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ON RED DEGENERATION OF UTERINE FIBROIDS: WITH REPORT OF CASE.

By J. F. W. Ross, M.D., C.M., Toronto,

AND

A. C. Hendrick, M.A., M.B., Toronto.

Bland Sutton[1] writes that among the new things which the surgical treatment of uterine fibroids has brought to light is a knowledge of that change to which these tumors are liable, known as "red degeneration."

This increase in our knowledge of the pathology of fibroids is extremely useful in diagnosis, for red degeneration is especially liable to occur in fibroids lodged in a pregnant uterus, and it has the effect of rendering them painful.

Red degeneration, even in extreme degree, in fibroids of a non-pregnant uterus, may be quite devoid of pain, however—also a gravid uterus may contain a number of fibroids in its wall and yet only one fibroid may show red degeneration and become very painful, whilst the others are quite insensitive.

In the early stages of this change the fibroid exhibits the red color in streaks, but later it permeates the whole tumor.

The usual color of a uterine fibroid on section is pale yellow, or in the case of the pure myoma a reddish grey, especially in the smaller and apparently recent ones. This pure myoma is, however, firmer than the normal uterine muscle.

The fibroid proper is pale, almost white, in color and extremely dense, so that it cuts with difficulty, the cut surface having a watered silk appearance due to the lamellae passing in various directions reflecting the light differently.

When one of these tumors undergoes the red degeneration it

becomes a deep red or mahogany tint on section either in streaks or throughout the whole substance, and it is with the significance of this change we intend dealing.

First of all, let us review briefly the histogenesis and structure of uterine fibroids in general, as this has an important bearing in discussing the various theories of the causation of "red degeneration."

According to Pilliet[2] fibroids begin in the walls of the uterine capillaries, *i.e.*, they are angei-myomata, and he claims that this also explains the origin in fibromata of peri-vascular sarcomata (perithelioma), since both are tumors of a vascular series.

However, most observers are agreed that fibroids begin as proliferations of muscle cells, but whether peri-vascular or of the true uterine parenchyma is disputed. Thus, all fibroids are primarily myomata and only secondarily become fibrous or fibro-myomata.

The frequent difficulty in distinguishing between the pure myoma, or non-striped muscle neoplasm, and the pure fibroid may be explained by regarding the majority of the "fibroids" as originally muscle tumors, which, in the course of the growth, become gradually changed into fibrous tissue, not by an overgrowth of the connective tissue framework, although this may occur coincidentally, but by a direct conversion or metaplasia of the muscle fibres into connective tissue. The prevalent view, of course, is that the muscle undergoes atrophy and replacement.

Such metaplasia is to be regarded as an adaptation on the part of the cells to altered environment, and not of necessity and primarily to altered function.

Thoma has shown that as a result of immobilization of a joint by surrounding adhesions, etc., the cartilages covering the articular surfaces disappear and are replaced by mucoid and connective tissue. Physiological metaplasia is seen in transformation of cartilage into bone and connective tissue cells into fat cells.

Fibroids are said never to develop before puberty or to become active after the menopause, hence the stimulus producing their proliferation seems to have some relation to sexual activity.

Fibroids are primarily interstitial or intramural, the capsule being a secondary development due to the mechanical pressure of the growing tumor. Small fibroids are often devoid of capsules.

Uterine fibroids possess what is termed a "collapsible circulation" just as the normal uterine tissue or other tidal organ does; that is to say, the uterine capillaries possess a wall made

up of a single layer of cells which are capable of changing with contraction or peristalsis, and relaxation or congestion of the uterus as in menstruation and pregnancy, from a thick palisade epithelium to extremely flattened cells like a true endothelium. Nor is this the only place where these changes in the cells have been observed.

Much the same phenomena are described in the case of the endothelium of the peritoneum, where pseudo stomata are developed by retraction of the endothelial cells. The same thing happens to the transitional epithelium of the bladder. On distension of this viscus the cubical epithelium becomes for the time flattened or squamous in type.

Small fibroids have their own fissural or collapsible circulation, and it is only in the larger tumors that the capsule may assist in their nutrition.

Causation. As to the aetiology of "red degeneration" a number of theories have been advanced.

Pregnancy undoubtedly predisposes, though it may occur in spinsters. Some authorities consider that the essential and characteristic change is due to a thrombosis of the blood vessels in the red areas.

Professor Lorrian Smith and Shaw[3] found the change in four specimens, three associated with pregnancy. Staining by Weigert's fibrin stain, there was no evidence of recent or old extravasations of blood.

But in these specimens the other portions of the tumors not involved in red degeneration showed hyaline degeneration, and it seemed important to investigate whether "red degeneration" was always associated with this hyaline change.

Two of their patients showed toxemic symptoms, with active leucocytosis and bacteria in the tumors; streptococci in one and diplococci in the other. Neither of the other two showed either leucocytosis or bacteria.

Professor Smith considered the bacteria as probably a secondary invasion, predisposed by the thrombosis, and that the thrombosis was due to the pregnancy hampering the circulation and the puerperium increasing the coaguability of the blood.

The objections to this explanation of the causation are: (1) That this condition of red degeneration seems to begin with the pregnancy very often, as shown in the case we are reporting, or to continue throughout its whole course, or until it is interfered with.

Thrombosis is, we know, practically always due to septic infection, and very probably in the cases reported by Smith and

Shaw the thrombosis was a secondary condition and not the primary cause of the "red degeneration."

Mr. E. H. Tweedy[4], *Lancet*, 1909, Vol. 1, page 1756, reported a case before the Royal Academy of Medicine in Ireland; the woman had been sent to him six months pregnant and with a large myoma; no other history was given; he kept her over two months in the hospital, and induced labor at term—the child was dead. On the fourth day her temperature rose to 103° F. and the abdomen became very tender. Sir William Smyley saw her in consultation and advised postponement of operation; she gradually got better and the tumor was removed by supra-vaginal hysterectomy. It showed in a very characteristic manner red degeneration, which was a disease Mr. Tweedy thinks rarely occurs save in pregnancy. He considered high temperature characteristic, and thought it might be due to absorption of toxic matter from the tumors, apart from germ invasion; the temperature is probably secondary. It has been stated that almost all fibroids associated with pregnancy show this change, but Keen (Keen's Srg., Vol. 1, 773) and Fairbairn[5] deny this.

Again, it has been suggested that in pregnancy the entire uterine tissue is in a highly vascular condition, and something interfering with the blood supply, causing stasis in the veins might cause a diffusion of the blood-pigment.

Taylor[6] (Proc. Roy. Soc. Med. Sec. Obs. and Gyne., 1908-09, Vol. 11, Pt. 2, p. 180) reports a case of a woman aged 45, married 21 years, 3 children, the last 17 years ago.

The patient had been ailing since November, 1906, when she had a severe attack of pain in the lower abdomen, which confined her to her bed for three weeks; since then there has been gradual and progressive enlargement of the abdomen; menstruation irregular.

In spite of the constant abdominal pain the patient kept about until recently, when she was again confined to bed for about two weeks on account of severe abdominal pain; also some bearing-down pain. On Jan. 8, 1909, patient was admitted in Chelsea Hospital for Women—under care of Dr. Giles—complaining of pain and swelling. Jan. 11—Supra-vaginal hysterectomy was performed. The specimen removed consisted of the body of the uterus enlarged by fibroids; it weighed 4½ lbs.

In the posterior wall of the uterus was a globular fibro-myoma, 4 inches in diameter, encapsuled, softish, and a uniform mahogany-red color. In the anterior wall of the uterus was a globular fibro-myoma 4 inches in diameter, encapsuled, hard, white-whorled and free from any sign of degeneration.

Histologically the red fibroid showed loss of the outlines of

the muscle fibres, with feeble and diffuse straining, with nuclear ghosts and disappearance of the nuclei.

The association of pregnancy with red degeneration has been spoken of, but here pregnancy seems too far removed—17 years previously—to have any significance.

Pain, which was mentioned above, was the most marked feature in the history, whilst tenderness was not elicited on palpation, there was no pyrexia, but some loss of flesh.

Taylor concludes that some local nutritional disturbance in the degenerated fibroid was responsible for its condition. He also stated that in 30 specimens examined thrombosis of the vessels was a rare condition, though found occasionally.

Lastly, he endeavored to ascertain the nature of the coloring matter present by squeezing out the tissue juices in a muscle-press, and, after suitable dilution, examining with the spectroscope.

Taylor found the two-banded spectrum of oxy-hemoglobin—reducible to the one-band by Stoke's fluid and $(NH_4)_2S$.

Taylor therefore concluded that red degeneration of uterine fibroids was an aseptic necrobiosis of the tumor-cells, accompanied by a diffuse straining of the tissues with hemoglobin due to some local disturbance of nutrition.

Bland Sutton[7], R.S.M., p. 300, who first became acquainted with the red change in fibroids in 1901, had up till now placed several fibroids in the hands of bacteriologists, hoping to find some organism which might be accounted responsible for "red degeneration," but was unsuccessful until quite recently, when the following case is reported: A primipara, aged 30, two months pregnant, had been in London for the purpose of consulting a doctor, who, after examination, expressed himself as satisfied with her condition. On her return journey she was seized with sudden severe pain that necessitated her leaving the train. A doctor was consulted, who diagnosed ectopic gestation with rupture.

Bland Sutton was called in consultation 24 hours after onset of the symptoms and found a large tumor, probably a fibroid, occupying the right side of the abdomen and reaching to the liver. He considered that some change had taken place in the tumor, consequent on pregnancy; it was also possible that it might be an ovarian cyst with a twisted pedicle. The tumor was very tender—patient's pulse 112, temperature 100° F.

On opening the abdomen the tumor proved to be a large subserous fibroid with a broad stalk, the uterus was gravid, and as it contained several fibroids the size of golf balls it was removed.

On examining the big fibroid in the course of operation an

area of softening 5 cu. c.m. in diameter was found; it appeared acutely inflamed, being covered with flakes of lymph. As soon as the operation was completed the uterus was packed in sterilized waterproof material and conveyed direct to the bacteriological laboratory.

When the large fibroid was bisected they found a pyriform patch of red softening equal in size to one-third of the whole area of the tumor. The remainder of the fibroid was very hard, but the degenerated area had become so soft that the finger could be pushed into it with ease. From this infracted area a pure culture of "Staphylococcus pyogenes aureus" was obtained, using the usual precautions.

A careful examination of the tissues of this degenerated area showed the vessels thrombosed, and in some situations the clot had undergone partial organization.

The interstitial fibroids exhibited the red change in streaks, but no micro-organisms were detected in them. However, Sutton expresses the opinion that the red change is not due to micro-organisms, but to mechanical interference with the circulation.

Mr. J. S. Fairbarn[8] reports a case of removal of a red degenerating fibroid from the anterior wall of a pregnant uterus without disturbing the pregnancy.

The patient, married, aged 34, had one child 17 years previously, and none until now. Menstruation had always been regular, the last period being in February 2, 1908. She had no symptoms until six days before admission to hospital, April 23rd, 1908. Six days before admission she had an attack of pain in the abdomen and back and slight uterine hemorrhage; as the pain, though varying in intensity, continued and prevented her from working she came to hospital for advice and was admitted. The patient did not appear ill.

On examination a rounded tumor was felt in the abdomen, reaching to just above the umbilicus; it was movable, elastic, and very tender. The tumor was considered to be a fibroid, and in order to save the child, myomectomy was performed. The tumor weighed 1.5 kilos; on section it had a characteristic raw-meat appearance, and the stale odor of a necrobrotic fibroid.

In 19 cases of red degeneration investigated by Fairbairn 16 had pain, in eleven it was severe and the chief cause for the patient seeking advice.

In conclusion, he stated that in the majority of cases the diagnosis of "red degeneration" would prove correct, when pain, tenderness and softening of the tumor were present in a fibroid in a pregnant uterus.

Thus far we have stated two theories as to the probable cause of this fleshy necrobritic change, viz.:

1. Thrombosis of the vessels of the fibroid with necrobritic change in its cells, and diffusion of the blood-pigment throughout its substance. These observers consider the thrombosis due to mechanical causes, but you will agree with us, we believe, when it it stated that a thrombosis is most always due to a microbic invasion either of the vessel wall damaging the endothelium and causing conglutination of the red corpuscles or hemolysis and destruction of the corpuscles themselves, as after extensive burns, in eclampsia, and in severe secondary anemias accompanying cancer.

But intoxications pure and simple are rare compared with infections and bacterial invasion.

Even in what are termed "bland thrombi" bacteria are being constantly detected or cultures gained while conversely as shown by Welsh and Lubarsch, if known cases of infection be carefully studied, *e.g.*, suppurative cases, pneumonia, appendicitis, etc.—capillary thrombi in brain, lungs, kidneys, etc., are found to be very frequent.

There are different views as to how the bacteria act; thus, some have drawn attention to their hemolytic action, and have demonstrated that *e.g.*, the pyococcus aureus is most actively hemolytic, and is found associated with thrombi very often.

Some have contended that *e.g.*, that in the case of tuberculosis or typhoid, these are not hemolytic bacteria, although capillary thrombi are frequent, but Welsh draws attention to the fact that in many of these cases examination reveals not the microbes of the main disease, but those of some secondary affection, *e.g.*, streptococci, bacillus coli, etc.

There is also diversity of opinion regarding the presence of the bacteria in the blood stream; some contending that this is not always the case, and that parenchymatous inoculation of pyococci leads in the majority of cases to thrombosis of the vessels in the immediate neighborhood.

The adherents of the second theory consider that "red degeneration" depends upon some mechanical change in the circulation causing stasis of the blood in the vessels, aseptic nicrobritic change in the tumor cells, and diffusion of the blood-pigment. They deny a microbic invasion as the primary cause, although Smith and Shaw in their series of four cases report one fibroid yielding pure staphylococci, and one a diplococci; whilst Bland Sutton, who is an adherent of the mechanical theory, reports one case showing staphylococci pyogenes aureus, in pure culture.

From what has been stated, it seems very probable that the

condition of "red degeneration" is due to a germ capable of causing hemolysis.

This germ need not of necessity be a very virulent organism; for instance, the streptococcus pyogenes, staphylococcus pyogenes aureus, and albus para-pneumococcus and the colon bacillus have been shown by Lea[9] and Sidebotham to possess hemolytic properties.

These observers, in examining the lochial discharge from the cavity of the uterus by careful technique, found staphylococcus albus, the organism usually present, but in a few cases the aureus.

Hemolytic and non-hemolytic colonies often existed together on the culture plates.

Organisms were found in 80 per cent. of the cases examined; in 20 per cent. of the cases diplococci were present. They were facultative anaerobes growing equally well aerobically and anaerobically. Many of the colonies showed well-marked hemolysis.

The organisms present in the puerperal uterus were precisely those which have been found frequently in the vaginal secretion during pregnancy. Failure to find germs is usually due to the culture medium. The course of the puerperium was in the great majority of cases entirely uninfluenced by the presence of the organisms. Hemolysis does not form a distinction between saphrophitic and pathogenic organisms.

Having shown that hemolytic bacteria are always in the immediate environs of the fibroid—*e.g.*, the staphylococci, diplococci, streptococci, in the vagina and cervix, and the colon bacillus in the intestine—we have only to explain their probable mode of entrance into the fibroid. Since this red change is a frequent complication of fibroids in pregnancy, it seems probable that the micro-organisms may invade the uterine wall more readily in this condition. The germs are carried very probably by the wandering cells of the endometrium into the blood stream and then into the fissural vascular system of the fibroid; here they become stranded, forming capillary thrombi, very probably. Owing to this inocclusion of the bacteria in the sluggish or occluded circulation of the fibroid, they may become more virulent, just as it has been shown that by occlusion of bacteria in the caecum of the rabbit this may increase the virulence of the bacteria. Or, as observed often in appendicitis, occlusion of the appendix by some obstruction, or by kinking, may increase the virulence of the germs in its distal portion, and hence the lesion often takes place there. Then, owing to the hemolytic powers of the bacteria, the red cells become disintegrated, portions of the cells

becoming lodged in the capillaries of the muscle fibre, causing hyaline thrombi, whilst the pigment (hemoglobin) diffuses throughout the tissue. (Adami Sys. Path., p. 903.)

According to Wells[10], the staphylolysin, or streptocolysin, seem to differ from the ordinary cellular hemolysin in certain features, *e.g.*, reaction to heating, etc. They are simply toxines for the red cells, uniting directly with the receptors without the intervention of an intermediary body.

Bacterial hemolysins are all merely toxines with a particular affinity for red cells.

In the case of this red change in fibroids of a non-pregnant uterus, it seems reasonable to suppose the infection is from the alimentary tract, probably the rectum by the colon bacillus, the predisposing cause being pressure of the tumor upon the bowel wall causing irritative peritonitis, and so injury to its walls. It is significant that in the case reported above of Fairbairn's, the red fibroid was the one in the posterior wall of the uterus, the one in the anterior wall being normal.

The above explanation has been proposed by Gebhard and others[12] (Pathological anatomy). The red fibro-myomata show loss of the outlines of the muscle fibres, with feeble and diffuse staining, with nuclear ghosts or disappearance of the nuclei. In our case there was some parenchymatous degeneration, with slight edema and disappearance of the nuclei. The pigment did not react to the Perl's test, hence seems to be unaltered hemoglobin.

Symptoms.—Pain is the most frequent symptom in a fibroid undergoing red degeneration; indeed, a painful fibroid in a pregnant uterus is almost pathognomonic of this change.

As stated above, in 19 cases investigated by Fairbairn, pain was present in 16 cases, and in 11 of these was severe, and the chief reason for the patient seeking advice. In the case here reported by us pain was the only symptom complained of until the interruption of the pregnancy. Pain may be severe enough to simulate an ovarian cyst with twisted pedicle or a ruptured tubal pregnancy.

Kelly and Cullen[11] report 5 cases of myomata associated with pregnancy, in three of which there was pain; two complaining of constant pain in the lower abdomen and the third of a jumping and gnawing pain. On the other hand, tenderness does not seem to be a very marked symptom; in the case we are reporting there was very little complained of. Tenderness, like high temperature and softening, seem rather to exist only in the later stages of the degeneration. Hemorrhage from the uterus is unusual.

Diagnosis.- The previous knowledge of the existence of a

fibroid in a uterus, the intervention of pregnancy and pain and tenderness of the fibroid, subsequently with perhaps high temperature are almost pathognomonic of red degeneration.

Prognosis.—When the symptoms are mild or moderate in type they will disappear if the patient be kept in bed. Red degeneration, even in extreme degree in non-gravid uteri are often painless; this is also true in some cases of pregnancy, as when multiple fibroids exist one may be painful, the others insensitive.

Treatment.—When mild in degree rest in bed, when severe hysterectomy.

The patient F. G. was admitted into the Gynecological Service of the General Hospital, Toronto, on Jan. 18th, 1910, under the care of Dr. J. F. W. Ross, complaining of pain and uterine hemorrhage.

The patient is an intelligent woman, aged 36, married 5 years previously. Became pregnant soon after marriage, seeing only one period, miscarried at 2 1-2 months; there was no pain during these 2 1-2 months and only a little pain at the time of the miscarriage. Remained in bed seven days, the following month menstruated, being free from any bleeding in the interval. Had a second miscarriage 6 months later of a 3 months' fetus, but there had been no pain and no bleeding until just at the time of miscarriage, when there was bleeding for one week, then well with no bleeding; menstruated the following month. The patient thought heavy lifting brought on these two miscarriages.

Patient perfectly well for the following three years, menstruating regularly and suffering neither pain nor hemorrhage; she had no idea of having a tumor, and was working steadily. During this interval her husband was absent from home. He returned 8 months ago, and after a respectable period the patient became pregnant again.

Patient says she suffered a great deal of pain right from the beginning of this pregnancy. The pain was localized by her in both sides internal to the ovarian region, and described as a sticking pain. Exercise made the pain much worse. There was some tenderness also, especially after walking, but the tenderness was never a marked symptom, just the pain. The patient was only doing her housework at this time. There was no bleeding at any time during the pregnancy, not until the threatening miscarriage, to be shortly mentioned.

The patient noticed she did not correspond in size to the month of pregnancy; at two months the patient says she seemed like four. Three weeks previously to coming to the Hospital the

pain grew so severe that a doctor was sent for; they felt like labor pains, the patient stated; there was only very little hemorrhage.

The patient was ordered to bed for two weeks. The pains were so much relieved at end of this time that the patient was allowed up. Patient was up one day when the pains returned, also some bleeding. Patient again returned to bed, but at the end of another three days miscarried a 4 1-2 months fetus; this was three weeks before coming to the Hospital. The bleeding the first week after the miscarriage was not very severe, but both the bleeding and the pain gradually grew worse, and at the end of another two weeks patient was sent to the Hospital, where a diagnosis of fibroid was made and sub-total hysterectomy performed, leaving the right ovary. The patient made an uninterrupted recovery.

Specimen.—Consisted of the uterus about the size of the fetal head at term, round, comparatively evenly enlarged, and containing an interstitial fibroid. On section the fibroid was seen to occupy almost the entire thickness of the right posterior uterine body, the uterine canal being elongated to 4 or 5 inches and pushed well to the left, being encroached upon by the tumor.

The cut section showed the characteristic raw-beefsteak appearance of red fibroids, with some softening in the interior of the tumor.

Microscope showed some edema with hyaline degeneration of the muscle cell, and loss of nuclei.

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THE EYE IN DISEASES OF THE EAR.*

By Gilbert Royce, M.D., Toronto.

The advance that otology has made during recent years accounts, no doubt, for the interest which is being taken at the present time of the effect upon the eye of aural disease. This progress has brought forth searching investigations of a physiological and pathological character, so that direct relationships have been shown to exist that heretofore seem to have been completely ignored. The trifacial nerve innervating both the ear and the eye, the correlation of the reflex centres of both the optic and auditory nerves, the motor and sensory ganglia, connection of the trifacial, the facial nerves, etc., demonstrate clearly the close association that exists between the two most important sense organs.

Optic neuritis occurring as the result of aural disease has long been known and was formerly thought to be the only ocular trouble resulting from aural lesions. Since then nystagmus, hemianopsia, ocular paralysis and blepharospasm were observed. Politzer cites examples of myosis and disturbances of accommodation as having their origin in aural conditions.

Some claim that nerve changes may be observed at times from suppuration of the tympanic cavity without evidence of intracranial affection, and explain it as being due to damage to the carotid plexus of the sympathetic inducing vaso motor disturbance in the optic nerve, or that these changes might also be brought about by the tympanic suppuration, producing irritation in the perivascular sheaths of the carotid venus plexus as well as in those veins which pass directly from the tympanic cavity to the membranes.

However, it is difficult to prove that a slight meningitis does not occur in these cases. The writer has observed blurring of the disc in suppurative otitis, but it was always in long-standing cases. This would suggest the possibility of erosion through the bone and consequent meningeal irritation. Optic neuritis is a frequent occurrence in brain abscess of otitic origin, specially in the later stages and in those of considerable size; it may not be present in abscess with a short course or in very small abscesses with a short period of inflammation.

Optic neuritis is of frequent occurrence in otogenic mening-

*Read at the Academy of Medicine, Toronto, January 20th, 1910.

itis; it is usually not observed or only slightly marked in uncomplicated sinus thrombosis. It is sometimes found with extra dural abscess.

J. D. Richards has observed papillitis in three cases of extra dural abscess, in all of which it was on the affected side. In sinus thrombosis he places the percentage in the neighborhood of five, and observes that in his experience neuritis is most frequently seen in jugular thrombosis.

In cavernous sinus thrombosis, due to the passage of infection from the middle ear by the carotid canal, or by infective thrombosis of the superior petrosal vein, oedema about brow and orbit, exophthalmos, paralysis of extra ocular muscles, oedema of the lids, chemosis of conjunctiva, and choked disc on the side of the chronic aural suppuration, are seen. Oedema of the eyelids has been reported as occurring as the result of extensive involvement of the zygomatic cells.

It is generally agreed that nerve changes associated with aural disease mean the extension of the aural lesion into the interior of the skull, and it is doubtful if simple uncomplicated suppuration of the tympanum does produce any change in the optic disc.

Nystagmus occurs as a reflex from irritation or disease of the semi-circular canals, and is manifested by horizontal or rotatory oscillations of the globe, depending on the element of the canal system involved.

It has been shown that movement of the endolymph from the convexity of the right horizontal semi-circular canal to its ampulla caused horizontal nystagmus to the right, while movement of the fluid in the opposite direction produced nystagmus to the left. Similar experiments carried out on the vertical canals produced nystagmus corresponding to their direction. Vestibular nystagmus is characterized by two movements: a slow deviation in one direction—the slow phase—followed by a quick movement in the opposite direction—the quick phase.

These movements Barany was able to produce by injecting cold or hot water into the external auditory meatus or by rotating the subject on a revolving stool. When the vestibular apparatus is destroyed or the vestibular nerve is paralyzed no nystagmus follows the syringing.

Nystagmus may also be produced by condensation or rarefaction of air in the meatus, but this is obtainable only when there is a fistulous communication with the labyrinth. Labyrinthine disease is manifested by nystagmus of a spontaneous character, and is due to the upsetting of the normal balance of

power between the two sides. The stimuli from the diseased side being suddenly withdrawn and those from the healthy side predominating, so that the nystagmus is notatory and horizontal and towards the sound side.

The spontaneous nystagmus of infective labyrinthitis passes through three stages:—

(1) A short and transitory stage of irritation, with nystagmus to the affected side.

(2) The stage of destruction with nystagmus to the sound side.

(3) The stage of disappearance of spontaneous nystagmus.

DENTAL HYGIENE AND ITS RELATION TO HEALTH.*

By Richard G. McLaughlin, D.D.S.

Ladies and Gentlemen,—I esteem it a privilege to have this opportunity of addressing you on a subject of such importance and so far-reaching in its effects as the one forming the title of this paper. The teaching profession and the dental profession, although seemingly far separated in their lines of work, after all, are aiming at a common goal, namely: the fitting of men and women physically and mentally to do the best work of which they are capable throughout life. Just how much the physical and mental efficiency of an individual depends upon the condition of his teeth and mouth is the subject under discussion in this paper, and in placing this matter before you I shall endeavor as far as possible to avoid the use of terms that are of a technical nature.

The close relation existing between physical health and mental activity was never more emphasized than to-day. In order that a man may be at his best and fit to do his best work every organ in the body must be perfectly healthy, and so able to perform its natural functions. Each organ in this wonderful human machine is dependent to a greater or less extent for its health, its power and its efficiency on every other organ in the same body. For example, a dyspeptic can never be the strong man, mentally, physically, socially or morally, that he would have been had his stomach been in a normal condition. It has been stated that Napoleon lost the battle of Waterloo because of over-indulgence that morning in his favorite dish of fried potatoes. Investigation has disclosed the fact that when the mummy of Rameses II., known in history as the Pharaoh of oppression, was examined, it was clearly manifest that that tyrant ruler must have suffered greatly because of decayed and diseased teeth. Medical science is inclined to attribute much of his cruelty to this fact. Be this as it may, the important point is that modern scientific research and observation have proven undoubtedly that many of the ills of the human race, both physical and mental, can be traced directly to an unclean and diseased oral cavity. Nor are we surprised at such a conclusion when we consider the fact that the mouth is the gateway or vestibule to the whole body. Through it must pass the food, and

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in many cases the oxygen, that goes to nourish and build up the body.

There are few outside the medical and dental professions who know what a complex network of nerves and blood vessels run out from the teeth and jaws. These nerves which are intimately related to the brain act and react upon the whole nervous system. It must follow that any disturbances or derangements of the nerves of the teeth produce a sympathetic derangement in the higher nerve centres, and so not only the physical organs, such as the kidneys, liver and stomach suffer, but the intellectual faculties as well. The common idea that a violent toothache is the ultimate penalty nature will exact for neglected and decayed teeth is one of those delusions which recent research has swept completely away. Holding, as they do, such a strategic position at the entrance to the alimentary canal and respiratory apparatus, and so intimately connected with the nervous system, the teeth truly dominate the whole organism of man.

The functions of the teeth may be considered as three-fold: to give contour and expression to the face, to assist in articulation, and to masticate the food. It is with the function of mastication that we are particularly interested at this time. This is the first step, and in the case of some of our food, the important step in the process of digestion. Food to be properly masticated and prepared for the fluids of the stomach must not only be crushed and ground into small particles by the teeth, but what is just as important, should be held and worked in the mouth long enough to be thoroughly mixed with the saliva. Especially is this so with such common every-day foods as bread and potatoes, which contain a considerable amount of starch. Now, starch is an element of food that requires saliva in abundance for its proper digestion. Saliva has the property of converting it into glucose or sugar, and as such it forms a large part of our nourishment. Now, the point is this: if in the mouth this first important step in digestion is to be properly performed, so that the stomach be not unduly burdened, how urgent it is that the teeth be in good, sound condition, free from any soreness, and properly articulated. Bolted food, or food not properly prepared by the teeth and saliva, is looked upon to-day by the medical profession as the direct cause of a large percentage of stomach troubles. Dr. William R. Woodbury, of Boston, Mass., is the authority for the statement that eighty per cent. of the cancers of the stomach are due to bolted food. If day after day and week after week a quantity of food, not properly prepared, be taken into the stomach, that organ will, no doubt, in time rebel, and we

have indigestion, dyspepsia, and the whole train of troubles that naturally follow.

Let us look for a moment why so much of our food is only partially prepared in the mouth before passing into the stomach. As one writer very tersely puts it, "man eats along the lines of least resistance," which, interpreted, simply means if a tooth on one side of the jaw is decayed and sore, he will not make use of that side of the mouth to masticate his food. Now, if he is still neglectful, and one or two teeth on the other side become troublesome, he will not use that side either, and so the food is merely rolled round with the tongue and cheek for a moment or so and then bolted. With this badly prepared food the stomach and other digestive organs must do the best they can. The result is a two-fold injury: first, the body is robbed of part of the nourishment it should have extracted from that food, and, second, the eliminating organs, such as the kidneys, are overtaxed to rid the body of the extra poison consequent upon faulty digestion. Again, not only does this half-hearted mastication result in serious complications to the general system, but is injurious to the teeth themselves. This soft food being merely rolled round by means of the tongue and lips, naturally leaves the teeth coated with a film of the mass, making a splendid resting-place for the work and growth of micro-organisms which promote further decay of the tooth structure.

As long as we persist in tickling our palates with sloppy foods, jellies, angel cakes, and the so-called pre-digested foods, we must make up our minds to have poor teeth and weak stomachs.

If we examine the skulls of the primitive inhabitants of this land, we will find, generally speaking, a well-developed muscular jaw with a full contingent of fairly sound teeth, set in a firm socket of bony tissue. The question arises: Why does not man to-day possess such an enviable masticatory apparatus? The answer is a simple one. Our jaws, teeth and muscles of mastication have deteriorated for want of use. The food of the savage was of such a character as to require vigorous mastication before it could be comfortably swallowed; dried or partially cooked meat and hard, coarse bread or cake. To masticate such food would not only build up strong, healthy teeth and jaws, but the constant rubbing of this hard food over the teeth during the process of mastication would help to keep them free from all accumulation, and so cleanse the teeth as to prevent decay. The important point to be remembered is simply this: If we would have better teeth and better digestion, then we must see to it that at least

a portion of the food of each meal is of such a character as to require considerable mastication, and that all our food is thoroughly masticated before it is allowed to pass into the stomach.

Mr. Horace Fletcher is to-day making strong claims as to the value of thorough mastication in the prevention and cure of many general diseases. His own personal experience in this matter, added to the testimony of many others since that time, gives considerable weight to his system of dieting. If you have not read Fletcher on this subject, I think it would be quite worth while. His doctrine is sound through and through, that the man who does not properly use his teeth is sinning grievously against both body and brain.

But the evils which follow imperfect mastication are by no means the only ones arising from decayed and diseased teeth. The mouth that contains many such disabled molars presents an ideal harbor and breeding-place for germ life. Here we have the necessary moisture, heat and undisturbed food in the cavities and round the necks of loose and sore teeth to give the micro-organisms every opportunity to flourish and get in their deadly work. Moreover, the infectious matter thrown off by decayed teeth is of a particularly virulent character, as it is similar to that of diseased bone. The medical profession to-day is almost unanimous in its opinion that many of the infectious diseases of the body can be traced directly to a diseased and unsanitary mouth. When we understand the many dangers lurking in unclean and ill-kept mouths, we do not wonder at this conclusion. That many species of the most poisonous germs are to be found lurking in decayed teeth has been fully demonstrated by Miller and other bacteriologists.

This continual swallowing of these germs and decayed matter from diseased teeth and foul roots carries disease to every part of the body. Dr. William Hunter, of Charing Cross Hospital, London, states that his observation and experience has proven that such local diseases as tonsilitis, pharyngitis and inflammatory condition in that region can frequently be traced to a septic condition of the teeth and mouth. Also a hollow tooth having a dead pulp has been the means of conveying the germ of tuberculosis to the lymphatic glands of the neck, resulting in tubercular abscesses. In the fight against this dread disease, "The White Plague," it is most important that the teeth should be sound, properly arranged for good mastication, and well kept.

Again, to go a little farther from the region of the mouth, we find that the constant swallowing of the septic matter arising

from decayed teeth is a direct cause of disturbance and diseases of the deeper digestive organs. It is true that the gastric juice of the stomach will in its normal condition take care of much of this foul matter and those pus organisms from decayed teeth and foul abscesses; but we must remember in most cases the supply is constant and by degrees the tone and resisting power of the gastric juice is lowered—becomes, in fact, gradually infected—and so fails in the performance of its digestive function. This results in indigestion, dyspepsia, constipation, ulceration of the stomach, septic catarrh, and all the evils arising from a disabled and diseased digestive apparatus.

In the great majority of these stomach troubles the physician to-day is looking to the mouth of the patient both for the cause and the cure. Drugs can be of no avail till the teeth are put in a sound and sanitary condition. Many cases are on record which fully demonstrate the force of this statement. Let me mention one or two which have come under my own observation:

Case 1. A young lady had for some three or four years been suffering from ulceration of the stomach. Her condition was gradually becoming more serious, she became weaker, and was under the constant care of her physician. Upon examining her mouth I found her lower back teeth were all so decayed that nothing remained but rotten and diseased roots. These were so sore and the gums so inflamed that no attempt was made at proper methods of cleansing. Here, I felt satisfied, was a source of serious infection. The patient was physically so weak that the operation of extraction was attended with considerable risk. However, the diseased roots were in time all removed, an antiseptic mouth was prescribed, and as soon as possible the patient supplied with artificial teeth for the work of mastication. It was quite noticeable that as soon as the mouth was put in a healthy condition the patient showed signs of improvement, and inside of twelve months was about her duties as usual. Since that time, which was some years ago, there has been no signs of recurrence.

Case 2. A little girl between five and six was brought to the office suffering from toothache. For a child of her age, she presented a decidedly emaciated appearance. It was clearly a case of poisoning of the system from some source. She had the ashy-grey color, and even at that age was a sufferer from indigestion Upon examining her mouth I found all her back teeth were more or less decayed, some with exposed nerves or pulps, and also five or six abscesses, from which pus was continually oozing into the mouth, and, of course, taken into the stomach

with every mouthful of food. Was it any wonder the child was a dyspeptic, in general bad health, and unfit for her school duties? It took some weeks to restore that mouth to even a fair condition; but as soon as the foul matter and pus was gotten rid of and the child could again masticate her food with comfort, her health and spirits began to return.

If time and space permitted, many similar cases could be cited of the general health being undermined by infection from an unclean mouth.

Apart from these local effects or digestive disturbances which so frequently result from decayed teeth, there is always a danger of these pus organisms and this foul matter from the mouth being absorbed into the blood itself, and if allowed to continue will gradually lower the vitality and resisting power of the whole body. In such cases there may be no definite local manifestation of the deadly process, but there is, as Dr. Hunter states: "The dirty ashy-grey look and general langour, irritability, feelings of intense depression, which are constantly found associated with those cases of oral sepsis, sometimes of the profoundest character." Thus the same authority states that many cases of pernicious anemia, profound septicemia, and serious nervous disturbances coming under his own observation have been traced to a constant infection arising from a foul and diseased mouth.

Now, if, as we have concluded, a diseased and unsanitary condition of the mouth is so far-reaching in its effects as to upset the whole human machinery, what effect must it have on the physical and educational progress of the boys in our schools? Simply this: that a boy who has bad teeth is handicapped both physically and mentally. No doubt, one of the difficult questions you have before you at this Convention is that of the backward pupil we find in every school. The educational world is just awakening to the importance of subjecting these laggards to a rigid medical and dental examination. The educational board of Toronto has gathered 117 of these laggards and appointed a medical practitioner to report on the physical condition of each. It is possible that a dentist will also be asked to examine the mouths and teeth of these children, and it is safe to predict that a large percentage will be found to be "Dental Cripples."

In educational circles to-day, it is generally conceded that the backwardness found in many of the school children is due largely to some physical defect. In many of the large cities of the United States this matter has been taken up with a good deal of vigor. The children in many of the schools in New

York, Boston, Philadelphia, and Chicago have been subjected to a close medical examination, not only as to their general health, but as to the condition of their teeth and mouth. As a result, it has been found that from 67 per cent. to 98 per cent. of the children in different schools have decayed or defective teeth.

Dr. William A. Evans, Commissioner of Health for the City of Chicago, stated in a recent public utterance that as a result of a medical examination of the school children of that city 44,000 were found to have defective teeth. In other countries, such as Germany, England, France, where the matter has been investigated, the same lamentable condition prevails. Now, the serious point is this, that if the percentage of children in our schools having defective teeth runs up as high as 98, we could naturally conclude that fully 50 per cent. would present mouths in such a serious condition as to affect their physical development and educational progress. Observation has also shown that children whose mouths are unclean and diseased to such an extent as to affect the nervous mechanism are not so amenable to school discipline; in fact, many become not only ungovernable, but actually criminal. Now, such a child is not having a fair chance. It is no fault of his that he carries this handicap. He may have as much native ability and good nature as the boy next to him. We must conclude that those responsible for that boy's education and future are not giving him a square deal. The parents, the municipality and the school authorities, who are the responsible parties, should see to it that no boy or girl in our school is allowed to labor under such a serious handicap.

Germany perhaps leads the world in looking strictly after the health of her children in the schools. For years she has insisted that pupils undergo periodical examination of their teeth and present a certificate, either from the family dentist or the public clinic, that their teeth are in good condition, and as a result there has been a marked improvement in the health, scholarship, morals and discipline of the school children. Germany has proven for the whole world that such oversight and assistance has been a wise investment. She has fewer laggards in her schools, fewer in the hospitals, better discipline, and all resulting in a higher class of citizens.

Let me give you just one illustration in support of what I have been placing before you; a case from the Children's Aid Society of New York. I quote this from an article written by Dr. J. O. McCall, of Buffalo. A young girl of 11 years appeared almost incorrigible and wholly unmanageable in school. Upon investigation it was found she had only two sound teeth in her

mouth, all the others being badly diseased. She was at once sent to the dental clinic established for these children, and her teeth put in good condition. At once there was noticed a marked improvement in her physical health, her studies and her deportment. That same pupil was afterwards referred to by the teacher as the model pupil in the school.

Now, if, as has been shown, such a large percentage of our school population are suffering to a greater or less extent from such a serious handicap, we ought to, and we must, ask ourselves—what is the remedy and who are responsible for its application?

First: The children in our schools must be regularly instructed in the importance of having good teeth, and how to properly take care of them. To be capable of imparting such instruction the teacher must know more, vastly more, about the teeth, their structure, their functions, their diseases and their proper care than she is expected to know to-day. This would mean a full course of instruction on dental hygiene and in the Normal Schools of the Province. I can assure you that the dental profession will be only too glad to assist the teaching profession in such a course of instruction. Already in n y of these normal schools some little attempt has been made towards such a course.

Second: Periodical inspection of school children's teeth by dentists should be insisted upon by the school authorities. This is already being carried out to good advantage in many large centres. In the municipality of Strassburg, Germany, every child on coming to school is compelled by a city ordinance to present to the teacher a certificate from a physician and dentist, giving information as to the general health and condition of his teeth. If the child needs medical or dental attention he is sent to the regular practitioner or the infirmary, which is supported by the municipality. The German Government, in pursuing this course, keeps the children in good physical condition, and well equipped for school work.

Austria, France, Switzerland, England and Australia have also in recent years been paying special attention to dental and oral hygiene in relation to school children. The United States is now turning itself with a good deal of vigor to the solution of this problem. Professor Witmer, of the Department of Psychology at the University of Pennsylvania, has been making a special study of the causes of intellectual backwardness in school children. He reports that a large number of these laggards present mouths and teeth so defective and diseased as to be

wholly incapable of performing the work nature had intended them to do.

Also, let me state here that I believe in the Board of Education of Toronto a movement is now under discussion to appoint both a physician and dentist, whose duties shall be to make periodical inspections of the school children as to the condition of their general health and teeth.

Third: In large centres of population dental clinics supported by the municipality should be established to look after the teeth of those children whose parents are not financially able to pay the regular fees of the family dentist. By this means the child of the poor man may have an even chance with the child of the rich. Many of our larger cities are already looking after the poor children in this respect. In 1908 Cleveland paid for the care of the teeth of 1,500 school children. The services of the dentist being given free. Other American cities, as Rochester and New York, are doing similar work.

The city of Strassburg, to which I referred before, has a dental infirmary in connection with her schools, established since 1902. This clinic is now conducted in a special building erected for the purpose at a cost of $60,000. And Germany finds that it pays. It helps materially to produce a better class of citizens. And a nation's best assets are her men and women, well developed physically, mentally and morally.

If this much-needed reform is to be accomplished in this good land of ours; if our school children are to be relieved of this serious handicap, it must be done by the hearty co-operation of the teaching profession, the dental profession and the municipality. And I can assure you that in all or any part of this work you may rely upon the support of the dental profession of this Province.

Selected Articles.

REMARKS UPON THE TREATMENT OF HYSTERIA WITH SPECIAL REFERENCE TO THE REST CURE

By Edwin Bramwell, M.B., F.R.C.P., Ed. and Lond.
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The writer has endeavored in the present communication to commit to paper some of the lessons in the management of cases of hysteria which he has himself learned from practical experience. No attempt has been made to treat the subject exhaustively, nor does he claim that the conclusions arrived at are in any way original, when he states that the convictions expressed have been driven home by personal observations, for there are many things we think we know, the true significance of which experience alone teaches us to correctly appreciate and value. It may be that in the following pages in which the modern conception of the Rest cure is more particularly dealt with, that the reader will acquire something of use to him in practice.

Hysteria may be defined as a disease of psychical origin which is curable by psychical methods. An instance, in which hysterical symptoms were induced by a sudden mental shock, was that of a bailiff who unexpectedly came across two poachers one night in a dark wood. He stated that upon raising his right arm to strike one of the men it fell powerless by his side. Upon examination a few days later he was found to have a typical hysterical hemiplegia, with the characteristic loss of sensation, affection of the special senses, and aphonia met with in this disease. An example of the sudden cure of hysterical manifestations as a result of profound emotion, a veritable faith cure, was that of a man who for months had been unable to speak. Sent from a distant part of the country for treatment, immediately he entered the hospital he recovered his voice.

The practice of hypnotic suggestion in the treatment of hysteria at one time so much in vogue, especially in France, has been almost universally discarded for several reasons. Firstly, these cases, if properly treated, can be almost always cured by other means. Secondly, the curative effect of hypnotic suggestion is too often only temporary, repetition being demanded at shorter periods after each relapse. While, lastly, if recovery is so induced and relapses occur, other methods of treatment are usually ineffective.

Suggestion and persuasion, the latter implying an appeal to the patient's reason and her Will during the conscious state, are the psycho-therapeutic measures which are now employed. Should it happen that the term psycho-therapy conjures up in the minds of some nebulous images of complex psychological problems, the appreciation of which is necessary for the practical application of the method, this paper may at least prove of service in dispelling such an erroneous impression.

Although it is not my present purpose to discuss the many difficulties which may arise in the recognition and differential diagnosis of hysteria, yet it is of interest in passing to note the more important groups of cases in which uncertainty may exist. Grave organic disease of the nervous system is very apt to be mistaken for hysteria, when, in the absence of pathognomonic signs, its onset, on the one hand, happens to coincide with a pronounced mental shock, or, on the other, when its symptoms disappear for the time being. The case of a boy who ultimately died with symptoms indicative of an intracranial tumor, the first manifestations of which were noticed two days after the fall of a chimney through the roof of his bedroom, is a remarkable instance of the former, while illustrations of the second group of cases are of every-day occurrence in that protean disease disseminated sclerosis, in the earlier stages of which transient amblyopia, fleeting paralysis of a limb, and other temporary phenomena are of such common occurrence. Again, hysteria may closely simulate organic disease. This is notably so in cases of long duration in which contractures and muscular wasting have developed. A patient, seen by the writer, who had been for upwards of two years in an incurable home and whose symptoms—those of a complete paraplegia—yielded to the measures about to be described, affords a striking example in point. This case, too, illustrates a group in which the diagnosis is especially difficult, for there was good reason for believing that the patient had originally actually suffered from organic disease, peripheral neuritis, the symptoms of which had been replaced by an hysterical paralysis depending upon the "fixed idea" that she was unable to move her limbs. Lastly, and equally difficult, are those cases in which symptoms due to structural disease are associated in the same individual with the manifestations of hysteria. A case which falls under this category was that of a young woman examined by the writer several years ago. She was suffering from aphonia and hemianæsthesia of the hysterical type associated with a peculiarity of gait so remarkable in its features that it was only to be explained by

its dependence upon a psychical cause. The patient's case had been demonstrated as one of hysteria, and in the presence of a bilateral extensor response the conclusion had been arrived at that the latter sign could not be regarded of distinctive value in differentiating between organic and functional disease. Examination revealed that there were also present nystagmus and relative pallor of one optic disc. The hysterical symptoms above referred to disappeared and the patient left the hospital to all appearances cured. Some months later, however, she was admitted to another ward with characteristic symptoms of disseminated sclerosis, a diagnosis which the writer had an opportunity of verifying post-mortem at a subsequent date.

Even in the presence of undoubted hysterical symptoms, the necessity for a most thorough examination with the object of definitely excluding co-existing organic disease will be appreciated from the foregoing remarks. The importance of a correct and complete diagnosis cannot be too forcibly emphasized, for upon the physician's confidence in his diagnosis success in the treatment of hysteria is very largely dependent.

From what has been said it will be seen that an exhaustive examination should be conducted in every case before any opinion is expressed as to the nature of the condition and the proposed line of treatment decided upon. Not only is a complete physical examination to be carried out, but, in addition, a minute inquiry is to be undertaken into the patient's whole mode of life, more especially with regard to any mental factor which may have originated or be the means of maintaining the existing symptoms. Lastly, the opinions which have been expressed to the patient by other medical men must be as far as possible ascertained, together with the treatment which she has undergone. A complete examination is also of great value from another point of view, particularly when, as so often happens in this disease, the patient has previously consulted other physicians; for by such an examination, which omits none of the methods of diagnosis commonly employed in these cases, the patient is impressed by the physician's familiarity with her disease. The physician has thus a great opportunity of acquiring the confidence of his patient, a factor which is essential in the subsequent successful treatment of the case. Needless to say, the examination is to be conducted in such a way as to avoid suggesting possible symptoms to the patient. The necessity for such precautions will be realized when it is remembered that some of the leading exponents of the modern Paris School hold that the symptoms of hysteria are the product of the physician.

After satisfying himself that the patient is suffering from hysteria and that there is no organic disease of the nervous system, the physician then expresses his opinion to the patient. The way in which he does so is important. It is not sufficient for him to say that he cannot detect any evidence of actual disease, for such a statement implies its possible existence. Dogmatism is essential, and dogmatism rarely carries conviction with it unless it is coupled with conviction. The patient is to be told that he, the physician, after making a very thorough examination, is absolutely satisfied that there is no structural disease of the nervous system, and that he is not only certain that her condition is curable, but that he can cure it. The physician's assurance as to his ability to cure the patient will carry conviction with it in proportion to his experience and confidence in dealing with cases of the kind.

Very much depends upon the attitude which the physician adopts towards the patient. It is to be remembered that hysterical patients are commonly selfish and self-centred, and that one of the traits of the hysterical mental state is an abnormal craving for sympathy. The physician must adopt a sympathetic attitude towards the patient, and show her he recognizes that she is suffering from a definite disease. The term hysteria should never be employed in her presence, for it is commonly regarded by the laity as synonymous with malingering. Functional disease is the equivalent expression which is to be employed, since its use implies no such erroneous interpretation. Although devoid of precise etiological meaning, it is nevertheless a term which, in the present position of our knowledge, is indispensable. How long it will be before hysteria and malingering are disassociated in the lay mind it is difficult to say, when among nurses and even among medical men they are so often regarded as synonymous. Particularly difficult to deal with, on the other hand, are those cases of chronic hysteria which for years have been waited on hand and foot by their relatives who are ready to gratify their every wish. So satisfied may such a patient be with her existing state that it may be very hard to inculcate in her the desire for recovery, which is the first step requisite in its attainment. The attendant physician is often largely to blame for this state of affairs; it is too often his fault that the patient has become a kind of mollusc. He visits her, it may be, twice a week or oftener, quite pleased so long as she and her relatives are satisfied with his attention, and failing to realize that decisive steps are demanded if she is to be saved from life-long invalidism. An active desire to get

well is indeed the state of mind which is, in the first instance, imperative. Demonstrations of the truth of this assertion are of everyday occurrence in the case of patients suffering from traumatic hysteria who are appealing for compensation. No doubt the attendant worry and, it may be, the prospect of impending litigation retard the patient's progress, but it is beyond question, in the writer's opinion, that the absence of a strong desire for recovery is the main factor which delays improvement in these cases in which recovery is often comparatively rapid after a settlement has been arrived at.

When the physician informs the patient that she is not suffering from structural but from functional disease, she may reply, "Several doctors have told me this before, but what have they done to cure me?" In such cases personal conviction impressed upon the patient by the physician that he not only can cure her, but that he is determined that she shall be cured, may serve to convince her of the truth of his assertion.

A delicate question arises if it happens that the physician in the course of his examination detects evidence of some visceral disease. If, for instance, he finds that the patient has mitral stenosis which, it may be, has given rise to no symptoms, what is he to say to the patient? The cardiac lesion is obviously a concurrent affection in no way related to the hysterical symptoms. This being so, is it advisable to refer to it before the patient? At first sight such a course may seem injudicious, but it is to be remembered that the patient may already be aware of the condition, even though she has given no hint that this is so. If this happens to be the case, and the physician does not mention its existence, she may conclude either that he has failed to recognize it and is therefore incompetent, or, on the other hand, that he has noted it but is keeping the information to himself. In either instance he runs a great risk of losing her confidence. It is better by far to be perfectly frank and to tell the patient of the disease he has discovered, explaining to her at the same time that it is no way associated with her present illness.

The minor forms of hysteria may often be greatly benefited by a few kindly words of advice and encouragement and precise directions as to the daily routine, which will be dictated by common-sense according to the particular circumstances of the individual case. This may be all that is necessary, if it so happens that the patient lives with sensible relatives, who recognize that neither a too rigorous nor too sympathetic attitude is to be adopted towards her, and who at the same time can be depended upon to carry out the instructions of the physician.

When the symptoms are pronounced, and particularly when they are of long-standing, the physician should at once take up a firm position and insist upon a "rest cure," either in a nursing home or hospital ward; for, as Dejerine has shown, these cases do quite as well when treated "behind screens" in a hospital ward as in a private institution. To attempt half-measures and treat the patient in her own home is to court failure. The physician should clearly explain that it will be necessary to treat her for a period of some weeks, during which time she will not be allowed to see her relatives or friends nor be permitted to write or receive letters, while milk will form her staple article of diet. At the same time, she should be informed that her relatives will hear regularly from the nurse or physician as to her progress; and that during this period of confinement, in the event of anything happening in connection with her family affairs which it is important that she shall know, it shall be made known to her. Experience has shown that it is inadvisable to hazard an opinion as to the exact period during which she will be kept in isolation; for while in some cases one month is sufficient, in others three months are necessary in order to effect a cure. Treatment by isolation should only be undertaken after all these points have been clearly explained to the patient, and she has assured the physician that she is willing to submit to his injunctions in full detail and with the co-operation on her part which is required.

Isolation, although now rightly regarded as no more than an adjuvant in the treatment of hysteria, in that it permits of the application of psycho-therapeutics under the most advantageous circumstances, is none the less essential. The patient is thereby removed from the surroundings at home which often play such a prominent rôle in inducing and maintaining her symptoms. Her environment is entirely novel, and all about her tends to give an impression of quiet confidence as to the ultimate result of treatment. The physician has summed up his mental attitude towards the patient, and he has the satisfaction of knowing that she is, for the time being, under his complete control, and that he is thus enabled to instil new impressions into her mind without fear that they will be contradicted or annulled; for he may rest assured that, once he has gained her confidence, she will spend considerable periods of her day thinking over the expressions of opinion to which he has committed himself regarding her condition and progress. The importance of this will be recognized when it is remembered that a prominent characteristic of the hysterical mind is indecision.

These patients are ever ready to be influenced by the last speaker, and constant reiteration is necessary in order to fix impressions which have been made.

The patient is, in the first instance, to be placed in a cheery and quiet room and kept at rest in bed, where she is to remain for several weeks. The choice of a suitable nurse is, as all will agree who have had much to do with these cases, of vital importance, for without a doubt the results of treatment are largely dependent upon her influence. To suppose that any nurse with a good training possesses the qualities required for successfully dealing with cases of this class is altogether a mistake. Indeed, these qualities are rarely met with in combination. The nurse should be of a bright, kindly, sympathetic and sanguine disposition, possessed at the same time of tact and with a firm and decisive manner, added to which a sense of humor will be found to be a valuable accessory. The beneficial influence of a nurse who has had experience in nursing cases of this class, and who in addition possesses the above-mentioned qualities cannot be overestimated. Absolute loyalty to the physician is essential. The nurse's duty is to reiterate the statements of the physician as discretion suggests, to enhance thereby the intensity of the impression he has created, and to cheer up the patient when occasion demands. Above all, she is to avoid questioning the patient as to her symptoms and discussing their possible cause.

Diet is of importance. In the first instance, it is advisable to give the patient milk alone. For the first week, 3 pints in the twenty-four hours (6 or 8 ounces to be taken every two hours) is sufficient. Patients sometimes say that they are unable to take milk, but this will almost invariably be found to be an impression which can be overcome. The quantity is to be increased to 4 pints during the second week. In cases in which there has been much loss of weight, the amount of milk taken may be gradually augmented to 8 or 10 pints in the day. The tongue is to be closely watched and the amount of milk reduced on the first appearance of any gastric disturbance. The rapidity with which these patients put on weight is sometimes extraordinary. A patient, under the impression that she had cancer of the stomach, who was treated by the writer, increased in weight in the course of eleven weeks from 6 st. 7 lbs., at the commencement of the treatment, to 11 st. 4 lbs., this being her normal weight prior to her illness. One great advantage of commencing with milk alone is the moral and disciplinary effect. A more generous diet may be gradually added as the patient improves.

Drugs are unnecessary, unless it be in the treatment of symptoms such as anæmia, constipation, etc., which may happen to coexist and demand attention. It is advisable, however, in the majority of cases to give some medicine because of the mental effect which it produces, for patients, more especially those who belong to the uneducated classes, are apt to think nothing is being done for them unless they are taking medicine. Asafœtida and valerian are from their unpleasant taste sometimes efficacious. The first night after admission either to a home or hospital ward, patients rarely sleep well, and it may be that a sleeping draught is advisable; unless, however, the patient has been in the habit of taking drugs at night to make her sleep it is far better from the commencement to avoid their use. A glass of hot milk in the evening may send her to sleep, and, if this is not sufficient, massage, to which reference will afterwards be made, if carried out late in the day will often induce it. When, in the later stages of the treatment, the patient complains that she is not sleeping so well as she would like, it should be pointed out to her that she cannot expect to sleep so well as if she were taking regular exercise, and that after her discharge she will no doubt find that she is sleeping quite well.

The treatment of the various subjective symptoms of which these patients complain by drugs and local applications is to be avoided, since attention is thereby directed to their existence and their presence emphasized.

Massage is necessary since it keeps the muscles in condition, taking the place of exercise. It should be carried out, if possible, by an experienced masseuse. "General massage" may be ordered for half an hour daily, and, if the patient is not sleeping well, the evening is the best time.

Faradism, although not essential, may be employed, and is of value for the same purpose as massage.

After one very thorough examination it is unnecessary and indeed inadvisable to repeat this at subsequent visits, for such a procedure, and particularly an inquiry as to symptoms, is apt to reinforce their existence in the mind of the patient. By far the wisest course is to allow the patient to make her statement and to ask no questions as to subjective complaints, but to concentrate the attention upon any admitted alleviation of symptoms ascertained from the nurse or volunteered by the patient, and upon objective evidence of physical improvement which the physician himself is able to verify. If, for instance, the patient complains that pain in the head is worse than it was on his previous visit, the physician cannot deny that this is so.

When patients complain that the time hangs heavily, they may be permitted after a few days to read some light literature, to knit, crochet or do some needlework which calls for no special effort, or to play patience.

The major symptoms of hysteria (paralysis, etc.) are dependent upon a fixed idea, and their successful treatment depends upon the physician's ability to persuade the patient that this fixed idea is groundless. Sometimes this is easy, in other cases most difficult to effect. Particularly difficult is it when previous treatment has been directed to some organ, to disease of which the symptoms have been referred. This is notably so in connection with the uterus and its appendages. Cases of hysteria in young women who have been treated for pelvic disease are often most intractable. The writer believes he can say with truth that the only case of hysteria which he has had under his personal charge, either in a nursing home or hospital, and which he failed to cure, was a young woman who had undergone a prolonged course of gynecological treatment.

The following is the general line of argument which has to be adopted in answering the patient's inquiries, and which experience will elaborate to meet the exigencies of individual cases:—"The symptoms you present are due to a functional disturbance of the nervous system, and are not dependent upon structural disease. It is well recognized that by the plan of treatment which I am adopting these symptoms are curable. I have met with many cases almost identical with yours and attributable to the same cause, and I am confident from my experience of such cases that by this treatment the general condition of your nervous system will be improved and that your symptoms will consequently disappear." The first point, then, granting that the patient is imbued with the desire to improve, is to make her anticipate improvement.

The second point is to convince the patient that she is improving. Keeping this in view, the physician lays stress upon any alleviation of symptoms which she volunteers or admits. If, for instance, he is able to assure her that the grasp of a paretic hand is stronger than it was, and particularly if he can demonstrate this by means of the dynamometer, he has made an important advance towards cure. In a case of complete paralysis the use of electricity in demonstrating to the patient the ability of the muscles to contract may be valuable. Any increase in weight is another point upon which great emphasis is to be laid, especially if the patient has lost much flesh during the course of her illness. It should be explained to her that this

increase in weight signifies improvement in her general physical condition, and that as her general condition improves this will react upon her nervous system.

When any improvement is observed, some little relaxation in the rigor of treatment is advisable. Thus she may be promised some extension in her diet, or she may be encouraged by being told that if she continues to progress as she has done, she will before long be allowed to see a friend, and so on.

On each occasion the physician should leave his patient satisfied that he has made some new point, that she has admitted to further improvement, or, at any rate, that he has accounted to her satisfaction for any want of improvement there has been since his last visit. When a relapse occurs the cause is to be sought for and brought to light, whether it be some temporary disturbance of digestion, the occurrence of menstruation, or possibly some erroneous impression she has received from some chance expression dropped by the physician or the nurse, this is to be pointed out. It must be explained to her that in cases such as hers improvement is seldom uninterrupted, that from time to time she will experience bad days, but that these will gradually become less frequent, and finally disappear.

A third stage is attained when the patient begins to take pride in her improvement, and to consider the effect that she will produce when she sees her friends.

Isolation is to be strictly maintained until she is practically well, and even after this period, when she is allowed to see one or two friends and permitted to get up, she should still be kept in the home for a fortnight, during the latter week of which she may be sent out at first driving and later walking with a nurse. Every day something more is exacted of her. The physician must see to it that once improvement commences there is a gradual but steady progression and no lagging. She is to be discharged only after promising that she will follow the precise directions which he has laid down as to her daily routine, which should be based on the general laws of hygiene and, as far as circumstances will permit, on the ideal of the simple life. Finally, the physician must see to it that she banishes for good any ideas she may have previously entertained as to her inability, on the score of ill-health, to lead a useful existence.—*Clinical Studies.*

Progress of Medical Science.

MEDICINE.

IN CHARGE OF W. H. B. AIKINS, F. A. CLARKSON AND BREFNEY O'REILLY.

New Horizons in the Pathology and Therapy of Nephritis.

The classification of the forms of nephritis hitherto adopted corresponds neither to the clinical reality nor to the anatomical and pathological observations. The new classification will have as its point of departure the pathogenetic elements which have produced the disease, because such elements constitute its particular physiognomy. The question of the permeability of the kidney in nephritis is of the utmost importance. The nephritic kidney has not entirely lost its power of elimination. Histological examinations have shown that in the diseased kidney, even when it has reached an advanced stage of degeneration, there still exists a considerable quantity of renal elements in good condition. Experimental pathology has also shown that small portions of kidney are sufficient to discharge the purifying function. A long series of observations, repeated during many years, has proved that, generally, the nephritic kidney is permeable to materials both of mineral and organic origin. There may be suspension of the renal function, due to obliteration of the canalicular system or to an inhibitory action of organic nature. But such retention is not permanent, and after the suspension there is an excretion of materials above the normal.

Maragliano insists on the quantity of imperfect materials which pass in nephritic urine; whereas the same materials do not pass when the kidneys are in physiological condition. Such a fact is placed in evidence by the relation between the total azote and the ureic azote in the urine and blood. It is important to know whether or not the kidney is capable of eliminating organic materials; whether it eliminates all that it should physiologically eliminate.

In conclusion, Maragliano claims that the nephritic kidney is generally permeable; that only temporary suspension of the renal function exists; and that in nephritis, the kidney is the exponent of a morbid state of the whole organism. As the clinical conception of the disease has been changed, so must its prognosis be changed, and we must have more faith in the possibility of cure.

Calabrese states that the therapy of nephritis, especially of chronic nephritis, has been greatly changed in the last few years,

by reason of the new light thrown on the physiology of the kidney. The investigations of Von Noorden in Germany and of Maragliano in Italy show that the diet of the nephritic can be varied with benefit and that one can administer foods, such as meat, which were formerly considered hurtful.

A new question has come forward, since the investigations of Achard, Widal, Strauss and their collaborators had shown the important function of chloride of sodium in regulating the changes in the food materials and in producing edema and the helpful influence of chloride-free diet on nephritic edema. The absolute milk diet still retains its importance in acute nephritis, because of the small quantity of chlorides therein contained. But the milk diet must not be kept up beyond three weeks, because it is poor in iron, because it contains in 3 or 4 litres (the amount necessary for the calories) too large a quantity of albuminoids and of fats, few hydrocarbonates and much liquid. Hence it can be replaced to advantage by the mixed milk-vegetable diet. The milk must be increased gradually according to the patient's tolerance. Then one may add lactose and cream, hydrocarbonates and fats, and especially green vegetables, which contain much iron.

In chronic nephritis one must give the maximum of nitrogenous alimentation (compatible with the functional capacity of the kidney) for the maintenance of the equilibrium of the azote; on the average 70 to 80 grammes of albumen. Not all nephritics behave alike, and a strict watch must be kept over the condition of the digestive tract. There is no exception to the rule that we must exclude broths, game, oranges, alcohol (except wine in moderate amount). Fish may be given. In chronic nephritis, especially in the gouty, arthritic forms, one may obtain benefit from the iodides. In the gouty cases one should add alkalines (except chlorides) to the iodides.

De Renzi has observed that albuminuria sometimes remains after the nephritis is cured, without influencing the general condition of the patient.

Among the factors of nephritis, there is one, too often overlooked, namely, mercury. When a large quantity of mercury is administered, without the existence of a real indication for the mercurial treatment, very often a mercurial nephritis is developed. Stomatitis is the macroscopic lesion which should put us on our guard. In the treatment we must use diuretics, in small doses. Later we may be compelled to suspend even these small quantities, in order to avoid more serious renal lesions.—*Papers read at the 19th Congress of the Italian Society of Internal Medicine in Milan. Translated by Harley Smith.*

OBSTETRICS AND GYNECOLOGY.

IN CHARGE OF ADAM H. WRIGHT, K. C M'ILWRAITH, FRED. FENTON AND HELEN MACMURCHY.

Technique and Indications for the Vaginal and Cesarean Section.

A. Dührssen (*Gym. Rund.*, Jahr. II, Heft. 22) gives the technique of the vaginal Cesarean section as follows: The operation is preceded by an injection of ergotin, an incision is then made on the right side of the vagina through the perineum large enough to admit the fist of a full-sized man. The cervix is now grasped with forceps, and the posterior lip split up to the roof of the vagina; by prolonging this incision backward the cul-de-sac of Douglas is opened, and the peritoneum separated from the uterus. The anterior lip and vaginal junction are split in the same way, and the urinary bladder separated in a similar manner; thus the anterior and posterior walls of the body are exposed for a distance of six centimeters, and this is now quickly incised with a pair of scissors; the resulting opening shows the amniotic sac if that has not yet been opened, and the opening must be as large as a man's fist. A hand is pushed into the uterus; the foot of the fetus is grasped, and the child extracted. The indications for this operation are eclampsia, in which better results are obtained by this method than by any other; placenta prævia when the cervix is not widely dilated enough to allow of the use of a rubber balloon and combined version, or when the delay would destroy the life of the child. The author has never seen lesions of the bladder produced by this operation. In cases of danger to the child alone with undilatable cervix the vaginal section is indicated.—*Amer. Jour. of Obst.*

Post-Partum Hemorrhage.

Dr. Douglas Stewart, in a paper on post-partum hemorrhage, deals chiefly with treatment. He gives the following summary in conclusion:—

1. The term post-partum hemorrhage should be applied solely to a flow of blood after delivery, 1,000 c.c. or more in amount, which blanches the lips, produces air hunger, and which gives rise to the pulse symptoms of severe hemorrhage. Other bleedings occurring under similar circumstances are properly named "excess bleeding," "threatened post-partum" or "traumatic hemorrhage," as the case may be.

2. A good precaution is to allow the mother forty-five minutes rest after delivery of the child.

3. A hemorrhage occurring some hours after delivery may be checked by the administration of an ounce of vinegar by the mouth. If this fails a hypodermic injection of the same, into the uterine wall, is an efficient means of meeting the emergency.

4. A Rose bandage will hold the patient safe, after bleeding has been checked.

5. Threatening or actual hemorrhage at the immediate completion of labor may be forestalled or checked by the application of chloroform to the interior of the uterus, without the sticky black gum consequent upon the use of Monsel's solution or other iron preparations for the same purpose.

6. The writer simply desires to add to other more or less valuable means two simple ones which have served him well, so far at least, in dealing with this rare but always possible condition. However, when it does occur it presents a picture which is finely described by Withington of Boston in these words:

"If the bleeding is not stopped the patient dies at once, even in the midst of the gratulations of her friends on the apparently successful completion of her labor."—*Amer. Jour. of Obstetrics.*

Veronal with Vomiting of Pregnancy.

We extract the three following cases from a paper by A. Reich and A. Herzfeld, of New York:

L. B., primipara, 23 years old, suffering from hystero-epilepsy, for which she was treated with the bromides. Severe vomiting set in during the sixth week of pregnancy, which persisted for two weeks before the first dose of 4 grn. of veronal in hot water was given. The patient took 15 grn. daily for two days. The vomiting ceased and did not recur during the pregnancy.

E. W., 27 years old, 2-para. The patient was formerly a teacher, and was always well, but very excitable and "nervous." Soon after conception there was frequent and severe vomiting. All kinds of drugs were tried. After 2 grn. of veronal three times a day, in hot water, the emesis was checked immediately, and did not recur throughout the entire pregnancy.

H. A., primipara, 35 years old, and the sister of above patient. Soon after conception frequent and severe vomiting set in, which was checked, after the second day, by 2 grn. of veronal every three hours, in hot water. There was no recurrence up to term.

Pelvic Haematocele and Haemorrhages Independent of Ectopic Pregnancy.

Tartanson (*Thèse de Lyon,* July, 1909) has collected 32 cases of this condition, so important both for medical and for medico-legal reasons, adding cases reported since de Rouville's series, Stein's monograph on fatal haemorrhage from uterine fibroids were published, and Jayle's monograph on haematocele caused by the rupture of haematic cysts of the ovary. Tartanson includes twelve examples of haemorrhage from lesions of the ovary, excluding big cysts, as well as ovarian gestation. One case was under his own observation; the patient was a single woman, aged 30, apparently a virgin. She was engaged to be married, and, had sudden death occurred, the question of pregnancy might have come before a court of law. She declared that she had been perfectly regular. A violent attack of abdominal pain set in one night a fortnight after the last period, coming on in spasms, without vomiting or signs of haemorrhage. She was sent into hospital, when it was noted that the abdomen was distended and a firm tumor occupied the hypogastrium. Tenderness was marked, and the patient felt much pain without appearing anaemic. A uterine fibroid was definable, but doughy swelling was detected in the vaginal fornices and fluctuation in Douglas's pouch. Albertin operated, and found a large collection of blood behind the omentum and uterus. The blood did not proceed from the omentum, which was infiltrated with clot, nor from the uterus, which bore a small fibromyoma. It was traced to a haematic cyst of the right ovary. The left was the seat of a similar cyst, as big as a small Tangerine orange, thin-walled, but unruptured; it contained almost pure blood. The cyst in the right ovary had ruptured, and the haemorrhage had proceeded from it. The ovaries were examined, and a series of sections of both cyst walls prepared. No trace of any products of conception could be found; not a single chorionic villus. The uterus, bearing a fibroid as big as a foetal head, was removed with the appendages, and convalescence was uncomplicated.

Death Following a Vaginal Douche of Lysol. A. CHVOJKA (*Zentralbl. f. Gyn.*).

In the Prague clinic the writer was accustomed daily or on alternate days to give vaginal douches of 4 or 5 litres (8¾ pints) of a 1 per cent. solution of lysol to every primipara over 30 as a prophylactic against rigidity of the os. The results were satisfactory until the following case occurred.

During the administration of a lysol douche the patient sud-

denly complained of cardiac oppression. The pulse became infrequent and the face cyanosed, and shortly afterwards respiration was slow and superficial with tracheal rattling. After artificial respiration with massage of the heart the woman regained consciousness and exclaimed that she was dying. Consciousness was again soon lost, and in spite of all attempts at resuscitation death occurred three hours after the injection was given. The child died simultaneously. Post mortem the only abnormality found was that the placenta near the internal os was slightly detached. There was no air embolus.

The injection was given by an experienced midwife in the writer's presence with the patient in the usual examination position. There was no discharge of blood. The only theory which would explain the facts is that the lysol was absorbed from the small area of placental detachment.

The writer has given no intra-uterine douches even in cases of retained and decomposing placenta—during the last 14 or 15 years. The only exception he makes is to give an intra-uterine injection of 50 per cent. alcohol in retention of lochia with pyrexia. Before this period some cases of puerperal tetanus occurred, and all obstetric operations were as much as possible avoided. The results are at least as good as when intra-uterine douches are given and the rigors so common after injections are avoided.—*The Medical Review.*

Editorials.

CANADIAN MEDICAL ASSOCIATION.

For the forty-third annual meeting of the Canadian Medical Association in Toronto on the 1st, 2nd, 3rd and 4th of June, transportation arrangements are in force on the standard certificate plan, with the exception of British Columbia, where the regular summer tourist rate will prevail. All intending delegates should consult with their ticket agents when purchasing first-class transportation to Toronto as to rates, dates of sale of tickets, time limits, and routes. For these purposes the Association and the Canadian Dental Association are coupled, and fare will be single for going and returning if three hundred are present at the two conventions holding standard convention certificates, between Halifax and other Eastern points and Laggan and Coleman, B.C. The first general session will be held on the afternoon of the first day, when the President-elect, Dr. Adam H. Wright, Toronto, will be installed in office, and the opening ceremonies will take place. Following this there will be a report of the Milk Commission by the Chairman thereof, Dr. Chas. J. Hastings, Toronto, and addresses by Dr. Evans of Chicago, Dr. North of New York, and others. On the evening of the first day Dr. Herringham, of London, England, will deliver the address in medicine, which will be followed by the discussion on Dominion Registration. The sections, which have exceptional programmes, will meet in the forenoons. On the afternoon of the second day, Thursday, there will be an excursion to Niagara Falls and a dinner at the Clifton House. The address in surgery will be delivered Friday afternoon by Dr. Murphy, of Chicago, followed by a symposium on exophthalmic goitre, and at 5.30 p.m. the annual meeting of the Canadian Medical Protective Association will be held. Friday evening the address in obstetrics by Dr. Henry Coe, of New York, followed by a symposium on the psycho-neuroses. A general session will be held Saturday forenoon, and about eleven o'clock an excursion will be taken to Guelph to visit the Ontario Government institutions in the Royal City.

THE CANADIAN MEDICAL ACT.

Notwithstanding many bitter disappointments in the past we are very much pleased to note that Dr. Thos. G. Roddick, of Montreal, is still taking a very active interest in certain proposed amendments to the Canadian Medical Act of 1906. Our readers will remember that these amendments were fully discussed at the last special meeting of the Ontario Medical Council, held December 7th, 1909. It was then expected that the proposed amendments would be considered by the Dominion Parliament during the present session. For certain reasons, which will be discussed shortly, the matter was deferred for another year. Dr. Roddick has done magnificent work for many long years in connection with this very important matter. These efforts have been highly appreciated in all parts of the country from the Atlantic to the Pacific. The prospects have frequently appeared very bright, but clouds have suddenly arisen from various quarters. We are authorized to state that the matter will be again discussed at the next meeting of the Canadian Medical Association, to be held June 1-4, at Toronto.

THE CARE OF EPILEPTICS.

It is fairly well known that Dr. J. J. Williams, the Medical Superintendent of the Hospital for Epileptics at Woodstock, holds some strong views with reference to legislation for epileptics. He has referred to this matter in two or three of his annual reports.

He has expressed the opinion that a law should be passed prohibiting epileptics from marrying until at least ten years have elapsed after a previous attack. In his last report he says there is a very prevalent belief among the laity, and also to a limited extent among medical men, that the marriage state will improve the trouble in either sex. Several cases have come under his observation where patients have been advised to marry because it was likely that such marriage would cure the disease.

He admits that occasionally the attacks may be arrested in females, but says they will soon recur in an aggravated form, making life miserable for both the patient and her friends. In addition there is the grave danger of the offspring being affected in a similar manner.

Dr. Williams believes that the epileptic in certain stages of the disease is not responsible for his actions, and at such times he may do injury to himself or others, having no recollection of doing so after the deed has been committed; he may commit such deeds without any motive that can be ascertained. In speaking of these things Dr. Williams has no reference to those cases where epileptics commit deeds under the stimulus of violent anger or excitement.

FILTRATION PLANT IN TORONTO.

Considerable progress has been made in the construction of the Filtration Plant on Toronto Island. A large section of the concrete pipes is laid and the floors of the filtration chambers or tanks are nearly all laid. It is hoped the work will be completed sufficiently to allow the plant to come into operation at the end of the year. The plant covers an area of about ten acres, and will have a capacity for filtering 40,000,000 gallons of water daily. Twelve filtering stations are being installed. When the plant is in full operation one or two of these will be cleaned each day. The water from the lake enters through a steel pipe and will flow into the filtration tanks, these will contain a filtering compass of about one foot of gravel and three of sand, through which water will percolate. It will then pass into the regulator chambers and reservoir. From the reservoir the water will flow through concrete pipes to the regulation houses, where it is diverted to the iron pipes that feed the tunnel.

The filter chambers are arranged six on either side of the regulator houses. They are constructed of concrete with ground floors, and a roof which is supported on concrete pillars. After the filters have been in operation for some time the sand will be removed and new sand substituted. The sand removed will be thoroughly washed and cleansed so that it may be utilized again.

HOSPITAL FOR SICK CHILDREN.

The authorities of this hospital have sent out a very important circular to the physicians of Toronto. It gives full information regarding the modified milk mixtures for well babies, which are prepared in the pasteurization department of the hospital, 253 Elizabeth Street. The pasteurizing plant was installed last October and has been in successful operation since the first of November. The milk is pasteurized on the plan adopted in the Strauss Laboratory in New York. In addition, certain mixtures are prepared in the same department, so that after pasteurization the count is zero. The price for the pasteurized milk is 10 cents per quart, and for the cream 60 cents per quart.

Modified milk mixtures are made up according to five different formulae. The cost of these mixtures is from 5 to 16 cents each, which covers one day's feeding. As a sample of these we will take formula No. 3, containing ingredients for a child 4 or 5 months old, as follows: 16 per cent. cream, 5 oz.; whole milk, 10 oz.; milk sugar, 1½ oz.; lime water, 1½ oz.; boiled water, 38 oz.; fill seven bottles, 5½ oz. each; feed every three hours: price of mixture, 12 cents. A deposit of 42 cents is required on the bottles, which will be refunded when the bottles and stoppers are returned. The hospital does not deliver either milk, cream or milk mixtures, but physicians can obtain any of them by sending to the pasteurizing plant, which is open from 9 a.m. to 5 p.m. daily.

UNIVERSITY OF TORONTO.

At the annual meeting of the Toronto Branch of the University Alumni, held in Toronto on the evening of April 13, some subjects of great importance were discussed. One of the most important of these was the discussion on the standard of the University entrance examination. It was contended that the standard should be materially respected. Nearly all of the subjects now contained in the curriculum for the first year can be

taught in the high schools. The advantages in favor of increased work in the high schools are that in teaching elementary subjects, because of the longer terms, there will be smaller classes and closer personal touch between teachers and scholars. From a medical standpoint it is thought all pupils intending to study medicine should receive courses of instruction in biology, chemistry and physics.

THE ONTARIO MEDICAL LIBRARY.

It fortunately happens that the authorities of the University of Toronto have a very kindly feeling for the Ontario Medical Library and the Toronto Academy of Medicine. Certain negotiations between the Governors of the University and the Trustees of the Academy of Medicine have taken place during the last few weeks. The latter asked permission from the University to put up certain buildings in addition to the one now existing in Queen's Park. They desire to build a stack-room, an auditorium and small rooms for contents, etc. They expect to spend, in all, for this purpose about $25,000 or $30,000. It appears, however, that the University desires to get the lot at present occupied by the Academy as soon as possible. In lieu thereof it is probable that the University will lease to the Academy another lot, which it seems will suit the Trustees of the Academy better even than the present lot. To show that this is a very friendly act and a high compliment to the Academy, it may be stated, that in all other cases the University will take up its leases as they fall due. It is most likely that under the new lease there will be no building restrictions such as accompany all the leases at present in existence.

THE NEW HOSPITAL.

As was expected, the By-law submitted authorizing the grant of a further sum of $250,000 towards the cost of the New General Hospital, April 9th, was carried by a large majority.

The total vote for the By-law was 3,860, against 549. The vote was comparatively small, but the majority something like seven to one was large. The voters opposed to a by-law are, as is well known, more apt to come to the polls than those in favor. It may be considered, therefore, as a result of this vote, that the feeling of the citizens was almost unanimous in favor of the By-law.

It is expected that the total cost of site and buildings will be about two and a half million dollars. Private citizens have contributed $900,000; the University of Toronto, $600,000, and the City of Toronto, $450,000, making $1,950,000 in all. This leaves about $550,000 yet to be raised.

The plans after much careful study, many consultations and many trips to distant cities, have been approved by experts in Canada, and by some of the foremost hospital authorities in Great Britain and the United States. It is generally conceded by all who have examined these plans that the proposed buildings will constitute when built one of the world's great hospitals.

There can be no two opinions as to the site: it is beautifully situated beside University Avenue, close to Queen's Park, and almost exactly in the centre of the southern half of the city. The New Hospital will have 547 beds for in-patients, an out-patient department capable of taking care of 350 patients daily, and accommodation for 16 house doctors, 175 nurses and 100 servants.

AUTOMOBILES FOR DOCTORS.

We publish in this issue an article on Automobiles, which is made up of extracts from a long article which appeared in the Toronto Globe at the time of the Automobile Exhibition Sale in this city last March.

The motor car has evidently come to stay, and the general practitioner in Canada and the United States generally recognizes that fact. It is in many cases a hard wrench for a good horseman to give up his horses for such an unattractive-looking thing as a motor car. The physician or business man of any sort,

for whom time saving means more or less money, is nearly always very well satisfied with the results very soon after his purchase of a good car.

Considering the motor from the standpoint of economy, the greatly increased rapidity in travelling means much to the physicians, especially in cities or towns where they can use their car throughout the whole year. The extra cost in purchasing a motor car, which in the past has been rather a short-lived machine, has been a serious matter for the average physician, but things are looking more favorable in that regard at the present time than they did a few years ago. Cars are cheaper now and last longer than they did formerly. There are now many cars built, or partially built, in Canada. In many cases the various parts of a car are imported from the United States and put together in Canadian workshops. Cars suitable for physicians may now be purchased from $500 up. The cheapest automobiles are not recommended by experts, but very good ones can be purchased at prices running from $800 to $1,200 each.

NOTES.

It is said that what has been talked about for some years will soon become an accomplished fact; that is, that the authorities of Trinity College of Toronto will leave their present beautiful building and erect a new College close to the University of Toronto, with which it is affiliated.

The following were elected April 18th to fill the vacancies occurring on the Council of Queen's University, and will hold these until 1916: C. Y. Chown, Kingston; Reginald W. Brock, Ottawa; W. A. Loggie, L. B. Hamilton, and Judge Fraelick, Belleville; Rev. D. McTavish, Toronto; R. H. Cowley, Ottawa; Dr. W. H. Rankin, Brooklyn, N.Y.; Rev. W. W. Peck, Arnprior, and H. A. Calvin, Kingston.

We are told that the authorities of McMaster University contemplate leaving their present home and erecting a much larger building for their purposes on a site not far removed from the present location. It is also said that the University is consider-

ing the establishment of a new Medical Faculty. A vague rumor of this sort has been in the air for some years, but it is stated that more than a mere rumor will appear within the near future.

We learn from Dr. Brown's monthly report that the average number of patients in the Toronto General Hospital in March was the highest ever known, being 380.87 daily. The attendance at the Outdoor Department was 1,210, as compared with 980 for March, 1909. The Superintendent, in speaking of the needs of the Hospital, said that a Social Service Department was required. By this he means a department in which a doctor and a nurse visit the homes of patients to see that proper food and clothing are provided. Many poor patients are discharged from the Hospital when they have no homes to go to, and some provision should be made for them.

Personals.

Dr. Brett, of Banff, is engaged in post-graduate work in Vienna.

Dr. E. E. Meek has been appointed Medical Health Officer for Regina.

Dr. Jno. T. Fotheringham, of Toronto, left on a trip to Bermuda April 13th.

Dr. and Mrs. Murray MacFarlane, of Toronto, left for Atlantic City, April 14th.

Dr. H. B. Andrew, of Sandbridge, and Dr. T. H. Bethune, of Emu, Ont., have been made Associate Coroners.

Dr. Joachim Guinane has been appointed one of the License Commissioners for Toronto in the place of Mr. Daniel Miller, resigned.

Dr. A. E. McCulloch, son-in-law of Dr. N. A. Powell, has been appointed Superintendent of the new Sanitarium for Tuberculosis in London, Ont.

Much sympathy is expressed for Dr. W. K. Coldbeck, of Welland, who lost two children, a son and a daughter, from malignant scarlet fever in March last.

Sir Edward Clouston has been elected President of the Board of Managers of the Royal Victoria Hospital, Montreal, in the place of Mr. R. B. Angus, resigned.

Prof. W. S. Thayer, of Johns Hopkins Hospital, Baltimore, visited Toronto and delivered a very interesting address on "Functional Heart Murmurs" before the Academy of Medicine.

A new addition to the Toronto Isolation Hospital will cost $74,000. The present building will be used for scarlet fever only, while one portion of the new building will be used for diphtheria and the other for measles.

Dr. T. A. J. Duff (Tor. '09), of Kingston, Ont., has been appointed—after a competetive examination, House Physician to Kings County Hospital, Brooklyn, N.Y. He entered upon his duties April 15th and expects to spend two years in the service.

Dr. J. Gerald Fitzgerald, of the University of Toronto, was married to Miss Edna Leonard, of London, Ont., April 29th. Dr. and Mrs. Fitzgerald have gone to Europe. The doctor will spend about six months working in the Portem Institute, Brussels, and after that he will make a comparatively short visit to Berlin.

The Government of Saskatchewan has appointed a Bureau of Health composed of Dr. Wm. Seymour, Regina, Commissioner of Health, and Dr. W. J. McKay, of Saskatoon, Dr. E. E. Meek, of Regina, and Dr. A. R. Turnbull, of Moose Jaw. The Bureau has decided to undertake an active campaign against tuberculosis under the direction of Dr. Seymour.

Obituary.

OSBORNE TOTTEN, M.D.

Dr. Totten, a well known physician in Western Ontario, died suddenly at his late residence, Forest, April 14th. The cause of death was apoplexy. In addition to his general practice he acted as coroner for his district, and was Government Medical Attendant to the Indians at Kettle and Stoney Points. He received his medical education in Trinity Medical College and graduated M.D. in 1885.

BERNARD S. KERR, M.D.

Dr. B. S. Kerr, of Birch Avenue, Toronto, died March 2nd, aged 73. He graduated M.D. from Victoria University in 1867. He had not been in active practice for several years.

GEORGE C. McINTYRE, M.D.

Dr. G. C. McIntyre, of St. Mary's, Ont., and a graduate of McGill University, died in the Royal Victoria Hospital, Montreal, after a protracted illness, March 6th.

MRS. HUNTER ROBB.

There was probably no woman in North America more widely known and more highly respected than Mrs. Hunter Robb, wife of the well-known specialist in gynecology, Cleveland. Mrs. Robb (formerly Miss Hampton) was born in Welland, Ont. After teaching school for a time at Merritton, Ont., she went to New York, where she spent three years at Bellevue Hospital, and soon acquired a high reputation as a nurse of great ability and exceptional executive skill in connection therewith. She was perhaps best known as the organizer of the Johns Hopkins

Training School for Nurses at Baltimore. She wrote much on the profession of nursing and was connected with many nursing organizations throughout the country, and was a Past President of the American Association of Superintendents of Training Schools for Nurses. Death came to Mrs. Robb in a very tragic way on one of the streets of Cleveland, April 16th, when she was caught on the devil-strip between two trolley cars. The remains were removed to Canada and buried at Welland April 19th.

GEORGE REID SIMPSON, M.B.

Dr. Simpson died at his late residence, 82 College Street, Toronto, April 8th, aged 36 years. He was a son of the late Mr. Jas. W. Simpson, of Hamilton. He received his medical education in the University of Toronto, from which institution he graduated in 1895. After engaging in general practice for some years he took a special course in diseases of the eye and ear and commenced practice in Toronto about four years ago.

We have received from the New York Academy of Medicine a very interesting and useful paper, reprinted from the *New York Medical Record,* giving a list and certain particulars respecting the Medical Libraries of the United States and Canada. In each case the name of the library is followed by the post office address, the name of the librarian and the number of bound volumes.

Selections.

Acute Poliomyelitis.

Because of the successful transmission of the disease to animals, our knowledge regarding acute poliomyelitis has within less than a year been very materially increased. In this country Flexner and Lewis, abroad Landsteiner and Popper, Leiner and Wiesner, Römer, and others, have produced in monkeys experimental poliomyelitis which clinically and pathologically is essentially identical with the disease as observed in children. Experimentally, the affection has been caused in many ways, as by injection of material into the brain, spinal cord, peritoneal cavity, blood-vessels, nerves, and subcutaneous tissues and by feeding. The disease has been transferred from a human source to a monkey, from this to a second animal, then from the second to a third, etc., until in at least one instance a series of seven was attained. This must be regarded as definite proof of what had long been suspected, namely, that the disease is infectious in nature. As would be expected from the site of the lesions, the central nervous system is the chief seat of the virus, and emulsions of the brain or spinal cord are generally used as injecting material. Flexner and Lewis, however, produced the disease in a monkey by injecting emulsion of lymph nodes connected with a nodule resulting from subcutaneous inoculation, and also by using the nasopharyngeal mucosa from an infected donkey. The latter points to the nasopharynx as an avenue of elimination of the causative agent and suggests the possibility of its being also a portal of entry.

In spite of the increased facilities for studying acute poliomyelitis afforded by experimental cases, all efforts to isolate a specific infecting agent have thus far proved futile. It would, therefore, appear that we have here to deal with a member of the ultramicroscopic group of organisms. Statements as to its nature must at present be largely speculative, and in its behavior, as indeed in the lesions produced, it has many points of similarity to rabies. Among these are the following: In each the virus is filterable and in both it withstands glycerinization and desiccation over caustic potash, each acts especially on nerve tissue, and in each that tissue is the surest medium for conveying the disease by inoculation. Histologically, in each disease there are destructive changes in nerve cells, either degenerative

or due to leucocytic or other cell invasion, and in each there are conspicuous circumbascular cell accumulations. Nothing corresponding to the Negri body has been definitely shown in the lesions of poliomyelitis, though Bonhoff found in one case a ganglion cell containing two small bodies that stained red by Giemsa's method. We must look to further experimental studies to demonstrate the causative agent of infantile paralysis. Clinical observations in some of the recent German epidemics of the disease indicate that the virus may be conveyed from one individ' to another by a third person. In these instances the incubation period was ten or eleven days.—*New York Medical Journal.*

Removing a Wax Candle from the Bladder by Means of Benzine.

Dr. Weisz reports the case of a wax candle which a young man of twenty-nine years had inserted in his urethra to make the flow of his urine less difficult, as he had seen his uncle do. The writer of the account of the case cystoscoped his patient and discovered a foreign waxy roll-shaped body, about 4 cm. in size, and floating. He resolved to follow the method of Lenk, who has shown that although the healthy bladder will easily bear 50 cm. of benzine, without marked irritation, in cases of strongly developed cystitis, the mucous membrane reacts more quickly; and, therefore, filled the bladder with 120 cm. sterilized water, on which the candle floated, then injected 50 to 60 cm. of benzine (*Journal of Urology*).

The benzine rose through the water in the bladder, reaching the highest surface, and then acted directly on the candle. In spite of the fact that the bladder was completely distended, the benzine came in contact with only the uppermost, and a relatively small part of the entire surface, which was in a healthy condition. The floor of the bladder, which was severely affected by cystitis, was entirely exempt from the irritation caused by contact with the benzine, and so there was no reason to fear benzine intoxication, as scarcely anything will be absorbed by a healthy bladder. In the case of his patient, the reporter injected 100 cm. sterilized water and then 50 cm. benzine, which was permitted to remain five minutes. The patient felt well and no sign of irritation was observable. Pulse 96. The liquid, evacuated from the bladder, showed two layers; a lower one, yellow (urine), and an upper one, cloudy (benzine with the dissolved stearine). The washing of the bladder was repeated, the benzine being again permitted to remain five minutes—and the return

flow again showed two layers. He made several further injections with sterilized water and dismissed the patient, intending to repeat the treatment the following day, by which time he expected the remaining portion of the candle to become dissolved, and he would eventually be able to remove the short wick with the lithotrite. When the patient made his next appearance he brought the wick, about 6 cm. in length, which had passed out spontaneously while urinating. One week later the patient was in the best of health.—*American Journal of Dermatology.*

Treatment of Epistaxis.

In the *Australasian Medical Gazette* Mr. Jas. Boyd describes a simple method of plugging the nares for obstinate epistaxis which has resisted the usual routine of compression, cold or iced douching, smart purgation, and anterior plugging. He very truly remarks that the operation of posterior plugging as commonly performed is very unpleasant to the patient, and that it requires special instruments, which are nine times out of ten not procurable in an emergency. The plan he recommends is easily and quickly followed, and requires only strips of clean muslin and a pair of dressing forceps; it is said to be almost as efficient as Rose's bag, and hardly more than inconvenient to both patient and operator. A dry piece of fine-starched muslin about six inches square is wrapped round the points of a closed pair of dressing forceps, by placing the latter in the centre of the square and then folding the muslin round the blades umbrella-fashion. This is then passed through the nares until it impinges on the posterior pharyngeal wall; the forceps is then withdrawn. The edges of the muslin are spread out over the face, and the hollow cone inside the nose is rapidly plugged with small pieces of cotton wool soaked in any available styptic-vinegar in default of the more usual astringent drugs. If—says the author—it is not necessary to plug the post-nasal fossa, the muslin can be pulled very slightly forwards after the withdrawal of the forceps, so as to clear the posterior wall of pressure before the plugs are introduced. This is worth bearing in mind, as it avoids the temporary deafness otherwise set up.—*The Hospital.*

Arterio-Sclerosis. By Dr. Laszlo Ketly, of Budapest.

He classifies under arterio-sclerosis all those arterial changes which lead to a diffuse or nodular thickening of the walls, especially the intima, and which are usually followed by fatty de-

generation, sclerosis, and calcification. The process is chiefly a degenerative one, though inflammatory and productive changes are common. Simple hypertrophy of the media and syphilitic arteritis of the medium-sized and small vessels should not be included, as they form distinct and separate processes. In arterio-sclerosis the connective tissue growth is mainly hyperplastic, and the increase of elastic tissue occurs by a splitting off of new lamellæ from the hypertrophied musculo-elastic layer of the aorta or the elastica interna of the other arteries. Arterio-sclerosis results from the mechanical factors at work during abnormal vessel-strain; these factors are caused by increased filling of the vessels and temporary or permanent rise of blood pressure. But, added to this, there is always some local or general weakening, induced by general malnutrition, toxic or infectious processes, hereditary tendency, influence of temperature, etc. A sclerosis marked by degenerative and inflammatory changes above all in the media and adventitia of the thoracic aorta is caused in many cases by syphilis, and the name, productive mes-aortitis, is often applied to this condition. The first signs of arterio-sclerosis show themselves in the elastic fibres of the musculo-elastic layer of the intima and of the media of the aorta, and in the elastic intima of the medium-sized and smaller vessels. The superficial atheromatous degeneration of the intima of the aorta in young individuals is already part of the process. Secondary to the degeneration of elastic fibres there will follow a compensatory, circumscribed, or more diffuse hypertrophy of the intima. If the arteries of the extremity are found diseased, it does not necessarily mean that the aorta or other vessels are involved in the process. Not rarely arterio-sclerosis is complicated by hypertrophy of the left ventricle owing to increased circulatory resistance and renal sclerosis. The importance of splanchnic arterio-sclerosis in bringing about cardiac hypertrophy has been over-estimated.

The most deleterious effect of the vessel-lesions upon the circulation is the loss of elasticity. The impediment caused by this and by the narrowing of the lumen is then compensated for by aneurysmatic dilatation. More work is rarely required of the left chamber, since all vessels are hardly ever affected. In advanced sclerosis of the splanchnic vessels and of the aorta without aneurysm, there is, however, a moderate hypertrophy. In 90 per cent. of uncomplicated cases the blood-pressure is normal. The most common complicating lesions are seated in the heart, but coronary sclerosis is present in only a certain percentage, where there is angina pectoris and cardiac asthma. The remain-

der suffer from the non-typical signs of a chronic insufficiency. In the kidneys there is a tendency toward chronic interstitial changes, which, when fully developed, will again react upon the heart. Cerebral signs often suggest neurasthenia at first, and may later pass over into a psychosis. Involvement of the sensory organs and of the gastro-intestinal tract is less frequent. In certain cases the vessels of the lower extremity are principally involved, giving rise to the interesting symptom-complex known as intermittent claudication. Important etiological factors in general are bodily exertion and nervous influences; besides these, alcohol, tobacco and tea. The diet should be simple and regular, without excessive amount of meat and spices, and fluids need not be cut off unless there is a tendency toward eczema. Attention to the stool is a matter of prime importance. In the early changes, especially in the initial cerebral symptoms, in angina pectoris, etc., iodide of potassium is of signal service. Yet this drug is unable to correct anatomical changes, so that too much should never be expected. Small doses (three times daily half a gramme) are best. There are no other specific remedies, though saltpetre has been recommended. In treating the kidneys, the attention should be directed toward the heart. Here the dangers of increasing the pressure are not as great as generally believed, but excessive rises must be avoided. In early stages of cardiac insufficiency and during convalescence from severe disease, mild carbonated baths are often excellent.—*The Medical Press.*

The Reproduction of a Pain as a Means of Making Differential Diagnoses. H. T. HUTCHINS, Boston. *Boston Medical and Surgical Journal*, January 13, 1910.

Instead of merely determining by examination the actual existence of pain, Hutchins urges that the examiner shall also attempt to reproduce the same kind of pain of which the patient complains. In this way he believes that it is possible to exclude an affection of certain organs, considered as possible origins of this subjective symptom. The necessity of such a differential diagnosis is especially likely to occur in instances where the pain is referred to the right side of the abdomen. The author cites a number of methods whereby the original pain may be reproduced. For instance, the method of Rovsing, in which pressure is made on the descending colon in the direction of reversed peristalsis; confining the gas by pressure of the hand and tapping the transverse colon. In diseases of the cecum and appendix, the actual pain of which the patient complains, will be re-

produced by this procedure. The author also mentions the Rovsing method of air inflation of the stomach by means of the gastroscope, for gastric ulcer; artificial distension of the kidney pelvis to differentiate renal from other disease; distension of different parts of the ureter and of the bladder. In a number of instances, the author has been enabled to make important differential diagnoses by this method of investigation.—*Ex.*

Solid Carbon Dioxide as a Cauterant.

The caustic property of solid carbon dioxide has long been known; it is only within the last year or two, however, that this has been taken advantage of in medicine. Zeisler, in 1908, called attention to the use of liquid and solid CO_2 in various skin diseases; Sauerbruch reported its application in angioma, and, later, Gottheil employed the solidified gas as a cauterant and recorded its use in the treatment of lupus erythematosus. More recently communications have appeared from Sutton, MacLeod, and Morton describing its use in various circumscribed affections of the skin.

Carbon dioxide, or CO_2—popularly termed "carbonic acid gas"—as is well known, can be liquified with comparative ease. The liquid gas is supplied commercially in iron cylinders furnished with a screw nozzle. When this nozzle is opened, and the gas allowed to escape into a confined space, a portion of the gas is converted into a solid "snow." This may be collected and pressed into moulds, when it forms a white solid resembling chalk in appearance. Solid carbon dioxide evaporates very slowly, and can be manipulated with ordinary precautions. When pressed against the skin it acts as a caustic.

In the article by Morton referred to above full and interesting details are given of the technique of its application. Solid crayons of carbon dioxide are made by collecting the snow in a towel and compressing in a vulcanite tube by means of a rammer or piston. Round rods are used for small growths, such as warts; square crayons are more useful when a large area has to be treated, as by their use no intermediate spaces are left. The crayon is held by means of a turn or two of lint wound round it, and the point pared with a knife to any required shape or size. It is then applied to the growth for about 40 seconds; if bone is immediately beneath a shorter application will suffice. On applying the crayon, the depression made by it remains, and the frozen

surface becomes hard and white like china. Reaction sets in soon, the treated area becomes swollen, and a weal forms within half an hour. The application is practically painless. After-treatment consists in dressing with boric acid ointment; if a blister has formed this should be let out. After a few days a crust forms which will come off spontaneously, and the treated area will be perfectly healed in a fortnight.

The treatment finds application chiefly for nævi; for moles and other blemishes it has been very successful, and it has a favorable influence on lupus erythematosus and on lupus vulgaris. It is particularly useful for warts. For these a longer application—one to one and a half minutes—is necessary, on account of the poorly conducting properties of the growth. The crayon should be pressed on the wart until a narrow zone of healthy tissue is frozen around its base. In the keratoses accompanying X-ray dermatitis, brief applications answer well.—*The Prescriber.*

Surgical Suggestions.

Pulsating bone swellings are almost invariably sarcomata.

Do not advise amputation for every case of bone sarcoma—the results of resection are about as good and not nearly so mutilating. Why not use radium?

The administration of thyroid extract in a case of delayed union after fracture will do no harm and may do good.

The exhibition of the X-rays or the Finsen light seems to be the best treatment for post-operative keloids (radium caused).

Cicatricial stenosis of the uterus has been the result of too vigorous curettage and of the intra-uterine application of caustics.

To avoid troublesome hemorrhage in operations for tuberculous glands of the neck first expose the internal jugular vein.

By constipating the patient, a high-seated rectal carcinoma may be pushed down within reach of the examining finger in the rectum. A *small* enema may balloon such a tumor within reach of abdominal palpation.

Preparatory to, and following, operations upon the brain or spinal cord hexamethylenamene ("urotropin") should be administered in liberal doses; Crowe has shown that formaldehyde then appears in the cerebrospinal fluid, and thereby minimizes the danger of infection.—*American Journal of Surgery.*

Miscellaneous.

That Important Rodent, the Rat.

One scarcely realizes the role the rat plays in international sanitation until one studies the rodent in relation not only to plague infection, with which the scientific world is more or less familiar, but in reference to rat leprosy, to bacterial diseases other than plague, ectoparasites, of which fleas are not the most important, and internal parasites infesting the animal. Assuming, as a writer in the latest publication of the Public Health and Marine Hospital Service, "The Rat and Its Relation to the Public Health," does, that there are as many rats as there are human beings, the destruction these cause can scarcely be overestimated. It is therefore easy to see that their extermination is of prime importance, if the human race is to be saved from the dangers of epidemic diseases the most dreaded in history.

A notable advance in devising measures for rat extermination was taken by Denmark, when that country passed a law giving a bounty for every rat delivered to certain designated local authorities. Grants are made to associations for the extermination of rats, to enable them to purchase preparations for the extermination of rodents. Collecting depots are provided in the larger towns, and collecting carts for smaller towns and villages.

In England an incorporated society for the destruction of vermin has begun the publication of a journal to supply trustworthy information upon the subject. "In London," the writer of the article before mentioned says, "the practice of destroying rats on the docks has been systematically carried out by the dock companies at their own expense and under the supervision of the port sanitary authority. In Liverpool and Southampton professional ratcatchers are employed." The United States quarantine regulations, too extensive to quote here, made provisions, April 1, 1903, for the prevention of the spread of plague on ships through rodents.

The precautions against rats at Australian ports are systematically carried out with fairly satisfactory results. Poison baits are used to a great extent in the interior of the country.

South American and West Indian ports are carefully guarded. Panama, especially the canal zone, as might be expected

through the influence of American sanitary officers, is well in the van in instituting measures for the destruction of rats.

In India, the land of mysticism and caste and famine, it was to be expected that the plague would make great inroads. It must be admitted, however, the government has done everything in its power to instruct the people on the necessity for destroying rats as a preventative against plague. In Madras, Bombay, Calcutta rewards are offered for live rodents; but, although thousands were captured, it had little appreciable effect upon the rat population. Religious opposition is most potent in preventing effective measures being carried out.

Chinese authorities are dilatory in instituting proper measures of extermination. Certain ordinances enacted at Yokahama and Nagasaki, Japan, have proven most effective in the latter city, 30,767 rats being destroyed in six months, as a result of the payment of a small bounty for each animal.

Cape Town, South Africa, has no authorized persons to catch the rodents, but the medical officers are requested to take all possible measures to reduce the rat population, with little apparent success.

Alexandria and Cairo, Egypt, are backward in following in the wake of the progressive cities of Europe and America.

No special measures have been taken to exterminate rats in the port of Constantinople, but the sanitary administration of the Ottoman empire has issued instructions to destroy rats and mice on all ships entering port, the expense to be borne by the owners of the vessels.

The vast country of Russia finds the authorities devising measures for destroying patriots, and has no leisure and little inclination to systematically reduce the rodent population. St. Petersburg, one of the poorest regulated, from a sanitary standpoint, of all the world's large cities, has done practically nothing with regard to rat extermination. Odessa is the only city in the empire alive to the necessity of safeguarding public health by the destruction of rodents.

Austria insists on disinfection of vessels every six months, whether they need it or not, which reminds one of the baths taken by certain more or less undesirable citizens.

Italy and Spain have made tentative experiments in destroying rodents, the latter country with poor success.

It is in France and Germany, where, next to Denmark, most attention is paid to the possibility of plague infection by means of rodents, that perhaps the most effective methods of prevention are employed. At Bordeaux "contracts have been entered into

between the government and a private individual for the extermination of rats on all ships coming from plague-infected ports," and in Havre and Marseilles systematic destruction of rats is carried out rigorously in accordance with a ministerial decree of May 4, 1906. At Hamburg and Bremen, the most important German ports, the disinfection of vessels and their cargoes is done with sulphur dioxide.—*Lancet-Clinic.*

The Vomiting of Pregnancy Treated by Adrenalin.

Rebaudi (*Gazz. degli Osped.*) speaks highly of his experience in the treatment of a severe case of hyperemesis gravidarum of more than two months' duration by means of adrenalin in small doses. Various remedies had been tried, and artificially-induced labor was seriously contemplated. In whatever way the drug acts—whether by neutralizing the toxins produced in pregnancy, by toning up the nervous and muscular system, as an antitonic, as a stimulant of tissue change, or as a regulator of the vasomotor system, or in any of the other methods which have been theoretically suggested—the author is convinced of its great therapeutic success in the cure of obstinate vomiting of pregnancy.

The Tuberculin Treatment of Dispensary Patients.

In the *Boston Medical and Surgical Journal* Hawes and Floyd give the following summary and conclusions as a result of their study of this subject:

1. Out of 143 patients with various forms of tuberculosis treated with tuberculin during the past four years, 19 have died, 16 have shown no improvement, while 108 have been benefited to a greater or less degree.

2. In no instance have they been able to see that tuberculin has done the slightest harm; reactions have been rare and invariably of a very mild type.

3. In incipient pulmonary tuberculosis, especially in children, tuberculin is a factor in increasing body resistance and in maintaining this resistance so as to prevent relapses. In more advanced pulmonary disease tuberculin will often alleviate distressing symptoms, prolong life, and occasionally help to arrest the process.

4. In localized or "surgical" tuberculosis, tuberculin has a marked beneficial effect. Its administration should always be combined with hygienic outdoor treatment, and in the vast majority of instances should be subservient to this.

5. Dispensary patients can be treated with tuberculin not only with perfect safety, but with benefit, providing that there is a close personal co-operation between patients and physician.—*Therapeutic Gazette.*

The Automobile Industry.

The day of the low-price car costing less than $1,000 has come to stay. In the large exhibitions cars of from $500 to $950 take up a goodly space, and those of from $800 to $1,000 take up considerably more. What has been true of all other great inventions is rapidly becoming true of the automobile.

The story of the development of the automobile in Canada is but a repetition of the experience of the United States writ small upon the page.

The American Motor Car Manufacturers' Association has just finished an analysis of the American automobile industry which may be given here as an interesting basis of comparison with the trade in Canada. It shows that it has grown from two million dollars in 1898 to one hundred and thirty millions in 1908. The association estimates that there are now about 160,000 automobiles in the United States, or just about twice as many as there are in Europe. Sixty-nine thousand automobiles are registered in New York State alone. There are now 2,500 agents, to say nothing of hundreds of sub-agents. The recent panic showed little falling off in the automobile business, and constantly growing advertising capacity has been a marked feature of the business. No business has ever had so phenomenal a development. It is said that few people have been able to secure any of the three or four leading automobiles since last November, so heavy has been the demand. The same condition prevails with other makes.

Quite contrary to the prevalent idea that the best cars are made in Europe is the fact that in 1907 $5,756,972 worth of automobiles were exported and only $3,157,168 imported.

"It is safe to say," says Mr. Page, of the Chalmers-Detroit Company, "that there will be built in the United States this year two hundred thousand cars. Even the low average of $1,500 for each car would mean an output valued at $300,000,000 for

the United States. Cleveland alone will build more than thirty million dollars' worth of automobiles."

When we turn to the industry in Canada we are forced to admit that we are about ten years behind the people of the United States. Their estimated output of cars in 1898 was valued at about $2,000,000, and if we estimate the value of cars sold in Canada during the year just passed we find that $4,000,000 is a very fair figure. This means that about 2,500 cars were sold in the Dominion during the year, but upon examination it is found that a number of these were imported outright from the United States, and that by far the greater section of the remainder were made up of parts imported from that country and assembled by Canadian manufacturers. It is estimated that 4,000 cars will be sold in Canada in 1910, a fact which implies a still greater importation of parts from the United States, for at the present time the only firm which makes the necessary parts and assembles its cars in Canada is the Canada Cycle and Motor Company of Toronto.

A survey of the Canadian industry goes to show that many of the present so-called Canadian firms are but offshoots of parent American firms, and that the essentially Canadian concern is almost non-existent. It was in the year 1898 that the automobile made its first appearance on this continent.

The year 1905 was an important one in the history of the industry, for in that year the Ford Motor Company of Detroit established a branch in Walkerville, and commenced to assemble their cars in Canada, although no manufacturing was attempted. The industry might fairly be dated from that year, for in 1905 the number of cars sold in Canada was probably not more than 500.

In 1906 the Packard Electric Company, of St. Catharines, made an arrangement under which they began to assemble the Oldsmobile there; and in the same year the Chatham Motor Company began to turn out Chatham cars. Both these concerns ceased operations shortly.

The Comet Motor Company also began to assemble cars in Montreal the next year, using European parts, and continued in business until 1909.

Substantial advance was made in the industry in 1908, when the McLaughlin Motor Company made an arrangement with the Buick Motor Company, of Flint, Michigan, under which it undertook to put American cars on the market under the name of McLaughlin-Buick. In 1908 the Tudhope Carriage Company, of Orillia, began the manufacture of a high-wheeled or buggy type

of machine. The fire which destroyed their plant in 1909 terminated this branch of the business, but it is understood that they intend turning out automobiles in connection with their new business now developing. A similar type of high-wheeled car is also being produced by the Kennedy Motor Company, of Preston. The Reo Motor Company, of Lansing, Mich., has also established a branch in St. Catharines and will assemble there. The rise of the E.-M.-F. Motor Company, of Walkerville, as a branch of the Power Detroit Company is also of this period.

The year 1910 will probably see unprecedented strides in the automobile industry. Already two companies are about to set up plants in Windsor. The Regal Company, of Detroit, plans to assemble its cars there, and a new concern, financed by Detroit and Windsor people, will, it is understood, establish a factory for the manufacture of a car called the Royal Windsor.

It is not fair, however, to judge the Canadian industry by the small number of concerns which manufacture all the parts and assemble the cars. The demand for the automobile in Canada is steadily increasing, and out of the demand for parts a large industry has grown. The Conboy Carriage Company devotes the greater part of its attention to the manufacture of bodies, tops, glass-fronts and other automobile requisites. The Gray Carriage Company, of Chatham also does a large business in the manufacture of bodies. The Dunlop Tire Company, of Toronto, the Gutta Percha and Rubber Company, of Toronto, and the Canadian Rubber Company, of Montreal, are also largely dependent for trade upon the demand for automobiles, while the Goodyear Company, of Akron, Ohio, is establishing a branch for the manufacture of tires in Durham, Ontario. Auto lamps are manufactured by Chadwick Brothers, of Hamilton, and the demand for leather for upholstering has largely increased the business of Marlatt & Armstrong, of Oakville.

The advent of the automobile into Canada has had its effect in nearly every branch of trade. Many firms have felt the influence directly, while on others the effect has been so subtle and indirect as to be discredited. Tires, wheels, bodies and tops are usually Canadian made, and a considerable amount of assembling is done in Canada. In other branches of the business, the tendency is for a steady increase in importation from the United States. The amount of capital invested in Canada is about $4,000,000, and the number of men employed about 3,000.

A point which often escapes attention in a discussion of the automobile situation in Canada is that the good roads movement is at the same time unconsciously a movement for cheaper ma-

chines. Manufacturers and owners are aware that the great obstacle to lower-priced automobiles at the present time is the American tariff of about 33 per cent. Despite the fact that the duty on British machines is but 22 1-2 per cent., it is still necessary to import the American car with its special adaptability to poor road conditions. The British car, on the other hand, is built for the fine roads of England and the realization of better roads in Canada will mean the importation of the British at a considerably lower figure than the American makes.—*Toronto Globe.*

Diathetic Anemia.

Although it is considered an axiomatic principle that successful therapy depends upon the abolition or removal of the causative factor of any diseased condition, it is often the part of clinical wisdom to adopt direct restorative and hematinic treatment while the underlying operative cause is being sought for and remedied. It is of course well understood that the general anemia and devitalization dependent upon and caused by any of the constitutional diatheses or dyscrasie cannot be successfully combated by hematics and tonics alone. In Specific, Rheumatic, Tuberculous, Malignant or Paludal infections, the primal cause must be attacked with all the weapons of modern medical warfare that are likely to be of service, either antidotal or nutritional. At the same time, it is quite certain that a perfectly bland, non-irritant and readily tolerable hemic restorative, such as Pepto-Mangan (Gude), is needed. This palatable preparation of iron and manganese, in the form of organic peptonates, can almost always be given with distinct advantage to appetite, digestion, nutrition and general "well-being," while causative therapy is under way.

Furuncles Treated by Bier's Method.

Bier's method of hyperæmic congestion for all manner of local inflammatory conditions has been so much reported upon and discussed of late that its possibilities, as well as its limitations, are now well recognized by the profession. The treatment of furuncles of the face by this method would appear, however, to offer special difficulties, and a report on a number of cases so treated by Dr. W. Keppler, assistant of Dr. Bier, is not without interest. His report deals with 12 severe cases of furuncles of the upper lip, and 24 cases of a more mild nature, in which the lower lip and other parts of the face were affected. All the

cases were cured by the treatment in the course of four to six days. The technique of the treatment is as follows: an elastic band, three centimetres wide, is applied around the neck as low as possible and fixed at the back by a hook and eye. It need only be drawn moderately tight, as stasis is easily produced in the neck with only a moderate amount of constriction. A compress may be placed within the band. The band should be kept on for 20 to 24 hours. The inconvenience experienced soon passes off The face becomes swollen, and especially the affected parts. At the end of one to three days of hyperæmia the inflamed area softens and suppurates freely, then the discharge diminishes, and is followed by the process of healing. Applications should be made each day, the duration being gradually reduced, till the inflammatory process is at an end and repair of the tissues commences.—*The Hospital.*

Chorea Treated by Psycho-Therapeutics: Milk-Isolation Treatment.

The next patient, gentlemen, is this little girl, aged eleven; she was admitted to the hospital three weeks ago, on May 19, suffering from severe chorea without any cardiac complications. The choreic movements were very marked and affected the limbs on both sides of the body, as well as the face and tongue. You will see that to-day she is perfectly steady, the choreic movements have entirely disappeared, the chorea has, in fact, been cured in two and a half weeks. This is a very striking result, for most cases of chorea continue much longer than this, at all events under ordinary forms of treatment.

Now what treatment would you suggest in a severe case of chorea?

A student. Arsenic.

Another student. Salicylate of sodium.

A third student. Isolation and arsenic.

Dr. B. Up to the present time, arsenic is perhaps the remedy which has been chiefly employed in this country in cases of chorea; it is usually given in gradually increasing doses. The results have been thought to be satisfactory, but I must say, judging from my own experience, I have been disappointed with the arsenical treatment of chorea. Further, I have always had great difficulty in deciding in my own mind whether the improvement, which undoubtedly occurs in cases of chorea treated in hospital by progressive doses of arsenic, was due to the remedy (the arsenic) or to the rest, feeding and general hygienic measures which are concurrently employed.

Another remedy which recently has been given in cases of chorea, it is said with marked success, is salicylate of sodium. You are aware that the heart lesion in chorea—the endocarditis affecting the mitral valve—is indistinguishable from rheumatic endocarditis. Further, it has been shown that the rheumatic organism—the *diplococcus rheumaticus*—is present not only in the heart lesion in cases of chorea, but also in the tissues of the brain. Chorea is, in short, a rheumatic condition, hence the employment of salicylate of sodium in chorea.

For some time past I have been treating cases of chorea in the same way that I treat cases of functional nervous disease, viz., by psycho-therapeutics, isolation, large quantities of milk, and hypodermic injections of water. The results in some cases have been surprisingly good; the present case is perhaps the most successful that I have yet had.

As I have already told you, the patient has been three weeks in hospital. When she came in, she was suffering from well-marked chorea; for the first four days after her admission, she was treated by arsenic, 2, 3 and 4 minims being given, three times a day. On the fourth day of this treatment, I saw her for the first time and advised that the arsenic should be discontinued and that the psycho-therapeutic plan of treatment with isolation and milk should be commenced. The patient was told that she would rapidly get well, that she would be kept behind screens until sufficient improvement occurred, and that she would be treated with hypodermic injections and have large quantities of milk to drink.

Under this treatment striking improvement rapidly occurred and to-day (2½ weeks after the commencement of the treatment) she is, you will see, perfectly steady and the chorea is apparently cured.—*Dr. Byron Bramwell in Clinical Studies.*

Doctor Vance May, of Cornettsville, Ind., in treating a case of saccharine diabetes of long standing, in which he found a good deal of albumen present, as a result of an old gonorrheal inflammation, says the use of a few bottles of sanmetto so cleared up the urine that he could find no strings of mucus, nor the least trace of albumen by heat or nitric acid test. It also afforded a world of relief to his patient who had been suffering for years with his bladder.

The Nephro-Toxic Action of Flesh-Meat.

Linossier has recently reported to the Académie de Médecine de Paris some interesting experiments with regard to the nephro-toxic action of various meats. By subcutaneous injection of an aqueous extract of hashed meat he has been able to produce albuminuria in rabbits and guinea-pigs. The minimum dose necessary to cause this condition is very variable even when the same kind of meat is used to prepare the extract, a fact which must be attributed as much to a difference in the renal resistance of various animals as to variations in the toxicity of the meat. Albuminuria appears very quickly after the injection, and only lasts a few hours. It is impossible to cause a typical epithelial nephritis or a permanent albuminuria, even with repeated injections, the animal always dying with marked symptoms of anaphylaxis before such a condition is reached. After contact with natural or artificial gastric juice for two hours the nephro-toxic action of the meat extracts is destroyed, but contact with alkaline solutions does not produce this effect. It would therefore seem that the action of the fluid extract is not due to the extractives contained in the meat, since these are unaffected by gastric juice, but to an inherent property of the albuminous material itself. It is probable that man acquires toleration to the toxic action of meat, but this does not mean that heavy meals can be habitually indulged in with impunity. The accidental and excessive use of meat by a vegetarian would probably be productive of harm, but it is fair to suppose that regular and properly graduated meat diet would be beneficial to a nephritic. —*The Hospital.*

Von Pirquet's Reaction in Lupus.

This reaction has not proved very satisfactory in the diagnosis of visceral tuberculosis. G. Define (*Giorn. Internaz. d. Sci. Med.*), has tried it in a number of chronic skin diseases and finds it more satisfactory. The reaction was positive in all of 50 patients with lupus; in 1 of cutaneous tuberculoma, 1 of erythema iris, 1 of psoriasis, 1 of vitiligio, and 3 out of 23 cases of syphilis. If the positive reaction is mild, it takes the form of a papule appearing in twenty-four to thirty-six hours and vanishing after ten or twelve days. When it is more marked there is oedema round the papule, at a maximum on the second or third day, and the papule disappears in fifteen or twenty days. When the reaction is severe a phlyctenule appears, rupturing in a few

days and scabbing over; the last traces disappear in about a month. All these reactions appear within thirty-six hours; in a few instances Define has seen a "late reaction," a slight red papule forming after four or five days and lasting ten days or so. This he counts as a positive result. His inoculations (101 patients) produced no complications, no fever, and no discomfort beyond a slight itching in a few instances. He used "cutituberculin" from the Pasteur Institute at Lille, scarifying the skin in four places, not deeply enough to draw blood, inoculating two, and putting on a sterilized dressing. The skin was first cleaned with ether.—*British Medical Journal.*

The Relation of Alcohol to Immunity.

Parkinson reaches the following conclusions in an article contributed to the *Lancet* of November 2, 1909:

1. Alcohol in small quantities has no action upon the phagocytic activity.

2. It has no action on the phagocytic activity until it is present in 12.5 per cent. strength.

3. Small quantities of alcohol injected into rabbits may stimulate the production of antibodies temporarily.

4. A large dose of alcohol lowers the opsonic index for twenty-four hours.

5. Continuous moderate doses of alcohol cause a permanent lowering of the opsonic index.

6. The reacting mechanism to vaccines is much less effective in alcoholized rabbits than in normal rabbits; the difference is still more marked when living micro-organisms are used.—*Therapeutic Gazette.*

Caisson disease seems destined to be of increasing importance because the progress of civilization and the congestion of population are creating more and more need of tunnels and bridges, the construction of which requires the laborers to work in compressed air at great depths. The cause and prevention of the disease are well known, and yet, in spite of all precautions, cases continue to be produced and show the need of further investigation. It seems a simple matter, yet there are curious accidents proving that it is far from simple, and that there are individual as well as seasonal variations in susceptibility. Under compression more gases are dissolved in the blood, and if decompression is rapid, these gases must escape as when a champagne cork is withdrawn, and the bubbles of gas in unyielding cavities