow remains. While we must thus take

care not to overlook these slight concretions of little density, we can gather encouragement from the fact of the extree likelihood of a mixed composition in many calculi, especially those in which the predominant constituent is uric acid, which, if in a pure state, would cast but little shadow by virtue of their slight density. To be able, therefore, to diagnose concretions of various consistency under all conditions is, in great part, a matter of technique. The question of the various technical precedures in this branch of Röntgen diagnosis the writer purposes to avoid sedulously, since the consideration of these minutiae would have little general interest.

In spite of the highly specialized nature of its technical details, there is no diagnostic procedure in medicine, of any nature, which is more dependent for its success upon an attitude of coopération on the part of the patient and his physician. This coopération finds its chief expression in the personal bodily preparation of the patient for the examination by x-rays. Such preparation is directed for the most part to the bowels, and should result in a most thorough evacuation. Castor oil is to be preferred for this purpose, if the patient be capable of ingesting it, for it seems to leave less gas in the bowel than other agents, as has been pointed out by Caldwell. A systematic exhibition of castor oil should be followed by a thorough rectal enema given as high as is possible, shortly before the examination is to be made. This temporary freedom from intestinal contents is to be desired because we are thus able to eliminate from our diagnostic calculation any evidences of food particles which might simulate stone. Another

er reason is that, in many cases, it is necessary to make our examination while the abdominal tract in question is under mechanical compression, by means of especially constructed apparatus. Flaccidity of the abdominal wall in such instances is an obvious desideratum. The results obtained, be they positive or negative, by means of this freedom from intestinal contents, will be surprising when compared with those produced in patients not so prepared; this is irrespective of whether or not the plate has been made under abdominal compression.

Since a Röntgen examination of the entire urinary tract must necessarily embrace the ureters and bladder as well as the kidneys, certain anatomical landmarks must be taken as guides. In the upper portion of the tract our diagnostic plate must include the areas occupied by the spinal attachments of the tenth, eleventh and twelfth ribs, and it must extend below to include the symphysis pubis. In a patient of slight physique, the two extremes of the tract may be portrayed on one plate; in larger individuals, it may be necessary to make a series of plates, presenting the urinary tract in sections, as it were.

In order to be of service as a means to a diagnosis, what should our plate present as anatomical landmarks? All observers do not have the same opinion upon this point. It has been the writer's experience that a plate which clearly reveals not only the outlines but the structural detail of all the transverse processes of the lower thoracic and lumbar vertebrae, will have sufficient quality to present any calculus of the kidney or upper ureter that can be shown. As to the lower ureter, a concretion here will be faithfully depicted if the plate is of a

quality good enough to present clearly the area occupied by the sacroiliac synchondrosis. The consistency of the stone will often require a modification of the penetrating quality of the rays, as suggested above. In such cases the appearances of the normal landmarks will be altered to some extent, but as a rule, the above essentials to be possessed by a good plate have served the writer most satisfactorily.

The shadow of a calculus (and the term "shadow" is here wrongly applied, and is used for convenience only), if situated in or near the renal pelvis, has a fairly constant relative situation, provided the position of the kidney, as well as its size and shape, be normal. In such a position the shadow is not far from the vertebral column, and is generally in proximity to the shadow of the twelfth rib. In fact, cases have occurred where the plate showed the stone shadow superimposed upon that of the rib, and an otherwise clear diagnostic situation became obscured. If by chance the stone occupy the calices of the kidney, the shadow will be correspondingly placed. To determine the presence of a concretion in the ureter, we have merely to keep in mind the anatomical situation of the duct, and the fact that, as the ureter deviates laterally near its approach to the bladder, it projects the shadow of any contained foreign body outward to the immediate vicinity of the hip-joint and the tuberosity of the ischium. With regard to the bladder, one may safely say that stones here so often change their position as the posture of the patient is changed, that no constant landmark can be accorded to them. To make a diagnosis of a vesical calculus is, however, in no way difficult, provided the viscus be emptied before the examination is begun.

The fact remains, unfortunately, that all substances which may cast shadows along the genito-urinary tract are not necessarily calculi. This possibility requires a differential diagnosis of all shadows found upon the plate, and it is here that a good clinical history becomes of value. There are many shadow-producing substances which it is hard to conceive could be mistaken for concretions, such as foreign bodies of various kinds, among which the Murphy button can be mentioned. We may have, also, gall stones, enteroliths, coproliths, and phleboliths. Caldwell, of New York, in a personal communication, pointed out the likelihood of fracture of one or more of the transverse processes of the vertebræ as being mistaken for stone. Holznecht and Kienbock, in a recent issue of the *Zeitschrift für Urologie*, also mention a like possibility on the part of a fracture of a rib-extremity. We must not lose sight, also, of enlarged mesenteric lymph-nodes, for in an emaciated patient, possibly tuberculous, the ease with which these can be seen may give rise to a confusing problem.

It has been the experience of the writer that phleboliths are more often the source of shadows which closely resemble stones in the lower ureter than any other condition. They are most often seen in the vicinity of the vesical orifices of the ureters, and are, no doubt, situated in one of the venous plexuses in this general region. In many instances where they are favorably situated, and are of characteristic shape, their appearance so closely simulates that of small ureteral calculi that the differential diagnosis between the two becomes an arduous task.

It will be seen accordingly, from the above hurried remarks, that although the findings by means of the

Röntgen rays are usually definite, there is, nevertheless, much need of considering carefully the objective and subjective phenomena embodied in a good clinical history. To localize the symptoms in a general way, and to classify them properly, is a step which makes the Röntgen method of diagnosis much more easy and consequently more accurate. The writer has found repeatedly, on the other hand, that a calculus may be found in a remote situation from the supposed centre of the trouble. Watson, of Boston, among other prominent urologists, considers it almost necessary to make a complete bilateral examination in the case of the average suspected renal calculus. It has been the method of Leonard, in times past, to make an initial examination on both sides of the retroperitoneum, so that both kidneys may be examined at the same time. If this is done, it will render easy a more critical examination of any one suspected area.

The Röntgen method of diagnosis in urinary lithiasis is difficult at all times: the wide anatomical and physiological variations in individuals make it even more so. Those of us who, through bitter experience, have become schooled in these difficulties and discouragements, have learned to realize our shortcomings, and to appreciate the fact that all diagnostic methods are fallible. Without bias, however, the writer firmly believes that there is no complex of ailments which beset humanity in which the x-rays have a more direct usefulness and power for producing indirect benefit, and he who avails himself of the help which this method affords, finds himself oftentimes relieved from what would be otherwise a most perplexing and vexatious diagnostic problem.

SOCIETY MEETINGS.

ANNUAL MEETING OF THE OF NEW BRUNSWICK MEDICAL SOCIETY.

THE meeting held this year at St. Stephen was a pleasant and successful gathering. The attendance of members was fair, and those who were fortunately present were most hospitably entertained by the physicians of the "Border town." The trip which was taken by steamer on the St. Croix River from Calais to St. Andrews and return, was most enjoyable, the beautiful scenery and historic places being much appreciated.

Many of the papers read were of interest and value, while the action taken by the Society in reference to several very important matters affecting the profession and the public was noteworthy. Among these may be mentioned Fees for Life Insurance Examinations. This subject has been much discussed by this Society as it has been by Medical Societies in various parts of Canada and elsewhere. The committee appointed to go into the matter, had done so very thoroughly under the painstaking and energetic chairmanship of the President, Dr. Deacon. The Society has decided upon requiring a minimum fee of five dollars for every examina-

tion in all old line Insurance Companies, the regulation to come into force on first of October of this year. The profession is thoroughly agreed that this is a fair and reasonable demand and propose to carry it out loyally and absolutely. Nova Scotia and Prince Edward Island, it is to be hoped, will later on take up a similar position.

The subject of fees for examination in Fraternal Societies is to be considered and dealt with at the next annual meeting. The Society has now taken an important stand which only requires determination to make a complete success.

The Society also placed itself on record as being favourable towards the establishment of a Sanitarium for tuberculosis, and a committee will, for a second time, meet the Government in reference to the matter.

The advisability of the adoption of compulsory vaccination is also to be urged upon the Government, while inter-provincial registration has been again referred to the Medical Council for further action. The council was commended for its action in the prosecution of illegal practitioners.



BOOK REVIEWS.

REFERENCE AND DOSE BOOK, By C. HENRI LEONARD, A. M., M. D., Emeritus Professor of Gynecology in the Detroit College of Medicine. New and enlarged edition; 40th thousand. Cloth, limp sides, round corners, thin paper, 16mo., 145 pages; price, 75 cents. The Illustrated Medical Journal Company, Publishers, Detroit, Michigan.

The changes in the new edition of the U. S. Pharmacopœia are given in this edition of "Leonard's Dose Book" in two groupings, one showing those of "Increased Strength," the other of "Decreased Strength," and the new doses for these changes. All the Dose List has been carefully "proof-read" by several different readers, so as to insure absolute accuracy in the (nearly) 4,000 remedies given. The U. S. Dispensary has

been followed for medium and maximum dosage. The common name (in small type) is given after the drug name and dose. Besides this complete Dose List, the book has numerous useful tables and a therapeutic index.

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REPRINTS RECEIVED.

"Purulent Pyelitis treated by Lavage of the Renal Pelves. Report of Six Cases." By Winfield Ayres, M. D., New York. Reprinted from *International Journal of Surgery*, May 1907.

"The Submucous Operation on the Nasal Technic." By J. E. MacKenty, M. D., New York. Reprinted from the *American Journal of Surgery*, May 1908.

"The Relation of Appendicitis to Gynecological Pelvic Diseases." By Samuel Wyllis Bandler, M. D., New York. Reprinted from *Medical Record*, April 11, 1908.

"The Submerged Tonsil, with Special Reference to Cervical Adenitis and Systemic Infections." By

Lee M. Hurd, M. D., New York. Reprinted from *American Medicine*, July, 1908.

"Treatment of Gastric Ulcer," By Theodorus Bailey, B. S., M. D., New York. Reprinted from *American Medicine*, March, 1908.

"Radio-Active Baths in the Treatment of Malaria." By E. H. Martin, M. D., Hot Springs, Ark.; Reprinted from *Transactions Mississippi State Medical Association*.

"An Insane Hospital Annex Reformatory and Sanatorium for Insanoids or Semi-Fous." By C. H. Hughes, M. D., St. Louis. Reprinted from the *Unionist and Neurologist*, August, 1908.

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NOTES ON SPECIALITIES.

THE VARIETIES OF DYSMEN- ORRHŒA.

In an article on Dysmenorrhœa, Solomon Henry Secoy, M. D., of Jeffersonville, Ind., refers especially to its causes and treatment and offers some valuable suggestions as follows: "I am in the habit of regarding dysmenorrhœa as capable of division into three varieties. They are the neuralgic, the obstructive, and the membranous. The neuralgic form is a pure neuralgia, and its subjects, in all cases, will give a history upon which we can base its cause. These patients will tell us that never, prior to the attacks which they have recently undergone, have they had dysmenorrhœa. It is caused generally by malaria and other influences which tend to lower the general health.

"The treatment of dysmenorrhœa very naturally comprises such remedies and procedures as will correct the cause, and the administration of anodynes to relieve the pain. In the neuralgic form we must correct the cause. If that be malaria, quinine must be given. In most cases where the neuralgic form is presented there is anæmia, and no relief will be secured till this factor is overcome. Iron in some available form must, therefore, be given. During the period of menstruation the administration of antikamnia and codeine tablets in doses of two tablets every two hours, will relieve the pain. If these tablets are given at the beginning of the attack, we can often entirely prevent pain."

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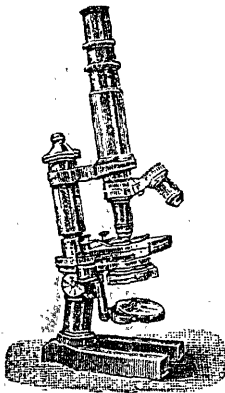
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ABDOMENAL APPLICATIONS IN TYPHOID FEVER.

Success in handling a case of typhoid fever may be likened unto the steering of a ship, already in distress, through a dangerous rocky channel. Results depend upon the man whose hand is on the wheel. Lucky be the typhoid fever patient in the hands of a cool common-sense doctor. It is this sort of a physician who guides his patient through the tortuous channel of typhoid fever and finally brings him into a safe port.

The many-sidedness of typhoid fever gives it a large interest and calls for good judgment. What to do and when to do it, are questions largely determining a physician's success in this infection. The bowels are inflamed, the Peyer's patches being the foci of inflammation, and it is but the application of common-sense principles to seek for some means of combatting this intestinal inflammation.

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its use in typhoid fever is demonstrable. It will tend to reduce the inflammation and thus contribute in making the typhoid patient comfortable and assist him in his return to health.

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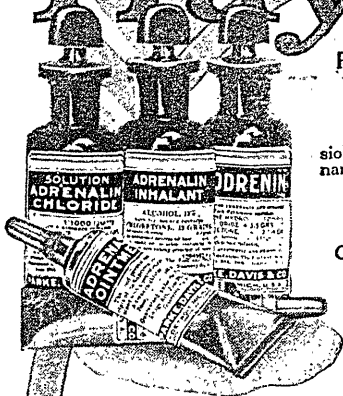
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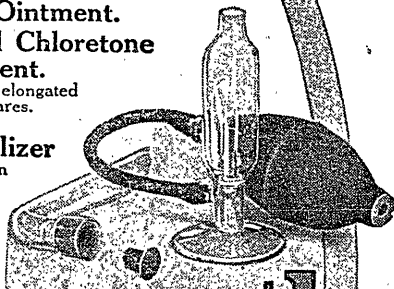
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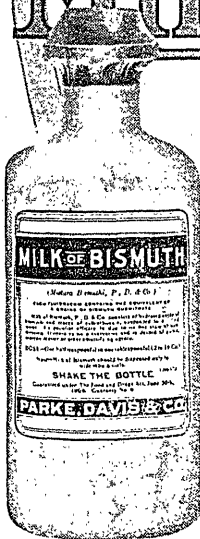
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