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SPINAL INJURIES EXTERNAL TO THE SPINAL CORD.*

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PROGRESSIVE study of trauma of the rachidian structures has, of late years, become a subject of more than passing interest to practitioners; because, since the enormous expansion of every description of railroad traffic in this country and the erection of buildings of great height, the number of serious spinal traumatisms has greatly enlarged.

Structure and Function.—In order to intelligently acquaint ourselves with the character of the primary pathological conditions succeeding rachidian injuries, it is well that an outline of structure and function be briefly considered. At the outset let us note that the spinal architecture in man presents several special and unique characters; hence we must exercise a prudent reserve when we assume to apply the deductions derived from deliberately inflicted traumatisms on the lower animal to grave spinal injuries in the human being.

In man the vertebral column occupies a vertical position resting on two supports. It is a flexible, tubular pyramid, its body being composed of a composite structure without any regularly constituted articulations. About two-thirds of the vertebral column is composed of osseous tissue, and one-third intervertebral substance. The osseous spines and arches posteriorly are jointed.

Although of great strength, the spine is in a large degree elastic and resilient. Within this osseo-cartilaginous cage securely guarded and deeply buried, is the medulla-spinalis, surrounded

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by a fluid continuous with the cerebral ventricles through the foramen of Magendie. A ponderous musculature supports and acts on the spinal column. The extrinsic structures have an abundant vascular supply from vessels within and external to the vertebral hollow.

Defences of the Spine.—Although the spine is composed of so many different structures, lying apparently so near the surface, no region of the human body can resist violence with so much impunity; the sudden sinking of the head on the shoulders so safeguards the cervical segment that a serious injury, except by indirect force, is seldom encountered. In the dorsal areas we note the frequent injuries of the shoulders, their appendages and the ribs; or even serious damage to the thoracic contents, but the rachidian structures have escaped.

Nearly every description of abdominal injury have I seen from violent blows and crushes, but never an associate injury of the dorsal or lumbar vertebræ, except in mortal cases. Nothing less than great and direct force can sunder the sacrum or its caudal appendage, the coccyx.

The Spinal Cord.—The vertebral hollow contains the greater part of an organ of the very first importance to life, which is not only a conductor of impulses, but also regulates all the processes of nutrition and governs all vital actions, as from ganglia directly connected with it springs nearly the entire nerve supply, general and special. Delicately organized as the cord is, it is endowed with a remarkable tolerance to injury; besides it undoubtedly possesses active regenerative properties. The spinal cord, in the vertebral canal and at the base of the skull, is vastly better protected from violence than the brain proper. The entire cord weighs a little more than two ounces, is pierced by a central canal and is suspended in the subarachnoid fluid, steadied and supported by its roots. Hall has pointed out that all the cranial nerves, except the optic, olfactory and patheticus, have their origin in the bulb; hence, should the brain be removed, even in a warm-blooded animal, life would yet remain, as respiration and the circulation would continue. The cord has a head, a body, limbs, and a tail; all but the first are in the vertebral canal.

Extrinsic Lesions of the Spine.—At first thought, it might seem impracticable or inexpedient from an anatomical or physiological standpoint to discuss separately the traumatisms of the cord and those of the parts overlying it, the *extrinsic;* but as a matter of fact, while central lesions from traumatism, involving paralysis, are uncommon, those of the external structures are comparatively infrequent. My purpose on this occasion will be to touch very briefly on the extradural lesions, chiefly on those which do not manifest themselves by paralysis. These in their order of frequency are: First, contusions; second, sprain; third, hemorrhage;

fourth, fracture; fifth, diastasis, fracture-luxation; sixth, lesions complicating spinal injuries.

Contusions.—Contusions result from blows, falls or crushes. A violent blow over the upper cervical areas of the spine may result in serious consequences, for here are lodged the large cervical ganglia of the sympathetic; the roots of the phrenic nerves are in close proximity to the ganglia of the vagi. In a violent blow the hollow organs of the neck, the pharynx, esophagus, larynx and trachea usually escape damage.

The Effect of Shock and Contre-Coup Force on the Viscera of the Cavities of the Chest, Abdomen and Pelvis.—Disastrous consequences sometimes result from the *contre-coup* effects of a blow. Therefore, in the dorsal or lumbar and sacral regions the organs of the thorax, abdomen or pelvis may suffer varying degrees of disorganization, while the rachidian structures have escaped damage. By this quality of force applied over the thorax, the posterior mediastinal space may be opened, the pleura or lung lacerated, the kidney contused or displaced, the distended stomach ruptured; the pendulous organs, as the liver, the spleen, may also suffer from the effects of the disorganizing force.

Similar effects may occur when the force falls over the loin, or hypogastrium, notably, to the solar plexus, the pancreas or the great blood trunks. In the female, a violent blow over the sacrum may displace the ovary or the uterus, and in any stage of pregnancy induce premature delivery.

The most ordinary effect sustained after spinal contusion is subcutaneous, intermuscular, extra or intra-rachidian hemorrhage. Inflammatory reaction with spasmodic contraction and rigidity of the muscles speedily supervenes. Extrinsic rachidian contusions, while they sometimes cause severe suffering and impairment in function, may be generally regarded as belonging to the minor class of spinal traumatism, when there are no visceral complications.

Spinal-Sprain, Wrenches of the Back.—By sprain we usually understand an injury of a joint produced by a wrench or a twist; sometimes just short of a tangible fracture or luxation, though it may be more serious in its consequences than either. In the spine such an injury involves several joints. Sprains frequently involve a splitting or clipping of bone, an over-stretching or a rupture of muscle ligaments or tendons. They are often self-reduced luxations, the displaced bones having automatically sprung into place. So-called "sprains" are without doubt one of the most frequent determining factors in serious types of Pott's disease in early life; the finer, deeper structures having sustained damage, while no obvious evidence of it remains on the surface after injury is inflicted. A very severe spinal sprain in the adult may lead to deformity, to ankylosis, to myotrophic changes in the soft parts

and ultimate impediment in function. Moliere well says that "We may properly observe an attitude of reserve in the prognosis of *entorse*, torsion or violent flexion of the rachidian structures, especially in young subjects, as at a period more or less remote from injury, ankylosis, necrosis or suppuration with symptoms of Pott's disease may set in." He relates an instance which so well illustrates these sequelæ that it is here transcribed: "A young man aged 23 fell a distance of forty-five feet, striking on his shoulder. For months he felt no inconvenience, when finally, he noted trouble in urinating. Now, anesthesia in the limbs with some pains in the back set in. After a while the medullary symptoms passed off, the *loco-dolenti* leaving a well-marked projection of the apophyses of the fifth, sixth and seventh spinal vertebræ. He later completely recovered his former activity and vigor. Tuffier, Hallion and Gurlt have recorded several similar examples of this class. Chadevergue and Bonnet insist, after their experimental reseaches on the cadaver, that *arrachement*, straining or tearing of the ligaments, occurs more frequently than fracture, and that in the dorsal region, particularly, it may be often observed, while the interstitial discs and bodies escape damage.

Severe sprain of the cervical segment of the spine, without fracture, in adults is probably very rare. In the dorsal areas partial fracture, or a non-displaced one, of an arch, or spur, may be often mistaken for a "sprain"; in fact, they often go together. Minor degrees of sprains occur most commonly in the lumbar region, and here is where we sometimes witness an injury which, clinically, closely resembles the joint-sprain of a member.

Fortunately at this point the medulla has broken up into a leash of independent trunks—the cauda-equina. The canal widens and the rachidian column begins to broaden, as it reaches the sacrum. Here we note a larger degree of motion. The lateral costal supports being absent, a considerable degree of lateral and rotary movement is permitted. In fact, we may regard this bond as the *lumbar neck* of the spine, inasmuch as it unites the thorax with the pelvis, and, moreover, within certain limits, allows of all the movements of the cervical isthmus.

A serious sprain may result here, from a sudden and violent bending backward of the trunk on the hips, or from an acute lateral flexion. The simple, common sprain in the "small of the back," most frequently follows from attempting to support great weights on the upper dorsal parts; raising heavy loads in lifting, the performance of difficult acrobatic or gymnastic feats. The patient is at once seized with an agonizing pain in the lumbar muscles; he is bent up and only moves with great pain. He quite invariably will say that he felt "something rupture," and, no doubt, there has been a giving way of some of the supporting structures,

with an extravasation of blood into the intermuscular spaces. In some cases the deep nerve roots have suffered from over-tension, and hence neuritis follows. Mothe and Siedellot regard this type of sprain as dependent on rupture of muscles, while Lieutaud and Ponteau believed it was caused by dislocated muscles or tendons. In 1873, Martin, of Lyons, wrote at length on spinal sprain, dealing fully with its etiology, diagnosis, pathology and therapy. He agreed with Ponteau in the luxation theory, alleging that this was invariably attended with widespread muscular spasm which produced marked flexure, or even lateral spinal curvature. Savery insisted that in various cases of severe spinal sprain, though the subject might be about soon at his usual occupation, insidious pathological changes may be in operation, which ultimately lead to possible serious central disease or great impairment to the action and strength of the back. This injury may be inflicted while the individual is in an emotional state, when he remans quite ignorant of the severity, till the following day or even much later.

This important feature of these cases was brought out in a case coming under my observation three years ago. The patient was a young man, 30 years old, when I saw him in consultation with Dr. James Moran, of this city. He was a hearty, vigorous person, a bricklayer by occupation, who was injured in a railroad accident a week previously.

History of the Case.—On Sunday evening, a week before, the patient was in a crowded, open trolley car on his way home from the seaside. He was standing with a firm hold on one of the uprights at the end of the seat. The car was moving on a downgrade, with great speed and about to enter a curve, when another car just ahead came in view. The motorman quickly set the brakes. A collision was inevitable. When the clash came, the man held to his post, but the motion swung him over to the seat ahead, and threw him on his shoulders, down by the roadside under another passenger. An ambulance was soon called, but, as he only felt a violent shaking up, he refused to be taken to the hospital and made his way home. Soon after he had free vomiting with great pain in his back just below the shoulder blades; but regarding his injury as only a simple sprain, domestic remedies were applied and he remained quiet. On the fourth day he called Dr. James Moran. Three days later I was called in. At this period both his general condition and the local state of the back, pointed unmistakably to severe spinal injury. At the lower dorsal region, the parts were tumefied and discolored, the muscles marked by severe spasm, and the body so bowed as to give him the most relief. There were no medullary symptoms. It struck me as an ideal instance of severe extrinsic injury, and so I declared it.

After six weeks' rest he so far recovered as to be able to walk about, but movements of the body, except in a bent position, were

painful. After six weeks he had quite recovered, except for a well marked limitation of movement and strength in the back. Now, a well marked kyphos had formed, the projection including the last dorsal, and the first and second lumbar vertebræ.

SECOND CASE.—*Fracture of Right Clavicle with Cervical Sprain.*—Patient 32 years old, driver of an ice-cart. Was injured on May 12th, 1902, by being thrown out, while intoxicated, striking on his right shoulder and side of the head. Sustained fracture of the right clavicle near the middle. The day after admission to the hospital, he complained of a sense of numbness in both hands with muscular weakness. On left side anesthesia extended up as far as insertion of the deltoid. Pain with rigidity of the muscles compelled him to keep the neck in a flexed position. After nine weeks the cervical segment had recovered from the painful rigidity and sensory paralysis had passed off in the right fore-arm, but some numbness remained in the left fore-arm, and the grip of the hand remained very feeble. Over the spines of the sixth and seventh cervical vertebræ there yet remains a well marked tumefaction exceedingly sensitive to pressure or manipulation.

In this latter instance, of clavicular fracture, with spinal sprain from a fall, it is evident that the fall on the shoulder spared the spinal cord from more serious damage. When fracture of the clavicle occurs through the outer third of the shaft we sometimes note varying degrees of impaired function in the arm, resulting from the brachial plexus being crushed or pressed upon by the fragments, but in this case palsy was most intensified on the left side which pointed to a central lesion, and not one of the brachial nerve-cords. I may add, that in this instance the patient suffered for three weeks most intense pain, from the fourth cervical down to the first dorsal vertebra, and there was marked rigidity with tumescence of the overlying parts.

Spinal Hemorrhage—Extra-Dural.—There is no variety of traumatic-hemorrhage about which more confused ideas prevail, than that which so often follows severe spinal injury. The usual conception of it is so vague that but few really appreciate what its full meaning implies. Nature abundantly provides for the "man who carries the load," for that column which supports every organ and structure of the body above the femoral crutches. The parenchyma of no organ of the body is more abundantly supplied by the vascular tide than are the rachidian structures. Arterial blood pours into the overlying structures of the cord from every direction, and the intrarachidian plexus of veins is very capacious. The cervical segment of the cord derives its arterial supply quite exclusively from the large descending divisions of the vertebral, the dorsal from the intercostal, which subdivides into three branches: (*a*) anterior, which ramifies over the vertebral bodies;

(*b*) a posterior, or retro-dural, which splits up over the walls of the spinal canal, anastomozing with arteries from above and below; (*c*) a middle or medullary. pierces the sheath of the dura mater, to enter the cineritious substance of the cord, anastomozing with the anterior spinal in front and the posterior behind. Branches of the lumbar arteries, eight in number, supply the vertebral bodies and ligaments only. Large branches from the internal iliac abundantly supply the sacrum, its nerve trunks and the coccyx. In no other region will we discover so free anastomosis between the large arterial and venous capillaries. So keenly alive are surgeons to this anatomical fact, that they are always

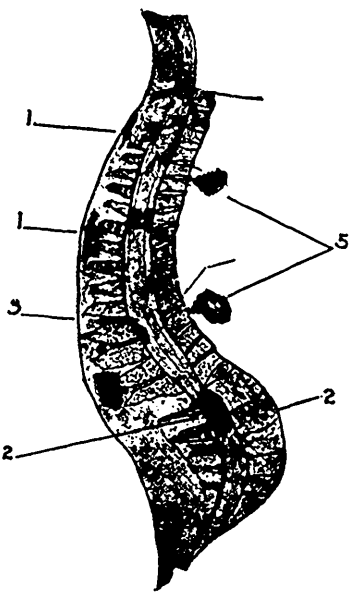

FIG. 1. Spinal Hemorrhage Types.

1. Extrarachidian.
2. Intrarachidian.
3. Intra and extra rachidian.
4. Hematomyelia.
5. Intrathoracic and abdominal.

impressed by a salutary dread when they essay to expose the spinal cord, for no other organ in the body is more inaccessible to the scalpel in the event of an excessive vascular leakage. Sir Victor Horsley sets this down as one of the greatest dangers of laminectomy. A plexus of very large veins courses freely over and under the vertebral walls. Zappy said that intrarachidian veins when fully distended occupy quite one-third of the spinal canal.

On the Usual Situation of Spinal Hemorrhage.—Over the cervical areas the deeper tissues are a veritable sponge, much like the cavernous, for vascularity. In my own first case of laminectomy for fracture, before the shattered arches could be removed—

fifth and sixth—in spite of all possible haste and provisions to effect hemostasis, our patient was nearly mortally blanched; and yet, paradoxical as it may seem, in no other organ of importance do we discover so inadequate a vascular supply as in the *medulla-spinalis* itself. In this respect, as in so many others, does this structure differ from the brain, a continuation of which it practically is.

From the foregoing it is, therefore, manifest that in the infliction of great violence to the spinal pyramid, some type of hematorrhachis, rather than hematomyelia, must be, by all odds, the most frequent; or in other words, it is rather extrinsic than intrinsic bleeding. This holds good of the lower lumbar and sacral terminus, peculiarly where the cord has broken into large trunks, and hematorrhachis or hematomeningia only can occur. In this connection the high vascularity of the coccyx and Luschka's gland is noteworthy. Of hematorrhachis we have three types: First, into the intermuscular planes—extrarachidian; second, into the spinal canal—intrarachidian; third, intra and extrarachidian combined. The first is the most frequent and insignificant in its effect; the second, epidural, when sudden and of large volume, is always a much more serious event; the third is seldom witnessed, except in association with fracture, severe contusion or sprain.

The pathological effects of hemorrhage are, first, the drain on the circulation; second, by acting as a foreign body, inducing pressure, thereby inhibiting function, or by its presence provoking inflammatory or degenerative changes; the latter effects only are in operation after extrinsic, spinal traumatism. The composition and functions of the spinal hollow are not such as to favor large hemorrhage. This is a hermetrically sealed passage, containing a fixed motionless organ. Hemorrhage into this tube is usually venous, and hence passive. There is no torrent. The blood coagulates slowly here, and often imperfectly, being of a tarry consistence, rather a firm clot. Bichat estimated the capacity of this canal, with the cord *in situ,* at a hundred and seventy cubic centimeters.

What part sanguineous pressure exercises here, *per se,* as a compression agent in impeding nerve conduction, is not definitely determined, because in many instances there have been other associate etiological factors in operation, of which the blood-leak is in a large measure but a consequence. There is but a very little analogy between this type of hemorrhage and intracranial, because of the wide contrast in the anatomical arrangement and structure of the vessels.

The most usual site of severe traumatic hemorrhage is extradural. In fractures of the spine and other forcibly induced injuries of the rachidian structures, on anesthetized animals—dogs

and cats---I saw no single instance of large intradural hemorrhage, on autopsy, except when fracture was present. In one case, it was at first supposed that there was no fracture, but on removing the vertebral column, one was discovered extending through the body of the seventh dorsal vertebra. In nineteen autopsies on those dying from spinal injury accompanied by extra-dural bleeding, a fracture co-existed in all cases. It is doubtful if the cord, or any section of it, can be strangled and its functions suppressed by an effusion of blood, external to the dural envelope. But after the membranes or medulla itself have suffered from violent tension, torsion or contusion, a large hemorrhage then greatly aggravates existing conditions, giving rise to grave complications, by the immediate suppression of function, or by exciting an ascending meningitis or myelitis.

From the comparatively frequent occurrence of cerebral hemorrhage in cranial traumatisms, we have been led, too often, to

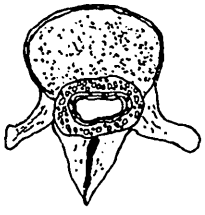

FIG. 2. Circulation in the rachidian canal.

FIG. 3. Comparative capacity of venous and arterial circulation.

assume the existence of "spinal apoplexy" after injury; and that the bleeding has been into the substance of the cord rather than external to it. This was what I looked for in my early hospital experience, in autopsies on those who had succumbed from violent injuries of the spine.

In 1893 I published notes of fifteen autopsies on this class, besides on fifty-five cases of spinal injury which recovered or remained paralyzed. My views on the subject then were as follows:

"I have never met with a single case, on autopsy, which gave conclusive demonstration of a free hemorrhage, which was exclusively limited to the spinal marrow, or subdural space, in which the leakage was of sufficient volume to seriously threaten the integrity of the cord by immediate pressure, or to excite consecutive inflammation. On the contrary, in all my cases of spinal hemorrhage, in which *post-mortem* examinations were permitted, the blood escape was external to the theca; extra-dural.

"We can seldom have extra vertebral hemorrhagic pressure as an independent factor in spinal injuries. When such does exist, it is always in association with either fracture or dislocation.

"Hemorrhage into the spinal canal—extra-dural—as a source of meningeal inflammation, or medullary compression in traumatisms of every description, in point of frequency, vastly preponderates.

"The physical quality of this pressure is hydrostatic; anatomically consisting in most cases of arterial blood, in a fluid or coagulable state.

"The ultimate fate of one, the subject of traumatic spinal hemorrhage, will depend on various factors, the most important of which will have reference:

"1. With respect to situation and extent.

"2. The suddenness of its onset, or its insidious development.

"3. The general condition and complications."

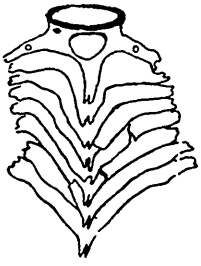

FIG. 4. Fracture of the arches - cervical region.

FIG. 5. Spinal arches removed and cord showing vertebral bodies.

My experience since that time has been along the same lines. It has been a source of much gratification to me to have learned that most surgeons and pathologists quite generally agree that *hematorrhachis* and not *hematomyelia* is the dominating vascular lesion here. Dr. Seymour Sharkey goes so far as to say that there is no case on record of death from a primary hemorrhage into the medulla-spinalis. Charcot expresses a doubt that such a condition ever existed, and believes that such hemorrhage only occurs after softening or consequent on myelitis. In those examples of large and sudden mixed bleeding into the spinal hollow, grave symptoms may quickly supervene.

In a case published by Mellor, after a fall from a cherry tree, a man was seen paralyzed. He had great pain in the neck on movement. On the seventh day a bed-sore appeared. In three months, complete recovery. Hoch gives an example of the less acute type. His patient fell about ten feet, striking on his back,

got up, no immediate trouble, but three weeks later was seized with severe pain between the shoulders, and contraction of the brachial muscles, and later had paraplegia. Recovery ensued with some paresis of the arms remaining over a long period. In another instance, a man fell from a train in motion, but apparently sustained nothing more than some slight bruises. On the night of the seventh day he awoke to find complete paralysis of the right side. Later, recovery was complete. Reynier and Lepine have published some remarkable examples of the acute and consecutive varieties. In May, 1900, a young man came under my care, who had of late fallen about fifteen feet, striking on his head and shoulders. In great shock, when he was brought to the hospital; quite complete motor paralysis, with loss of the patellar reflexes. Had to be catheterized. On the second day, temperature 104 F.; pulse, 110. Great pain between the shoulders, right arm drawn up over the chest, and rigid. After ten days, amelioration of all his symptoms set in, and on the thirty-second day, he left the hospital quite fully recovered. In some of these cases, it is highly probable that there is a small subdural hemorrhage, coincident with the external. Bastian supports the view that intra-dural hemorrhage is rare here; this, he thinks, is because of the consistence of the cord, as compared with the brain, and the richer supply of connective tissue around the blood-vessels. Gowers regarded severe hematomyelia as rarely primary and never traumatic. Erichsen divided spinal hemorrhage into three types: the first into the canal, the second into the theca-spinalis, and the third into the cord; the latter never, except after very grave traumatism, with fracture.

M. Lambert, of Lille, saw a man, who that day had sustained a violent spinal injury in the upper dorsal region, with paraplegia and complete loss of the reflexes following. It was intended to operate the next day to relieve what seemed to be osseous pressure of the cord, but he died the same night of bulbar paralysis. On autopsy, only a simple extra-dural effusion of blood was found, extending from the third to the fifth cervical vertebra. There was no visible alteration of the cord or bulb. From the autopsy findings in this case, this author is led to believe that acute hemorrhagic compression of the cord, is ample to produce paralysis or death, without any serious structural alterations in it.

In conclusion, we may summarize that extrinsic rachidian hemorrhages appear in the form of, first, intermuscular effusions of blood or hematoma, succeeding laceration of muscle, cleavage of bone or rupture of ligament; second, intra-rachidian hemorrhage from rupture of the larger intra-dural plexus of veins; third, a co-existing hemorrhage from the large connecting vessels lying between extra-vertebral and the rachidian plexus; fourth, non-complicated, intra-rachidian hemorrhage is seldom the cause

of grave central lesion; in the moderate type recovery is the rule. Meningeal or medullary hemorrhage, all authorities agree, can rarely occur as a primary lesion, after trauma, except in the event of fatal destruction of the medullary elements.

Extra-dural hemorrhage is seldom a cause of inhibiting function, except when sudden, primary and of large volume. In the lumbar or sacral segments, hemostatic pressure—hematorachidian—seldom operates alone, as an inhibitory influence on the nerve-cords, as in this situation the intervertebral apertures are so large as to permit of a free sanguineous escape into the loose connective tissues along the lateral and posterior walls of the vertebra; hence in this situation concentrated and prolonged compression is quite improbable. We are justified in regarding spinal hemorrhage as devoid of grave significance, with rare exceptions. It is, there-

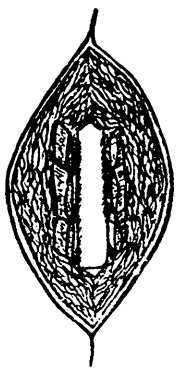

FIG. 6. Laminectomy, showing cord in position.

FIG. 7. Removal of posterior ligament.

fore, only when intra-rachidian hemorrhage exists as a complicating factor, that it may be a cause of serious apprehension.

Spinal Fracture—Apophyseal and "Broken-Back."—Spinal fracture presents so many unique and striking features that it should be always considered in a separate category. The subject becomes more simple and comprehensive if we would more critically examine into the anatomical architecture of the triple-curved, hollow, osseous tube. Its dominant characteristics are its strength and its pliancy. In virtue of the latter, its axis and angles may be altered; it may be bent within certain limits and be rotated without any marked diminution in the diameter of its canal.

Although the current works on anatomy describe the spine as made up of a chain of vertebræ, of separate independent links—something apparent enough in the skeleton—when we examine the body of the spine as a whole with the soft parts *in situ*, we will do well to note that the segments, the so-called bodies have

no joints, no synovial investment, no articular cartilage and no ligaments. Each segment is separated by an ill-defined structure, known and properly designated as "intervertebral substance." This occupies fully one-third of the entire length of the spine. It is neither bone nor cartilage, and yet histologically contains the elements of both. It resembles embryonic or immature osseous structure more than anything else.

Passing down anteriorly and laterally is a broad thick envelope of fibrous structure. It is defined as the "anterior ligament," but it serves other important purposes than a ligament. It passes down over the anterior and lateral aspects of the osseous blocks of bone; also invests the intravertebral substance, as a periosteal sheath. Laterally its fibres pass posteriorly to interlace and fuse with the "posterior ligament." Taken together, these two interwoven ligaments may be regarded as the *epirachidian sheath,* serving at once the double purpose of a periosteal in-

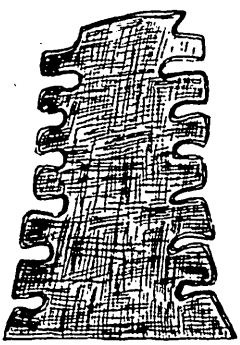

FIG. 8. Removal of anterior ligament.

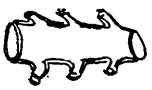

FIG. 9. Section of cord removed.

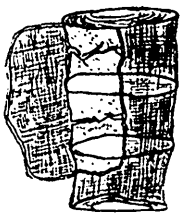

FIG. 10. Concealed fractures of bodies exposed by detaching sheath.

vestment and a lining for cavities. We may, then, without any violation of anatomical truth, regard the entire series of vertebral bodies, except possibly the atlas, as one continuous structure, "the back-bone." Attached or continuous with the osseous blocks posteriorly are the apophyses, the arches and spines, which enclose the cord and give attachment to muscles and ligaments. Here, and here only, do we find true ligaments. The osseous frame-work posteriorly, is essentially, but an *appendage* of the back-bone, to envelop the cord. The osseous structures of the spine are so deeply lodged, so limited in their range of movement, so firmly held by tendons and bound together by ligaments that when a fracture occurs there is seldom any palpable displacement, and hence it often defies detention. In the greater number of instances, there is an absence of crepitus, no immediate deformity after injury, nor is function of the cord in abeyance, except in very grave cases, where

the peripheral ganglia are involved, or the cord is crushed. The X-rays often fail to clarify matters. They cannot well be described as a primary aid. Of this means, Dunn well says: "It is not always possible or desirable to resort to the X-rays at once, but sooner or later great aid may be obtained from good skiagraphs in many cases. Nor will the rays prove infallible in diagnosis of these injuries. They are only a great aid in most cases, and it requires very expert work to make skiagraphs of the spinal column that are of much value. They are, perhaps, a greater service in certain gun-shot injuries where the ball has lodged in or about the vertebræ." Even the exploratory incision will fail to elucidate matters if the fracture is through a vertebral block. Nay, it may err when the more accessible pedicle or arch is shattered.

A case came under my care in March last—1902—illustrating the almost insurmountable difficulties in the diagnosis of spinal fracture. A young man aged 31 sustained a fall thirty-five feet from the elevated railroad, on the 12th of February, 1901. He was immediately brought to the hospital with paraplegia. Here it was supposed that a luxation existed, and several vain efforts at reduction were made. A week later he was entered at another hospital; there, a surgeon, who is among the pioneers of laminectomy, made an exploratory incision over the mid-dorsal region, assuming that there was a fracture at this site. Now, after more than a year, a well-marked kyphos has formed, consisting of the eleventh and twelfth dorsal and the first lumbar vertebræ, and at present the areas of palsy point to this as having been the primary seat of medullary lesion.

In fracture only involving the *extrinsic* parts, diagnosis is not infrequently quite impossible by any safe or justifiable procedures. In my experimental researches on spinal traumatism, it was repeatedly demonstrated that the arches might be cracked in two, or the bodies split in various directions, without a single central symptom supervening. Therefore, judging from analogy, one may often assume the probable presence of a fracture of the spine in man, after a violent injury, even though no positive evidence exists from the clinical aspects of the case; from all of which we may conclude that a "broken back" occurs more commonly than is generally assumed, and moreover, that it seldom menaces life, unless it seriously involves the cord; however, deformity and impediment in function may succeed.

At the International Medical Congress at Rome in 1894, the following was my summary on the topic of "Diagnosis in Spinal Fracture": "*First,* fracture of the spine has no well-defined symptom; *second,* in the majority of cases there is neither abnormal mobility, displacement or crepitus; *third,* experiment proves that the bodies or the apophyses may sustain multiple fracture without neural manifestations resulting; *fourth,* in those cases in-

volving the medullary structures, the extent of crushing is often great and permanent loss of function is liable to follow; *fifth*, the exploratory incision over the rachidian areas is fraught with danger and is never warranted here as an aid to diagnosis only."

Violent manipulation in reduction of the fragments is to be deprecated, as it is quite certain to aggravate pre-existing conditions. LeGros Clark records an instance of a young man impaled on the pickets of a fence, the injury quite limited to the sacrum. The spine seemed nowhere else injured, but after death, a fracture of the second dorsal vertebra was discovered.

Jacobson saw a man in whom he diagnosed a fracture of the first and second lumbar vertebræ. There was loss of power in both extremities. Paralysis passed off, and in a few days the man returned to work. He was killed by an accident a week later. Now, on autopsy this surgeon discovered that only the first

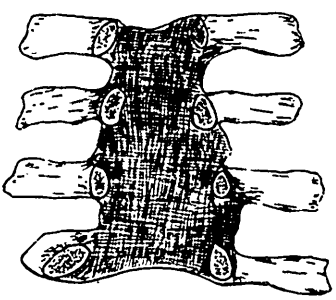

FIG. 11. The posterior common ligament after the removal of the arches and cord.

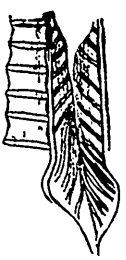

FIG. 12. Lumbar segment—cauda equina.

lumbar vertebra had been fractured, but this was shattered and somewhat displaced. Many of these fractures point to a surprising degree of tolerance of the cord. In Cloquet's celebrated case, though the atlas was resorbed and the odontoid process projected into the foramen-magnum, with pressure on the bulb, at no time in life was there any paralysis. Erichsen warns us not to forget that in a cervical region a fracture may be mistaken for a sprain, and that want of proper precaution may lead to a sudden displacement, with consecutive medullary pressure and death.

Gun-Shot and Punctured Fractures (compound fractures).—Gun-shot and punctured fractures in the spine belong to the open variety, and hence, from their nature, we will anticipate the dangerous complications of infection here. The propriety of including these with extrinsic lesions might be questioned, as the cord is often implicated, though not uncommonly there is no clinical evidence of it.

I have found, in the lower animals, that we may lacerate the cord with the needle point, or even make a small incision through

the long axis of it without any paralysis following. This is another evidence of the spinal marrow's tolerance of trauma, and from well authenticated cases published, we may believe that in man the same phenomenon obtains. Kirmisson removed with difficulty the broken blade of a pocket-knife, 6 cm. in length, which had been driven in between the seventh and eighth dorsal vertebræ. It was so fixed that a deep section had to be made before it could be dislodged. No unpleasant symptoms followed extraction. In another case, reported by Giss, a blade 7½ cm. long was broken off after being fixed in the cervico-dorsal space. On the fourth day it was dislodged with difficulty. This was followed by the escape of cerebro-spinal fluid. There was no paralysis and the wound healed well. In Joubert's case the blade

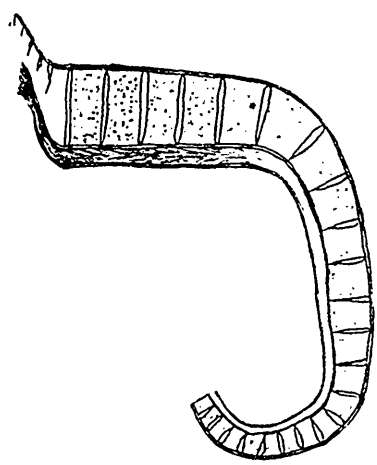

FIG. 13. Sharp cervico-dorsal and lumbo-dorsal, posterior flexure. The spinal canal preserving its uniform diameter.

entered between the sixth and seventh cervical vertebræ, engaging in the intervertebral disc. Some symptoms of meningeal inflammation followed, but there was no disorder of function.

Recent observations in connection with intrarachidian cocainization quite conclusively prove the comparative innocuousness of a single or repeated puncture of the meninges of medulla-spinalis. Just how the small modern missile, in recent warfare, affects these parts, we can only determine when the surgical histories of the wars in the Transvaal and Philippines are written.

Simultaneous Nerve Lesion; Mode of Repair and Ultimate after Effects in Spinal Fracture, not Inducing Paralysis.—Apophyseal fracture, the one most frequent, involves the arch or its constituent parts. It is quite generally induced by direct violence, by blows or falls.

Fracture of the vertebral bodies or diastasis of the intervertebral cartilage, the second variety, is confined to a sundering of the vertebral bodies, or a rupture through the intervertebral discs, a disorganization of the serpentine chain; in a word, it is a broken back. This is produced by a sharp bending of the rachidian coil, or a twisting movement—torsion. In this fracture, the thick investing sheath may or may not be lacerated, and the apophyseal ligaments are either overstretched or torn through. We will sometimes see instances of impacked vertebral fracture in the cervical region wherein we will discover the vertebræ telescoped into each other. This class is of a mixed character, the bodies and apophyses sustaining simultaneous shattering.

Nerve Complications.—It has been noted that the medulla-spinalis presents marvellous resistance to trauma, to over-tension, bruising or pressure. On careful examination of the nerve roots, before and after they have passed through the vertebral foramen in

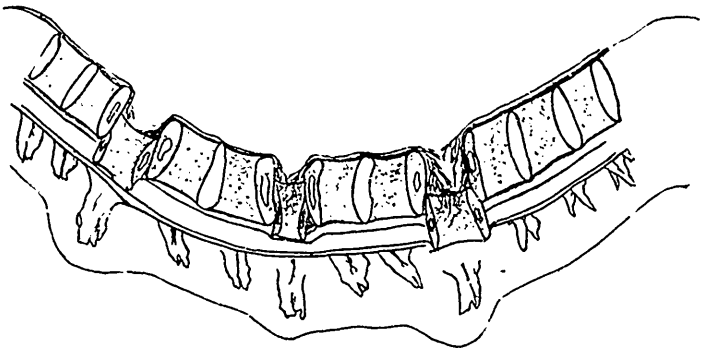

FIG. 11. Diastasis and displacement of the bodies.

apophyseal fracture, they will quite invariably exhibit evidence of laceration or contusion. Pain and atrophic changes are the dominating clinical symptoms of cord and nerve lesions in vertebral fracture, as in practically all severe traumatisms here, which do not seriously involve the cineritious tissue. The meninges at the site of injury take on inflammatory changes; there is congestion, with a plastic or serous effusion, which, however, fails to penetrate the pia mater or invade the cell elements of the cord. This is manifested by pain, hyperesthesia and myotrophic changes. The ganglionic nerve roots, the posterior, are by far more susceptible to the effects of trauma than the anterior roots, the motor. Hence, we will note so frequently after spinal injuries various phases of sensory disturbances, numbness of the parts supplied by certain nerve roots, or what is most frequent, heightened sensibility over the point of injury, always aggravated by motion and marked trophic changes in the areas enervated. The motor nerve

roots in many of these cases are quite unimpaired in function, until trophic changes are well advanced; in very aggravated instances the motor nerves of various parts will respond to electrical stimulation when sensation is quite totally abolished. We must, therefore, assume in a considerable number of cases of spinal fracture, that even though paralysis be absent, the cord and its roots have suffered damage with trophic effects on the muscles, and impairment of the general nutrition of the body Ollier, in his great work on osseous regeneration, has pointed out that the repair or regeneration of bone is not governed by the same laws, at different epochs of life, or in various regions of the body. When we come to examine into the composite anatomical structures of the spinal frame-work, its histological elements and its functions, we can readily understand why we should anticipate here, in the process of restoration, peculiarly unique phenomena. Anatomically, we encounter nothing in the spine which corresponds with a bone shaft. The continuous periosteal investment of vertebral bodies and discs, like the osseous investment of the dura mater, possesses the property of aiding in osseous repair after fracture, but none of regeneration. Repair after apophyseal fracture—simple non-displaced and non-complicated—is rapid and practically perfect. But in fracture, through bodies or cleavage, through their discs of cartilage, alone or complicated, the quality of repair is not the same, in a considerable proportion of cases. Here, we find different influences in operation. The fractured spinal bodies, through rupture of their sheath and ligaments, are loosened, and the superincumbent weight from above tends to press them out of position; the steady strain from muscular traction on the apophyses posteriorly, tending always to so draw them backward that the resulting concavity is directed anteriorly. The intervertebral disc tends to partial or complete absorption, or osseous transformation and fusion with the bodies. In order to provide for the strain placed on the damaged column after fracture, nature supplies a massive, osseous exudate, which welds into one mass the whole disorganized areas. The strength of the pyramid it restores, but its mobility is lost and deformity of a permanent character frequently remains.

Spinal Dislocation by Diastasis, Luxation-Fracture.—A typical dislocation at any articulation implies that two opposing surfaces of bone have completely separated from each other. In the spinal column this can only occur in the apophyseal joints as the vertebral bodies are essentially but a constituent part of a structure devoid of a true articulation; hence a so-called dislocation cannot occur there, but instead a diastasis, a displacement or a fracture, the line of separation being through the intervertebral substance, its osseous attachment, or through the osseous body itself. In any event, or in whatever light we may regard this lesion, all must con-

cede that a total vertebral displacement is quite impossible without complete crushing of the cord.

Apophyseal luxation is very rare in severe spinal injuries, and is almost invariably complicated by fracture. I have never seen an instance of it, except in association with fracture, even in mortal injuries; and, in a series of experiments on anesthetized animals, I could only produce it in association with fracture, or in other words, could only effect a fracture-luxation simultaneously. We can only have a complete or incomplete luxation, without paralysis, in the apophyseal or costal articulations of the spine; a dislocation of the vertebral end of the ribs may occur, though I have never seen one recorded.

As the sum total of this phase of vertebral injuries, it becomes clear that in order to be comprehensive and logical, to accurately

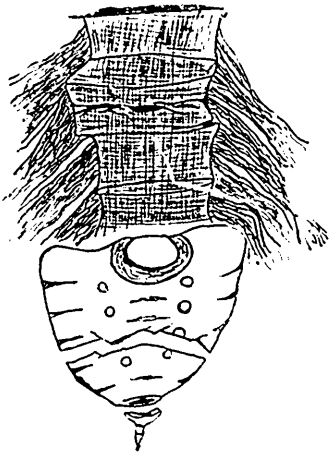

FIG. 15. (a) Lateral diastasis or lumbar subluxation. (b) Sacral fractures.

describe the true character of osseous disorganization of the rachidian pyramid, we should relegate to oblivion the ancient term, "dislocation of the spine," and substitute therefor the term, "diastasis or fracture-luxation." Spinal displacement or distortion, on the contrary, is common enough after various pathological conditions, as well as severe injuries. A recent able contribution by Drs. Painter and Osgood, of Boston, Mass., has been published, significant because the authors have broken new ground in nomenclature. They report: "Four cases of spinal displacement or kyphos, after injuries, without tuberculosis or other disease of the vertebræ, in which there were symptoms of pressure on the cord, which pressure symptoms were relieved and the patients entirely recovered, functionally, in the course of a few months, after treatment with plaster or leather jackets was commenced."

Fourteen other collected cases are included in this instructive report, all traumatic; the most striking feature in the essay is the authors' views of the etiology of deformity. It is no longer a deformity, consecutive to fracture or dislocation, but "rupture of the spinal ligaments." The kyphos in all these cases appeared at a distant period after injury, which is the rule after severe sprains, but in most of these cases of secondary hump, there is previously osseous injury or diastasis as well. Sir Astley Cooper saw a case of fracture in the fifth lumbar vertebra with the hump appearing several weeks later; there was no paralysis. A large number of such cases are on record. The pathology of deformity, as viewed by the Boston surgeons, no doubt rests on a sound basis, as damage to the ligament is one of the cardinal etiological factors, and "displacement" is a much more accurate designation than "spinal luxation."

Bennett cites an instance, setting forth the possibility of error in the diagnosis of vertebral injury. His patient sustained a fall,

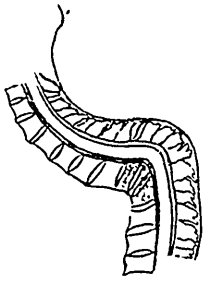

FIG. 16. Traumatic cyphos uniform diameter of vert. canal.

resulting in "apparent luxation of the sixth cervical vertebra." This was accompanied by the unconscious state. Patient soon sank. On autopsy, a fracture through the vault of the skull was found, with rupture of the middle meningeal artery. There was no luxation nor any injury of the cord.

Some of the Complications and Sequelae of the Spinal Injuries not Primarily Involving the Cord.—The cervical segment of the spinal column lies posterior to hollow passages. In severe injuries here, while life may be immediately jeopardized through the concussive impulse, communicated to the cardiac or respiratory centres, yet, except from the effects on the rachidian centres themselves, no consecutive, troublesome visceral complications are liable to follow. As we descend into the thorax, we at once appreciate the important relations subsisting between its contents and its posterior vertebral wall. We will note that the organs and structures of this cavity are in very close relation with it on either side. In the abdominal cavity, behind or below the mid-

rilf, resting more or less in immediate contact with the body of the spine, are the kidneys, the great blood trunks, the thoracic duct, pylorus, the duodenum and the distended stomach. The liver, pancreas and spleen have other interposing structures between them and the spine. It is well to remember that the upper pole of the kidney and the upper surfaces of the liver or distended stomach may extend to a level of the eighth or ninth dorsal vertebra under the diaphragm, and hence, although these are abdominal organs, they may suffer in cases of violent concussion of the lower thoracic vertebræ. The thorax is so constituted as to resist concussive force with remarkable impunity; its pneumatic sacs re-

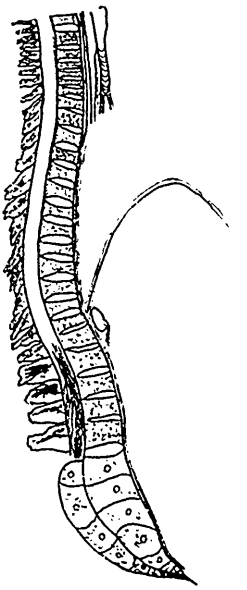

FIG. 17. Position of the cord. Relation of the cavities.

ceive and distribute violent blows; besides we will note posteriorly that the tips of the spinous processes are imbricated, look downward, and are usually below the convexity of the ribs, which are so often the seat of fracture after a fall on the side or back. This arrangement provides a powerful defence of the spine. In injuries produced by great backward flexion or torsion, involving disorganization, rupture of the ligaments or spinal diastasis, the contents of the thorax may become involved. I discovered in several instances on autopsy, after induced violence on the thoracic vertebræ of animals, that the posterior mediastinum and pleuræ were often opened with free hemorrhage into the parenchyma of the lung, the laceration in some cases extending into the pleuræ, with marked hematothorax following. In some instances pleurisy had

developed, and adhesions had followed. These complications occurred in cases, wherein the functions of the cord were undisturbed.

The lumbar segment contains only large nerve trunks, and hence, after great violence is sustained by the rachidian structures, the effects of complications may be more serious than those to the spinal structures. The spine may be "jack-knifed" in this situation; the fixed organs are caught under the midriff and crushed against the spine, the kidneys suffering most frequently. After violent concussive force sustained over the lumbar region, the solid or hollow organs of the abdomen, a pregnant uterus, a distended stomach, or bladder, or other viscus may suffer from *contre-coup* force—from transmitted shock.

I have seen a case of nearly fatal hemorrhage from the left kidney, following a blow over the upper lumbar segment. The

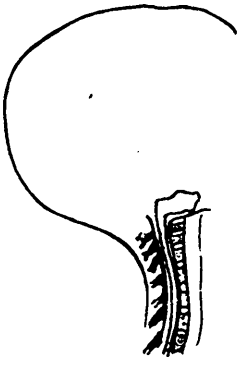

FIG. 18 Position of the bulb.

patient was a laborer, struck in the back by a large fragment of rock in a blast. Great pain in the back followed, with alarming hematuria. Blood flowed in a steady stream from the bladder, so copiously that the house-surgeon sought to subdue it by tying a string around the penis, which only led to great vesical distension. After a time, by the use of a refrigerant and astringent the bleeding ceased. It may be noted here that in this case there was no paralysis. It was more than a month before the man could leave the bed, and so much soreness and stiffness in the back remained that it was nearly a year before he could resume work as a laborer.

The late Dr. B. A. Watson discovered on the bodies of dogs, subjected to induced spinal injuries, the following most frequent complications: First, hemorrhage and infarcts into the lungs; second, laceration of the kidneys, liver and spleen; third, rupture of the great blood vessels, intestine and bladder.

Lyons, of London, records a case of a man crushed under a

wheel. No marked paralysis, had puffiness over the ninth and tenth dorsal vertebræ. This was followed by pneumothorax and expectoration of blood. Erichsen has published seven instances of severe thoracic lesions, following rachidian injuries, wherein no evidence of medullary lesion existed. These cases, he found, generally recovered. Butler saw a severe case of spinal injury after a fall. Patient suffered great pain in the back, but no palsy. Whole left chest barrel-shaped and hyperresonant; succussion elicited a splashing sound. Hollkopf believes that injury to the nerve structures may be a remote cause of tabes and says: "E. Schulze was the first to speak of tabes with traumatism as an etiological factor. Later on, Petit, Ferry and Strauss collected quite a number of partly new, partly previously published cases, in which traumatism preceded the development of tabes. I myself was years ago called to a woman whose right leg was amputated after a severe trauma with considerable tissue destruction. The patient sent for me on account of severe lancinating pains in the left leg and in the stump, which set in several months after the amputation. At first sight of the patient I was at once struck by the pin-head pupils, as they are usually observed only in tabetics. Upon further examination it was found that she also suffered from diplopia, dysuria, girdle sensation, analgesia and anesthesia; in short, I was able to observe the entire pathological picture of tabes." A young man came under my care five years ago for the treatment of an injury in his mid-dorsal region, resulting from being struck by a baseball. The blow knocked him down. Severe pain over the site of injury succeeded, and two weeks later he began to cough up blood. Between the scapulæ there remained a widespread intumescence, exquisitely sensitive. After a month's rest he quite recovered, and returned to his place as a clerk, complaining only of shortness of breath on active exercise.

Finally, when we recall the intimate relations existing between the ganglionic structures of the brain and the spinal medulla both direct, through the reflexes and the sympathetic system of nerves, it is obvious enough, when, in many varieties of serious traumatism, which either directly or indirectly involve the rachidian mechanism, the intracranial contents manifest signs of disordered function. Let us designate the condition neurasthenic, hysterical, psychical or what we may, but whether the predisposition to cerebral disturbance existed before the traumatism or resulted from it remains yet undecided. Sometimes the sundering of a bone may constitute the least serious pathological state following a fractured limb; the damage to the over-lying soft parts, the nerves or blood-vessels may be a much more serious matter than the osseous injury. And so in severe rachidian traumatism let us not concentrate all our attention on the cord to the exclusion of important circumjacent structures and organs.

ADDRESS GIVEN TO THE GRADUATING CLASS (1903) OF THE TORONTO GENERAL HOSPITAL TRAINING SCHOOL FOR NURSES.

BY ALLAN BAINES, M.D., C.M., L.R.C.P. (LOND.),
Physician to Toronto General Hospital.

MANY addresses have been given here to the graduating classes of past years, all of which have contained heartfelt words of sound and kindly advice. I think that I cannot do better than follow in the footsteps of my predecessors, and feel that, by so doing, I shall reap the gratitude of all the nurses who for the past three years have listened during the winter session to my discourses upon diphtheria and scarlet fever, and who will find relief in the change of the subject to that of the ethics of nursing.

First, let me give an introductory word with regard to our school. We have been taught that comparisons are always odious, yet I may perhaps be allowed to proclaim my belief that the graduates of the Toronto General Hospital Training School have always proved themselves to be as sound and as thorough in their knowledge and work as any of their sisters in the profession, and I feel that I have a right to proclaim my judgment, after an experience of many years in St. Thomas' Hospital, the head and centre of that grand order of skilled and trained nurses whose founder, Florence Nightingale, still lives in the home for graduates that is called by her name.

I have seen nursing in all its phases in many hospitals, and, in private practice, have had to do with many nurses from many schools, yet looking back upon my experience, I can assure you that a graduate of the Toronto General Hospital inspires me with a confidence and feeling of relief that can only be won after trial, by any other nurse.

Furthermore, I can assure you that I do not stand alone in this opinion, but that I have therein the concurrence of most physicians and surgeons in Canada, nay, on the whole continent, and I am sure this is also the feeling of our nurses, having been given a striking exemplification of this fact the other day. I received a card from one of our nurses' homes headed with the words, "All graduates of the Toronto General Hospital." This simple statement, given with the assurance of its value, conveyed to my mind the fact that our nurses were proud of, and appreciated their diploma, their training, and their lady superintendent and assistants.

I may say, furthermore, that I have found the nurses, both in

and out of the hospital, faithful, hard-working and deserving of every consideration. Such a condition of affairs cannot have been attained and maintained without great work and a competent supervisor, and this I claim we have in Miss Snivelcy, than whom it would be difficult to find a superior.

What are the attributes that must be looked for in a good nurse? Many. The power of observation is one of the greatest; without it, we may have a faithful, kindly, sympathetic automaton.

Take a history paper: a glance at the remark column will a tale unfold of clear, clever, brainy observation, or of a mediocre nothingness. The nurse who is unable to read the significance of expression, attitude, voice, in fact one who has not all her senses keenly on the alert, and who cannot place everything clearly and concisely on paper for the physician to see on his return visit will never make a good nurse. Is this faculty to be found at the outset of a nurse's career? To a certain extent, yes, a gift; but that it can be cultivated there is no doubt, and without training this power cannot be of any value.

We shall find this art of observation much more necessary in medical than in surgical cases, but above all it will be found most necessary in infants and young children unable to tell you of their various sensations and pains; therefore, let me impress upon you the necessity of cultivating this art of observation: let not the slightest sign or symptom escape detection, and make a clerical or mental note of such change so as to have it embodied in your report, verbal or written.

Loyalty to the physician is another great attribute. Without that watchword constantly before you, you are useless, nay, harmful. Once let a physician doubt your loyalty, the co-operation ceases, and the copartnership in the case must come to an end. A look, a shrug of the shoulders, an indiscreet word, may produce a feeling of wavering confidence in the mind of an acutely watching mother, wife, or sister. This naturally leads to doubt and further to distrust, which usually ends in the discharge of the attending physician, and the calling in of another. The physician may not, just at the moment, grasp how such a train of events came about, but, believe me, it is only a matter of time before such conduct, acting as a boomerang, will reflect with swift justice on the injudicious nurse.

Loyalty is a beautiful word, descriptive of a grand and noble quality. Should you unfortunately be placed in a position where you believe the physician to be not doing his duty, neglecting his patient, or incapable, I beg you be loyal still: be so, by leaving the case, rather than, by word or deed, shaking the confidence of the patient or his friends.

Be loyal also to yourselves. It is absolutely necessary for your personal welfare to lay down hard and fast rules for your own well-being, therefore a few hints may here be not out of place. Whilst you must perforce put up with the best accommodation the house you are working in may supply, you will look well to the following points:—

Foods.—Should the meals be irregular and of a quality not suitable, ask leave to cook for yourselves, and save simple, well-cooked meals at regular hours.

Sleep.—The public is just being educated to the fact that nurses are only women, not beings made of wire and india rubber, capable of sitting up all day and all night, and therefore is becoming more thoughtful of their comfort. Should you find yourself being overworked, speak to the attending physician, and he will, without fail, make arrangements to secure your proper rest.

Exercise.—It is most essential that at least one hour a day should be spent out of doors, for fresh air and exercise are as necessary as food. Find out the hour that will be most suitable and never neglect your out-door exercise.

Lastly, Holidays.—It is a poor comfort to find, at the end of a year, that you are so many dollars ahead, when this amount has been gained at the expense of your health. I beg you to take at least one month's absolute rest and enjoyment in the country or at the seaside. It will pay a bountiful dividend in renewed health and vigor.

May I give a hint as to one way in which you may, with advantage, dispose of some of the spare time, not only of your vacation, but also of the many hours of waiting for a case. I refer to the cultivation of the fine art of reading aloud, an accomplishment which you will find desirable, if not absolutely necessary in the routine of your work. Some will be inclined to smile at insistence upon so easy a matter. Such it seems at first sight, and, unfortunately, many resting upon the first sight think that anyone who can decipher print, and can take a breath at a full stop, can read aloud. It is not so. I repeat that the intelligent communication of written matter to other ears is a fine art, and that good readers are few and far between. To prove it, ask any of your acquaintances to read aloud, and note the misery that nine out of ten will cause you. The variety of their rendering will be great. Some will wind off sentences with a machine-like utterance, as from a reel; others rush into the fray without taking breath, and pause for lack of it in the wrong place. Some will go through it without communicating any of the life or color of the story to you, while others accentuate in the wrong places. We will not pursue this subject any further as this is not a lecture on elocution, but rather will dwell upon the reason of calling

your attention to it. Remember that, in nearly every case, only one-third of your time will be taken up in active nursing. The illness may be short and sharp, but there will be long days of convalescence, when your chief effort will be the beguiling of the weary hours of the sufferer. It is then that your ability to read aloud, pleasantly and intelligently, will be invaluable. The charm and the soothing power of books is unspeakable. Make friends with them in your spare time, for your own relaxation, and then you will be able to introduce the best of them to your patients. Nothing is so necessary to the healing of the body as the distraction of the mind by change of scene and surroundings, and this through books you will be able to give them as by magic. With you they will wander through foreign lands; with you they will enter into the intrigues, the trials, and joys of lives far other than their own; with you they will be led to ponder over the great questions of the day. Thus, by reading, you can help them to throw off the shadow of self, which is the worst enemy of convalescence, and will lead them by the hand from the debatable land of "better" to the high plateau of "well."

As I have said, I am no master of elocution, but from my own experience I may perhaps be allowed to throw out a few hints upon reading. Let your voice be well modulated, clear and low, and your breath taken without effort, and with due respect to the value of punctuation. Throw yourself as much as may be into the mind of the author, and let your emphasis be his. Wrap yourself in the story, and, losing yourself in it, be for the time (to use a paradox) an actress without action, so that you can make the sick-room a stage, and all the characters of the book players thereon. A nurse, capable of reading in such a manner, would be not only an aid to the patient and the physician, but would be making herself cultured and educated in matters outside her profession, impossible to attain in any other way.

A word or two now upon sympathy. The calling of a nurse is essentially womanly. It appeals to and demands all those gentle qualities that twine around the very name of the sex. Poet and artist have formed and have left us their pictures in color and word of ideal womanhood, and all of us who have natures capable of ideals at all, possess our mental picture of woman at her best. Such pictures will not be the same in detail of light and shade, yet the general outline will differ but little. Therein are found expressed tender sympathy, ready tact born of desire to shield from mental and bodily hurt, a politeness that was not learnt in schools, but rather is the outcome of a kindly nature, something, too, of a firmness that is not virile, but truly womanly, and withal the expression of a patient power of unselfish endurance learnt from the great Divine Example.

As we grasp this inward picture there seems to surround it the sweet fragrance born of fastidious cleanliness and daintiness, and we think that we hear that low, soft voice that is "a most excellent thing in woman." Look well at this picture, impress it on your minds, and know assuredly that as it shows forth the nature and manner of the ideal woman, so truly does it portray the nature and manner of the ideal nurse. Therefore, mould your lives into its likeness, resting in the certainty that it was moulded upon that Highest Likeness, of whose divine perfection the most beautiful character of man or woman can be but a faint and imperfect image. Shall we look now at the picture a little more closely, studying under the mental microscope each feature that stands before us?

Tender sympathy. What a great and wonderful and comforting word is this! How truly does one touch of it "make the whole world kin." How blessed a bond between soul and soul of man, how sweet a consoling power, how great an invigorator is this same sympathy. Three great questions present themselves about it: How shall we define it? How can we obtain it? How shall the nurse in her calling exercise it?

It is the power of one soul to interpret the foreign language of another. It is the reaching out of a living, loving human hand to the hand that gropes for help in the darkness of mental and physical suffering.

How is it obtained? This is a difficult question. All have not alike the power of showing sympathy. To those with whom its expression is difficult I would say, cultivate it by daily losing yourself in your case, not as a case, but as your fellow-being, and thus gradually growing to feel with the suffering to which you minister. As nurses you have the greatest opportunity of showing this gift. You who graduated to-night have been called out to a wonderful work. You will take your place at the bedside of sufferers, and will stand as it were in a circle of pain, and the effect of your skill will be doubled by your power of sympathy. Understand me, I do not mean by this, the poor imitation of it, another name for weakness, which would gratify the desire of the patient at the risk of his well-being. This would be to break your self-registered vow of obedience and loyalty to the physician in charge; but I do mean, manifestation of kindly fellow-feeling even whilst hard and painful things are being firmly done. I do mean the gentle look and whispered word, and cheering smile that will tell the sufferers that your heart is with them and that you are not a hard machine, but a sweet, tender and skilful woman.

In the family circle you will be wanted. Each member will turn to you in distress and anxiety, and for them also your sym-

pathy must glow and burn. Cultivate it, increase it, make it a part of your duty, for in it you have a marvellous God-given opportunity to strengthen the hope of the weary heart, to speed convalescence, and to fortify the frightened, shrinking souls of those whom no earthly skill can hold back from the solitary way of the Valley of the Shadow.

Now, we have to deal with a gift as important as sympathy, and in close alliance with it. I refer to the wonderful, priceless gift of tact—tact that lies as an instinct in the nature of many, and can be acquired to a great extent by all who will. The knowledge of when to speak, and when to refrain from speaking; the negative power that will control temper and tongue, and will bid the lips keep silence under provocation, when speech would be injurious and ill-judged. The power that will even control the expression of the face in moments when an unguarded look of surprise or dismay might be read by the patient and cause serious harm; and then the positive power that will prompt the word, and the act that shall fit the occasion, the word spoken in due season which the wise king tells us is "like apples of gold in pictures of silver."

Valuable in every calling and in every relation of life is this excellent gift of tact—so valuable, so necessary in all our dealings, works and companionships, that without it a noble nature may be marred, or a grand life-work rendered ineffectual. Valuable indeed to all—to you in your profession of such intense worth that no halting word of mine can sufficiently impress its vast importance upon you.

No position in life is so delicate as that of a nurse. The guardian of the patient's welfare, the supporter of the physician's reputation, the oft-times close confidante of the family, how can you move without the guidance of ever-ready, ever-watchful tact, that shall keep confidences without exchanging them, be inaggressively loyal to the physician, and unswervingly faithful to the care and charge of the patient.

You will perhaps go away with the thought that I have to-night placed before you an unattainable and impossible ideal of your womanhood and your calling, yet I think you will know and feel the truth, sung by the poet in "Excelsior." That, and that alone, must be the life motto of all. Nothing short of the highest must satisfy the gaze of the soul and the mind; with this before our eyes, though falling infinitely below that ideal, we may rise to "heights undreamed."

This being assuredly true, I would like to say a few words about two more qualities which will be necessary to you in every case that you attend: patience and forbearance. There is no human character that is not beautified and endeared to others, and

rendered doubly influential by the exercise of these two virtues. I would have you remember that neither your calling nor ours leads us in soft places, or beckons us to lie on beds of roses. For you and for us, the thorn of aggravation will constantly arise and prick. Aggravation in many forms—the irritability and unreason of minds enfeebled by sickness, inconsideration and interference of the patient's friends. Such things as these will and must sting us, yet we can show no signs of temper. To do so would be foolish, oft-times dangerous, for the atmosphere of the sick-room must be one of calm and peace, and it is the duty of the nurse and physician to preserve it.

Arm yourselves, therefore, with the coat of mail called patience; clothe yourselves in the garment of charity that "suffers long," guard your lips and hide your face 'neath the visor of forbearance, and the day will be won for you, and, may be, for your case.

We have had occasion many times to refer to your position as a member, for the time, of a family whose ways are utterly unknown to you. Bear in mind that you have a duty in the house, not only to the sick, but to the well. Remember always the burden of anxiety carried by the latter. Show yourselves ready by act and tone to put your shoulder to this load of theirs, and you will, by ministering to their happiness, win your way into their hearts, and will often go forth from their home no longer a stranger, but a close and valued friend.

Let us think for a moment in passing about that word "tone" which I used just now. Perhaps nothing is so powerful to soothe or irritate as the tone of the human voice. Let it be "soft and low," for that is, I repeat, an excellent thing in woman. Soft and low, yet clear. Not an indistinct mumble, and not a whisper, for this last is pernicious, and entirely to be avoided in a sick-room. Equally impossible is the loud harsh note which jars even upon healthy nerves, and how much more upon those quickened by disease to a sensitiveness that is agony. Cultivate then the soft voice, tender and rich; so gentle that, falling upon ears made acute by suffering, it shall be as the gentle murmur of cooling waters, or the chime of bells in a distant valley, yet so clear that it shall be heard breathing words of hope in that sad hour when the human senses are veiled beneath the sombre wings of the angel who stands to bear the soul on its flight to the "Land of the Leal."

Fastidious neatness and cleanliness must, of course, be yours —in person, in your surroundings, and in your work. The presence of a nurse should be as the fragrance of a violet, and all things about and around her should partake of that fragrance. Fragrant, but never perfumed; that is an article of toilet that

must never be used whilst in attendance upon a case. Many healthful people are nauseated thereby, and therefore it is doubly to be avoided in the presence of the sick.

With this word I close and not inaptly. Guard, I pray you, and ponder over this picture of your calling. Attain by degrees, and through strength outside your own, to this ideal, and there shall surround you through life and beyond it, the fragrance of well-spent days, and of a life lived for the healing of your fellows.

DEFORMITIES AND DISABILITIES RESULTING FROM INJURIES OR DISEASES OF THE EPIPHYSES.

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INJURIES and diseases affecting the long bones and producing secondary consequences which result in considerable disability, are of sufficiently frequent occurrence to be worthy of special consideration. The following cases illustrate well some of the varying causes producing deformity, some of the deformities which may result, and set forth plans of treatment which may be adopted for the relief of those so affected.

It will be well to review briefly some of the salient points bearing upon the histology and anatomy of the long bones. Some of them have several centres of ossification. The primary nucleus of the long bone appears before birth. The secondary centres generally appear after birth. Long bones do not grow uniformly in length throughout all their parts. Generally speaking, there are two areas of growth in a long bone, namely at the ends of its shaft. Here there is throughout the period of childhood and youth a section which remains cartilaginous, lying between the shaft of the bone and its epiphysis. It is here that increase in length of the bone occurs. If anything takes place which interferes with the powers of growth at this period, the resulting bone, as months and years pass, will be found shorter than its fellow. Such interference may result from disease, from fractures, and from other traumatism. Normally these cartilaginous areas become osseous at a period varying from fifteen to twenty-four years of age, according to the situation. The result of either disease or injury to the epiphysis, or in its immediate vicinity, is, in some instances, that the cartilaginous area ossifies before the normal period, and consequently growth ceases. Sometimes a part of the cartilaginous area ossifies while another part remains cartilaginous, and continues the normal increase in length. The consequence is distortion of the bone in that part.

CASE 1.—I. W., a boy eleven years of age, healthy and well developed, presented a deformity as shown in Fig. 1. At two years of age he had some disease affecting his left leg. The history given is not very definite, but the father asserts that the leg was red, swollen, and painful. Scar tissue found upon the shin shows that some operation was performed. The disease evidently extended to, or nearly to, the ankle joint. Measurement of the leg bones of both sides shows that the fibulæ of the two limbs are of the same length, but that the tibia of the left leg is an inch and a half shorter than its fellow.

The father asserts that the deformity is gradually increasing from year to year, that at first when the boy began to walk after recovery from his illness there was no deformity such as is shown at present. There is no history of injury in the years that have intervened.

FIG. 1. At the left of the patient is shown a plaster-of-Paris cast of foot and leg before operation. The legs are shown as they appeared some months afterward.

The conclusion was reached that the only rational explanation accounting for the present deformity, and harmonizing with the history given, is that either the disease in itself or the operation which was performed caused early ossification of the epiphyseal cartilage of the tibia; hence, growth in the lower end of the tibia had not occurred for a period of eight or nine years. The fibula, not having been interfered with, the growth of that bone continued. The mechanical result is manifest in the fact that the fibula has pushed its way downward and inward, pushing the foot into position shown in the figure.

Treatment.—Osteotomy of the tibia and fibula might be done and the deformity corrected thereby. It was thought necessary, however, to remove a section from the shaft of the fibula; consequently an incision was made about two and one-half inches above its extremity. The periosteum was turned aside and a section

of an inch was removed from its shaft. After cutting the shaft of the tibia about two inches above its lower extremity, the foot was replaced, bringing it as nearly as possible into line with the axis of the leg. But deformity would certainly occur if the operative intervention were limited to simple osteotomy and correction of the deformity, because there still remained to the boy several years of growth, during which the fibula would increase normally in length, while the tibia would still suffer from its handicap. Hence a longitudinal incision was made over the epiphyseal cartilage of the lower end of the fibula, and the cartilage chiselled out, thus effectually checking further growth in that part of the bone.

Healing of all the parts occurred without special incident, and the result was highly satisfactory. Several years have elapsed since the operation, and the leg, as a consequence of the interference with growth at a part immediately above the ankle joint, is continuing to become relatively shorter as compared with its fellow. This is a comparatively trifling matter which can be remedied by increasing somewhat the amount of cork placed under the boot as the years pass. Moreover, when first seen at eleven years of age, and as shown in Fig. 1, the limb was more than an inch shorter than its fellow.

CASE 2.—T. W., sixteen years, presented the following history: Right foot was very much in the position seen in the former patient, but deformity was less exaggerated. Three years previously he had fractured his leg close to the ankle while jumping. The adjustment of the fracture and the course of treatment was without special incident, and I am assured by the boy's father and by his medical attendant that the foot and leg were in the normal position. Some months passed before any deformity was noticeable, but since that time it has continued to increase. It would seem rather doubtful whether the fracture which occurred was a separation of the lower epiphysis of the tibia or a fracture in its immediate vicinity. In any case, the reaction of healing was such as to cause early synostosis between the diaphysis and the epiphysis. The fibula continued to grow normally, shoving the foot inward, and repeating, though in a lesser degree, the deformity described above.

A section of about half an inch was removed subperiosteally from the shaft of the fibula about three inches above its lower extremity, and the shaft of the tibia, having been cut with the osteotome, the foot was easily placed in the normal position in its relation to the axis of the leg, so as to secure normal weight-bearing. Considering this boy's age, and that, as a consequence, there would be little increase of growth in height, it was not thought necessary to destroy the lower growing area of the fibula.

Although four years have elapsed since the operation, there has been no recurrence of the deformity.

CASE 3.—N. T., eight years old (Figs 2 and 3). Three years previously, the child had run in front of a mowing machine in action, and consequently, the leg was more than one-half cut through at a point just above the astragalo-crural joint. The posterior tibial artery, nerve and neighboring tendons were not injured. This patient was seen shortly after the accident by Drs. Rice and Welford, of Woodstock, and the various tendons and other structures were brought into accurate apposition and sutured. Healing speedily took place, and the friends and surgeons had reason to congratulate themselves on finding a straight limb and a useful, movable foot. A few months afterward, slight deformity was observed, which continued to increase as the years passed by, producing deformity similar to that described in the

FIG. 2.

FIG. 3.

former cases. The diagnosis was that the growing area at the lower end of the tibia had been destroyed, while that of the fibula escaped. Treatment similar to that adopted in Case 1 was carried out, except that the section made so as to shorten the fibula was done at the same point where the epiphysis joins the diaphysis and at the same time that the epiphyseal cartilage was chiselled out, with results that were just as satisfactory, so far as function is concerned. Such a mass of new bone, however, had formed at the seat of injury as to make perfect replacement of the foot difficult. Very marked improvement was effected as shown in Figs. 2 and 3, and no relapse has followed.

CASE 4.—B. B., a girl nine years of age, had had tubercular disease at the lower end of the femur for several years, producing knee symptoms. This was operated upon by a leading surgeon of New York, with a view of removing the focus of disease without entering the joint. The incision was made at the outer and

anterior aspect of the lower end of the femur, about two years previous to my seeing the child. The immediate result of the operation was highly satisfactory, but increasing knock-knee was manifested, a deformity which steadily increased in that leg as time passed, while the other limb remained of normal shape. My diagnosis was that synostosis had occurred in the outer part of the epiphyseal cartilage, causing an arrest of growth at the outer side of the femur, while growth continued at the inner part. I advised osteotomy for the correction of the deformity. This, however, was refused at the time, and subsequently I learned that the family again visited New York, where osteotomy for correction was done. Of the subsequent course of the case I have no knowledge.

CASE 5.—T. H., a boy sixteen years of age. Two years previously, while riding in Manitoba, the horse fell, injuring his

FIG. 4.

FIG. 5.

knee. He was confined to bed for a few days afterward, but seemingly made a speedy and satisfactory recovery. In the interim, a constantly increasing deformity resulted in the knock-knee which is shown in Fig. 4. Referring to my former experience, I could not but conclude that the outer part of the growing area toward the lower end of the femur was interfered with by synostosis, while the inner portion of the epiphyseal cartilage remained active. Osteotomy was done, and the deformity over-corrected, so as to allow for the slight amount of growth in height which might still take place. (Fig. 5.)

CASE 6.—C. C., male, aged four years; was ill in spring of 1890, with scarlet fever; had always been a healthy boy, active,

and perfectly formed. Had a long illness, made a tedious recovery; had several abscesses, one in front of the ear, one over the larynx, and one over the great trochanter on the left side. These all seemed to be superficial. He became greatly emaciated, and digestion was very poor. Was carried out of doors each day, and in autumn had sufficiently improved to be able to walk, in so doing showing a very awkward mode of movement. It was described by his father as a waddling gait. His appearance and movement were characteristic of double congenital hip dislocation. On drawing the limbs down and shoving up again, they moved through a distance of about an inch and a half, and there was felt a cartilaginous roughness in each limb, most marked in the left. No tenderness or swelling; general health excellent; had no pain; slept well.

Diagnosis.—Separation, and probably absorption of the epiphyses. I recommended fixation and extension by the use of a Thomas double hip-splint. This treatment was not adopted, and the boy was taken to an institution in the United States, where a complicated appliance was employed.

January, 1892, examined the boy again, and found that mechanical appliances of various kinds had been employed, with a view to correcting the lordosis and holding the femora in place. There is, however, little or no improvement. When the weight rests upon the feet, the trochanters are carried far above the normal line. In any case of this kind, I think it exceedingly doubtful whether an ambulatory appliance can be devised which will retain the femora in the right place in reference to the acetabula.

Case 7.—S. B., a girl, nine years of age, first seen with Dr. Hurlburt, of Mitchell, in August, 1902. In March, 1902, she suffered from inflammation, and pain in the right middle ear, and subsequently numerous abscesses formed, two of them being in the vicinity of the hip joints. The girl suffered much, and was reduced to a mere skeleton, and no hope for her recovery was entertained. Subsequently, however, the suppurative process ceased, the sinuses closed and she regained good health. At the time when I saw her, however, she was unable to walk, also very unwilling to be examined; the legs were flexed upon the abdomen, making an angle of about one hundred and twenty degrees, and strongly adducted.

Examination revealed the fact that both femurs were displaced upward and backward, the left much more so than the right. The great trochanter of the left was felt distinctly under the glutei muscles upon the dorsum of the ilium. The diagnosis, in reference to these two joints, was that an acute epiphysitis had caused diastasis of the upper epiphyses, which were probably

gotten rid of in the abscesses above referred to, then dislocation upward of the femora naturally followed.

On coming to the Toronto Orthopedic Hospital, she was placed in the recumbent position, and extension made of both lower extremities by means of the weight and pulley. The limbs were gradually brought more nearly into line with the body, and the right appeared to have a fair degree of anchorage. Gradually, under careful treatment, she became able to walk, but with the amount of lordosis shown in Fig. 6. After the lapse of some months, during which treatment was continued in the gymnasium,

FIG 6.

it was thought well to make an effort to improve the position of the left femur in its relation to the pelvis. Under anesthesia, manipulation was made similar to that which is adopted in replacing the femur in congenital dislocation of the hip. By this means, the remaining portion of the head and neck of the femur was thrown forward, and secured a good anchorage anterior to the acetabulum, lying below the iliac spine. Upon recovery from operative traumatism, there was marked abduction and external rotation, so that after the lapse of some weeks an effort was made to correct the position of the limb. Finding success, however,

only partial, osteotomy was done just below the line of the great trochanter, and the rotation and abduction fully corrected. At time of writing, the plaster dressing is still in position, the girl's health is excellent, the lordosis is fully corrected, the limbs are of equal length, and both have a fair degree of anchorage. While there is no prospect that she will walk quite as well as if the disease had not affected her joints, yet I am confident that she will have an erect figure, a fair degree of motion in each joint, and a gait not greatly noticeable as departing from the normal.

There is another result which is consequent upon pathological conditions existing in epiphyseal cartilages which is worthy of mention. When chronic disease has existed at the knee during the growing period, affecting as it does by congestion the epiphyseal area of both the tibia and femur, it is found that the affected limb is considerably longer after some months or years than its fellow. The explanation is found in the fact that the extra amount of blood present in the vicinity of these growing areas causes a growth which is beyond the normal.

Doubtless there are other and numerous traumatisms and pathological conditions which affect growing bones in the vicinity of the joints, and producing disability or deformity not here referred to, but the above will serve to illustrate a number of conditions which have received but little attention in surgical literature.

NOTE.—Cases 1 and 6 were previously published.

NOTES FROM A RECENT TRIP TO NEW YORK.

BY JOHN HUNTER, M.B., TORONTO.

THE physician, for many reasons, should have an outing at longer or shorter intervals. His life is an exacting one, and demands a very high degree of both mental and physical vigor. He should always strive to keep up his mental and physical equipment like the engines on those fast express trains. With what confidence the engineers turn on the steam, knowing full well that their iron steeds can acquire a speed of sixty, eighty, or perchance one hundred miles an hour. The acme of efficiency should be our talisman. I have no hesitancy in stating that the most frequent and heaviest losses to our professional standing, as well as to our financial interests, come to us from the effect of mental and physical fatigue, rather than from our lack of knowledge or want of skill. How many times have doctors been disappointed and discouraged, when for consultation and help they have called in a man of good attainments, only to find his judgment and skill

so impaired by fatigue as to be of little or no value. It cannot be emphasized too strongly that it is the imperative duty of every one aspiring to do first-class work, to so adjust his work and time as to have the rest and change necessary to keep his mental and physical powers at their highest point of efficiency. Shrewd, practical railway companies know from experience that the best work on their fast trains can only be obtained by restricting the hours of work, both for engineers and engines. The slow locals and freight trains can keep on going all day, so in medicine the scientific worker must set his limitations. It is only the man who is indifferent about the character of his work, or slovenly in his methods, that can plod along from year to year without the inspiring and vitalizing influences that rest, travel, and change of scene can bring. Life is worth living, so let us strive to be always at our best, and always endeavoring to do our best for those who seek our aid, as well as for the honor of our noble profession.

Acting on the maxim, "That whilst one is not obliged to believe all he hears, he is expected to believe all he says," and so testifying to my belief in all I have said, I packed my grip, and soon reached my first stopping-place—Buffalo. This city is a great manufacturing centre. Its spacious avenues, lined with shade trees, stately homes, and beautiful parks, make it a very desirable place to live in. The side-walks in many parts of the city are abominable. The law there is for each property owner to build the side-walk in front of his property, so each street may have many varieties. Along vacant lots, planks, two or three in width, are placed end to end, but as in many human projects, they come out sometimes large and sometimes very small. Their centre fibres, too, like the moral fibres of politicians too long in office, are not to be trusted, hence walking is rather difficult and dangerous, even on many a fine residential street. I had the pleasure of seeing an operation for appendicitis done by Dr. Roswell Park, whom we had the honor of meeting in Toronto lately. Dr. Palmetter also operated. For anæsthetics, they began with the chloride of ethyl, and continued with either chloroform or ether. In one case—a strong young man—after a few whiffs of the ethyl chloride, the jaws became so firmly locked that they could not be forced open until he came under the influence of chloroform.

The run from Buffalo to New York takes about twelve hours. The Lehigh Valley R. R. passes through many prosperous cities, towns, and villages, past coal mines, surrounded by mountains of debris—the waste products screened from the coal. The fields have yielded their rich harvest of wheat and other grain, the woods are resplendent in autumn tints, and the orchards seemed like workmen resting in the evening, satisfied that they

had done their duty in carrying on the work of a beneficent Creator, in providing luscious fruit for the needs of man. Two years have elapsed since my last visit, but even in that brief space of time, New York has made marvellous progress. Massive new structures of stone or marble everywhere. There will soon be a very extensive system of underground railways. Automobiles in endless designs are rushing hither and thither at racing speed. Fifth Avenue, in the afternoon, presents the greatest display of wealth in equipage and dress to be seen anywhere in the world. The one all-absorbing topic, in the newspapers and on the streets, was the election of mayor and other city officials. The Republicans and Fusionist-Democrats, who supported Low two years ago, claimed to have had two years of honest, clean government. The wildest cries of political corruption were raised against the Tammany ticket, and its members pictured in cartoons of the fiercest and most diabolical character. The majority of the great newspapers, and nearly all the prominent preachers, denounced Tammany, but, strange to say, a large majority of the readers of these papers, and of the people who attend these churches, voted the straight Tammany ticket. These editors and parsons are doing a heap of thinking in trying to figure out the influence in mental and moral units they exerted on the voters. Two years ago I had a splendid opportunity of hearing Seth Low and his cabinet enunciate their platform, and this year of hearing McLellan, and whilst Seth Low gave splendid service, yet I have no hesitancy in saying that McLellan will not only maintain, but improve upon, the high standard of excellence his predecessor has established.

With all great circuses, there are usually some fakir sideshows; so, following in the wake of the great municipal menagerie, where the political gladiators, Low and McLellan, Jerome and Burke Cochrane, were slashing each other, aside in the Madison Square Amphitheatre tens of thousands from curiosity listened to John Alex. Dowie, *alias* Elijah III., quasi-preacher, prophet, divine healer,, and real estate exploiter, with his restoration hosts. The Rev. John Alex. impiously asserts that preachers, doctors, editors, and devils belong to one and the same class, and all are equally diabolical in their mission. This impostor is rather short of stature. He has a bald pate, and long white flowing locks, broad face, short pug nose, and heavy white beard. He struts back and forth on the stage, and generally speaks in loud, harsh, bombastic tones. He is very corpulent. His abdominal cavity would make a fine gas tank, and it must be from this borborygmous geyser that he gathers the inspiration for the vile and blatant epithets he hurls at doctors and others who despise this ignorant, brazen-faced, rapacious hypocrite. There is one

thing about Dowie that challenges attention; his shrewd business tact in advertising Zion City. More than half of all the twenty-two tons of literature distributed by his restoration host on every street and by-way in New York, extolled the virtues of Zion City as a sure and very profitable place for investment.

As light diet is more suitable for late hours, I will leave the purely scientific, medical and surgical notes for further consideration. Election morning came; all the doctors were taking a holiday, and, although it was said votes were bringing a high price, I could not barter mine, having been nurtured in a party that eschews evil, so had nothing to keep me in town. I arose at 5 a.m., and, notwithstanding the restrictions Price-Brown and O'Reilly put on cold baths, I enjoyed one as usual, and afterwards took street car and ferry for Jersey City, and boarded first train for Philadelphia. Rambling through Wanamaker's big departmental store, a fac-simile of Eaton's, I came into a handsome dining-room. It was very amusing to watch the facial expressions of the darky waiters as they brought back the change. If the guest pocketed it all, their faces immediately became oblong, 4 by 9, but if a tip was left out, they were instantly transformed into squares 6 by 6.

The run from New York to Washington impresses one with the extent of the immense manufacturing interests of these Eastern states. Cities, towns, and villages furnish an almost unbroken chain, and smoke and flame from factory chimney are in evidence everywhere. In Baltimore, I met our fellow-townsman, Thomas Cullen, who combines brilliant attainments with an exceedingly genial personality. Baltimore, in intelligence, morals and commerce, is said to be the peer of any other American city, yet it has its unique features. The buildings are mostly of red brick, of Puritanic simplicity. Many of the main streets have been paved with prehistoric rocks, and these, like unto their contemporary boulders along the north shore of Lake Superior, have developed very irregularly. If our doctors who aspire to "dash round" in their automobiles, were to try their vehicles on a street in Baltimore, they would have at least some valid excuse for abandoning them a few blocks from home, but would have less cause for being so irate as they scurry down town to "sic" a lawyer on the sly agents and astute manufacturers whom they think have gulled them so mercilessly. As for bicycling—a spin of twenty miles before breakfast—well! I desisted, after reflecting on what Bruce said at the last meeting of the Ontario Medical Association, about a patient of his who had come to grief after attempting to take amongst the boulders of Muskoka what the doctor considered too violent exercise.

The side-walks have been paved with bricks from moulds of

many shapes and sizes. However, it is never monotonous walking, for whilst picking your steps, you have time to observe the great variety of wavelets of soap-suds, boarding-house soup, and other waste products from the art of domestic economy. A moribund cat, rat, or mouse contributes a variety in odors, for here all surface drainage flows "Gentle Avon" like, along either side of the street. Not making rapid progress walking, I stepped on a street car, and this much can be honestly said of the car service, that you need not stop the car to get on or off, for the difference in speed when going or standing still is none too acutely perceptible. On reaching Broadway, a new asphalt-paved, stately street, one stands transfixed as he gazes on the majestic pile of buildings known throughout the world as the Johns Hopkins Hospital. The main building, of vast dimensions and artistic design, is built of red brick with stone facings. It, and the other twenty or more structures associated with it, occupies an elevated plateau of many acres in extent. The grounds are very pretty. Winding paths with rustic seats, trees, shrubs and flowers—all the princely gift of the late Johns Hopkins. What a boon it would be to our Medical College to have a few of our rich men like-minded. Passing through the portals, one enters the rotunda. Here is a massive statue in marble, with a mantle thrown over the left shoulder and draping the body. The pierced feet, the outstretched hands, and a gaze at the face, expressive of such matchless benevolence, inspires the beholder to exclaim, "Ecce homo!" On the pedestal are engraved the words, "Come unto me all ye weary and heavy-laden, and I will give you rest." Gracing the left wall is a life-sized and very life-like painting of Johns Hopkins. In figure and expression there is a resemblance to Sir John A. Macdonald. The characteristic distinction in the depth of the furrows on the face of a business man and a politician is well shown in the picture. In the former, they are deep and permanent; in the latter shallower and more evanescent, as influenced by defeat or victory. Leaving the rotunda, the operating rooms, private and public wards, kitchens, etc., are found to be spacious and thoroughly eqipped. The corridors connecting the different buildings are wide and long, and can be kept open or closed, thus furnishing ideal promenades in all kinds of weather. The very high official positions held by our fellow-countrymen, Professors Osler and Cullen, are intended as two-fold benefactions: first, as a tribute to their brilliant intellectual attainments and honesty of purpose; secondly, as some measure of compensation for having to live in Baltimore instead of Toronto. The professional staff of Johns Hopkins must have used up an enormous supply of clinical material in building up their world-wide reputation, for on leaving for Washington, about the first object in the suburbs

to excite the traveller's attention is an unusually large and most densely-filled cemetery.

The scenery along the route from Baltimore to Washington is not very attractive. The land is inclined to be flat and marshy. Washington, of all the American cities, is, *facile princeps,* the paradise of politicians and bridal parties. I was rapturously extolling the beauties of Washington to one of her citizens. He listened attentively until my supply of adjectives was exhausted, and then, in Yankee tones, admitted that the city was beautiful, but declared that there were more suicides in Washington than in any other city. I asked, Why? Well, he said, there are a great many politicians here who are obliged to commit suicide to cover up their deeds. Our Province would gladly part with a lot of her politicians in this or some other equally effective way. The avenues are paved with asphalt, wide, and shaded with trees. In the numerous parks are botanical gardens, containing all manner of trees, shrubs, plants, and flowers of every "clime" from pole to pole. The avenues and parks lend themselves admirably as resorts for honeymoon parties. Custom puts no restriction on the most gushing demonstrations of love. Young Sambos, with their dusky brides, whose blushes nature kindly obscures, are very much in evidence. One feels somewhat inclined to envy Sambo, when he recalls the exquisite bliss he experienced when kissing the tiny lips of his sweetheart. How immense must be the ocean of Sambo's bliss, when such a large expansion of ruby lips come in contact in the osculatory act.

The lofty Capitol, with its Corinthian pillars, marble walls, and massive dome, is situated on an elevated plateau, reached by tiers of marble stairs, and wide balustrades. The rotunda is ornate with great marble columns that support the dome. Its walls are lined with what seems to a Canadian, at least, much over-colored paintings—scenes representing the surrender of Lord Cornwallis, and other military episodes in which the British are doing all the surrendering. A painting of the battle of Queenston Heights, or the capture of Detroit in 1812, would have given the eye some relief from such brazen glory.

Senate and Congress have spacious apartments in either end of the building. Strolling into the Supreme Court chamber, I was surprised to hear a lawyer declaiming to the court dignitaries that France had no legal status as a republic or nation, and that such an innominate conglomeration of people need not be recognized by us of this mighty republic. Perhaps if France would hang up some old paintings of William the Conqueror's invasion of England, the Yankees would acknowledge her as a republic.

The two-story flat-roofed White House, with its marble walls and columns, its spacious red, white and blue rooms with their lux-

urious trappings, the occupation of which, as a residence, is the cope-stone of Yankee ambition. The wide and ornate corridors, adorned by paintings of present and past presidents and their wives, are ever-resounding to the ceaseless tramp of loyal citizens. Encircling parks, sparkling fountains, and fragrant flowers are its settings. Across the street is the U.S. Treasury. This place would delight Powell's heart, for here women count all the money. They have to count it, too, twenty times over before men take it from them as correct. With deft and lightning speed, feminine fingers count out, on an average, a million dollars a day. In another department, expert women sort over all worn-out money to detect counterfeit bills, etc. What these reject is passed on to men to put in macerators, to be ground into pulp. Here women conserve whilst men destroy. What a picture of the race: Woman on billowy bosom and downy cot, rearing the race; whilst man, on gory battlefield with sword, shot and shell, destroying his fellows.

Washington's monument rears its ponderous marble walls six hundred feet heavenward. Tourists, thirty at a time, are taken up in the elevator five hundred and thirty feet, whence they can obtain a panoramic view of Washington and surrounding country that, in wealth of range and beauty, is scarcely surpassed in the most ecstatic dreams of imagination. The Congress Library is a poem in marble. Its rotunda—in size, artistic design, and richness of material—is said to have no equal in architecture. The massive guns, manufactured at the Navy Yard for fort and warship, are fierce-looking objects. The National Museum is the world in miniature, and its medical section an immense storehouse of the normal and morbid anatomy of the human, and all all other species of animate life.

THE SURGICAL TREATMENT OF HALLUX VALGUS AND BUNION.

BY JAMES NEWELL, PH.B., M.D., WATFORD, ONT.,

Late Professor of Therapeutics in the Michigan College of Medicine and Surgery; Member of the Michigan Surgical and Pathological Society; Corresponding Member of the Wayne County Medical Society, Detroit; late Physician to Detroit Emergency Hospital, etc., etc.

THE term Hallux valgus implies abduction of the great toe. The extent of this abduction is variable, but it is usually to a marked degree. By bunion is meant the swelling and hypertrophy of the tissues over the internal aspect of the metatarso-phalangeal articulation of the great toe, and is extended so as to include the hypertrophied head of the metatarsal bone, and the overgrown base of the first phalanx.

Hallux valgus precedes bunion, and is caused by ill-fitting boots, which are too narrow, causing crowding of the toes. In the natural condition of the great toe, a line drawn through its centre and extended backward will be found to run through the middle of the heel, but it is very rare to find in the adult a foot which is normal. This outward deflection of the great toe uncovers the head of the first metatarsal bone, and with this there is also a slight outward dislocation of the base of the phalanx. Owing to this there ensues an inflammatory condition of the tissues, followed by swelling, hypertrophy, and frequently a false bursa. As the dislocation proceeds, the tendon of the extensor proprius pollicis becomes displaced outwards, and when this displacement becomes well marked a distinct exostosis is very frequently formed. I have thus very briefly outlined the causes which lead up to this deformity.

Treatment.—So far as my experience goes the conclusion has been forced upon me that the palliative or usual treatment resorted to has not been followed by permanent benefit. Of course, properly fitting shoes with a straight internal border, roomy at the toes, but with no dead space, must be advised. Sometimes also there may be a gouty or rheumatoid arthritis which should receive proper medical treatment.

If seen in the early stage of the disease, and which is rare, an appliance to keep the big toe in its proper place may be tried, or a sock having a separate compartment for the great toe. Sometimes placing a roll or wad of cotton between toes, or the wearing of a boot having a separation, or division, rising up from the insole, is found to be of service. Various splints, springs, plasters, traction by elastic, etc., are in use and will afford relief in the early stage of the disease. When, however, the deformity is well marked, and the uneasiness and pain are severe, it is necessary to proceed to operative measures.

Various operations have been employed in which the relief and benefit which followed was an uncertain quantity. Thus such cases have been treated by a straight incision, removal of the false bursa and excision of the exostosis by the chisel or bone forceps, but the result was not what was expected. There are also several other methods which have their advocates. The operation which I have done, and will proceed to outline, has been followed by complete and permanent relief, both of the hallux and bunion.

As the operation is radical and a rather extensive one, involving the laying open of the joint and amputation of the head of the first metatarsal bone, it demands thorough and complete asepsis in the field of operation, instruments, hands dressings, and everything that may come in contact with the wound. The foot should be thoroughly scrubbed and washed

with hot water and soap, and I have found brown soap, such as is to be found in every house, to be as good as any. This is followed by bathing with gasolene or oil of turpentine; wash off with soap and water again, and apply a 1 to 500 solution of corrosive sublimate, or a cream of the chlorinated lime and sal soda. Then finally wash off with sterile hot water. Do not forget to give special cleansing and disinfection to the skin between the toes. The operator's and assistant's hands must also be thoroughly washed, scrubbed, and disinfected, as may be preferred, not forgetting the interdigital skin and nails. Personally I have a predilection in favor of chlorinated lime and sal soda to disinfect the hands. I find it does not roughen them like corrosive sublimate. The operation which I do is the "Tubby operation," and the technique is as follows:

An incision from two to three inches long is made on the inner side of the big toe, with its centre over the bunion. This incision may be straight or curved, or it may be made to include the skin over the false bursa, if there is one. This false bursa must be excised before the incision is carried down to the joint, and its contents not allowed to escape and infect the wound. The incision is now made down to the bone, and the tissues are dissected and separated from the bones. This having been done an assistant thoroughly retracts the tissues, when the joint is freely opened, and the ligaments completely divided. It will now be found that the great toe can be easily turned outward, completely exposing the head of the metatarsal bone. As one of the objects is the removal of the head of this bone, no difficulty will be experienced in inserting a small metacarpal saw and dividing the bone just behind the articular cartilage. The bone should be sawn through obliquely from above downwards and backwards. It is of importance to keep this in mind, as it leaves a much better joint. After the removal of the head of the bone, the sharp edges must be cut off with a pair of bone forceps, and especially so on the outer surface, so as to remove any pressure from the branch of the internal plantar nerve. The under surface also requires to be carefully trimmed, so as not to be irritated by the sesamoid bones. Any exostosis that may be found on the metatarsal bone should now be removed by bone nippers. The wound may now be sponged out with sterile gauze. I have generally operated by the bloodless method, and have never had to ligate an artery. When bleeding has ceased the wound is closed by silk-worm gut sutures. I then place a pad of cotton between the great and second toes, so as to straighten the big toe, and if it is adducted a little, no harm will result. I now apply a light dressing of sterile gauze and place a sheet iron splint on the sole of the foot and big toe, with a piece turned up between the great and second toes to pre-

vent outward deflection. The part of the splint under the toe is curved upward, so as to cause the great toe to point slightly upwards. Next a ier plentiful quantity of sterile gauze is applied over the foot to absorb any serous or bloody discharge, a bandage is applied to the foot and half way up the leg, and the patient placed in bed with the foot elevated. Should the dressing become soiled it must be removed to prevent wound infection. Remember this should not take place, or the results will be bad in more ways than one.

The stitches may be removed in ten days, the splint and pad re-applied, and the foot dressed as after the operation. When the wound is completely healed, passive movements in the joint are instituted in from two to three weeks. The patient may now be allowed to go out, but the splint should not be removed till the end of the month. The pad of cotton between the toes may be kept much longer so as to prevent a return of the hallux valgus. Bunions are looked upon as among the lesser evils, but their common prevalence, the trouble and pain of which they are the cause, induces us to seek out a means whereby we may obtain an adequate and permanent cure.

The final result of this operation leaves nothing to be desired. The foot is restored to its normal appearance, the toe is returned to straight line, but slightly shortened, and the lameness and pain have vanished.

FIXATION OF THE PROLAPSED KIDNEY.*

BY DR. AUGUSTIN H. GOELET, NEW YORK.

[*Abstract.*]

THE author submits a technique of his own employed with uniform success for three years, and argues that the many modifications of the operation prove its necessity and the inadequacy of all mechanical appliances as belts and corsets, except in cases where the kidney has not descended below the border of the last rib in front to prevent further descent, and after operation to support the abdominal organs and insure a feeling of greater security to the patient.

The indications for operation are prolapse of the kidney to the third degree, viz., when the kidney has descended below the border of the lower rib in front, and the upper pole can be palpated when the patient is in the erect position, because it is then an anomalous condition that should not exist and is not conducive to either health

*Read in Section on Diseases of Women at the Fifty-fourth Annual Meeting of the American Medical Association, at New Orleans, May 5-8, 1903.

or comfort. In addition, the position of the kidney interferes with its circulation and function, and with the flow of urine from the kidney, and by compression of the ovarian vein which it overlaps gives rise to pelvic disease.

He emphasizes the importance of careful preparation of the patient for the operation to obviate post operation vomiting which strains the freshly attached kidney and loosens it from its anchorage.

The chief objects to be accomplished are: Permanent fixation of the kidney in its normal position; complete detachment of the colon from the organ to obviate subsequent dragging upon it by the distended bowel; the avoidance of mutilation of the kidney and of the patient, and cure of the symptoms and conditions produced by the prolapse.

The author's technique is briefly as follows: The kidney is reached by a vertical incision along the outer border of the erector spinæ muscle, the muscles being separated in the direction of their fibres; the fatty investment of the kidney is opened by a vertical incision near the spinal side of the wound, and the kidney is delivered through the incision upon the surface of the back. The fatty capsule is then completely detached upon both the anterior and posterior surfaces, care being taken to detach the colon completely. The redundant fatty capsule is trimmed off on both sides. The fibrous capsule of the kidney is not detached or otherwise disturbed. The sustaining sutures, two in number, are inserted only under the fibrous capsule, each having three insertions through and under this fibrous capsule, and the ends are brought out through all the structures of the back at the upper angle of the incision in the skin and are tied over a fold of gauze to avoid cutting by the suture and loosening of the loop. The suture material used is silk-worm gut and the sutures are removed after three weeks. The wound is closed by two layers of cat-gut suture, one uniting the superficial fascia, and the other the skin margins. A gauze drain is inserted about the lower pole of the kidney and brought out at the lower angle of the wound. This aids in supporting the organ, taking the strain off the sustaining sutures during the first forty-eight hours, after which time it is removed.

The author enumerates many reasons why nephropexy may prove a failure, the chief being as follows:

Postponement of the operation until the kidney is seriously disabled or an incurable pyelo-nephritis has developed, or until the health of the patient is permanently shattered;

Failure to completely detach the colon from the kidney which may drag the kidney away from its anchorage or give rise to annoying pain;

Failure to immobilize the kidney until it can become permanently adherent by employing absorbable sutures or by attaching

them insecurely to structures that yield to the constriction when it is tied; and

Fixing the kidney too low down where it will be irritated by pressure of the corsets or clothing constricting the waist.

The author concludes with a record of 159 nephropexies by the method he describes on 126 patients, in 33 of these both kidneys being fixed at the same time, without a death and without a single failure to secure permanent fixation. The ultimate results were cure of the symptoms and conditions depending upon the prolapse in all of the cases he has been able to trace, in from two to twelve months after operation.

TWO CASES OF NORMAL PREGNANCY FOLLOWING OPERATIONS FOR EXTRA-UTERINE PREGNANCY.*

BY FRANCIS D. DONOGHUE, M.D.,
Instructor in Clinical Surgery, Tufts Medical School, Boston, Mass.

THE fact that a woman who has recovered from an extra-uterine pregnancy is liable to a similar accident in the proportion, according to Pestalozza, Sens, and Varnier, of one in four, makes the report of cases of normal pregnancy following operation for extra pregnancy of interest. Two cases of normal pregnancy and confinement, one occurring after a vaginal operation, and the other after an abdominal, the past summer, seemed worthy of record and of interest to believers in conservative pelvic surgery that seems so necessary if we are to do our part in preventing "race suicide."

The cases of extra-uterine pregnancy group themselves naturally into (*a*) the cases in which the tube is ruptured, or aborted; and (*b*) the cases diagnosed before rupture. The first group also divides into cases of pelvic or broad ligament hematocele and free hemorrhage into the abdominal cavity. Hematocele into the broad ligament or slowly forming pelvic hematocele can well be watched and operated upon, or not, as the conditions warrant. Cases in which the hemorrhage stops after the formation of a moderate-sized hematocele can well be treated expectantly. The dangers of expectant treatment are renewed bleeding, and the clot becoming septic. When the hematocele becomes septic, operation through the vagina seems to offer the best chances of recovery. Hemorrhage into the abdominal cavity demands entirely different treatment. The signs are unmistakable—a sudden, sharp pain, faintness, pallor, weak or no pulse, and dulness rapidly develop-

*Read by invitation before the Celtic Medical Society of New York, Academy of Medicine, New York, April 23, 1903.

ing in flanks. In these cases, operation at once is indicated, and necessary, without intravenous saline infusion, or if pulse is extremely feeble or absent, *after* infusion. Waiting for reaction from the shock is dangerous, *as reaction may never come.* In these cases it is usually sufficient to tie off the offending tube, and close cavity without drainage to obtain recovery. The other tube should be invariably left, or if markedly diseased, should be resected, condition of the patient permitting, and left with a newly-formed ostium.

All cases, it would seem, should be carefully watched after recovering from operation for an extra-uterine pregnancy. As with an increasing number of reported results normal pregnancy, it appears, is many more times apt to occur than a repetition of an extra-uterine, we would seem to be doing right when we conserve the pelvic organs of our patients with a view to future pregnancy, but careful watch should be kept for the slightest deviation from normal menstruation after operation.

The question of election by the patient of the treatment desired has been discussed, not so much in this connection as in the case where Cesarian section is indicated for marked pelvic obstructions.

Disinfection for Schools.—A bill passed by the Legislature and signed by the Governor of Pennsylvania makes it the duty of school directors, trustees, or other persons having control of any school or college building to adopt and immediately put into operation a modern method and system of disinfection.

"Mens sana in corpore sano."—Dr. J. H. Carstens, of Detroit, in his address as Chairman of the Section of Obstetrics and Gynecology of the American Medical Association, said: "We must see to it that a young woman has a sound body if she wants to acquire knowledge; it is more important to have a healthy body than to possess great learning. We must oppose the cry that too much is being taught in our higher schools or the universities, that the demand on the mind was too great; for that was entirely wrong. *We must teach that everybody is not born to that higher education,* that only those should attend the higher institutes of learning who have the attributes of the mind that enable them to *learn easily and quickly,* and that even these require plenty of exercise and fresh air. We should insist that gymnastics and systematic physical exercise should be taught in every school in the land, from the lowest to the highest, and that the curriculum of study should embrace the most systematic course of gymnastics to produce a *sound body with a sound mind.*

The Canadian Journal of Medicine and Surgery

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Doctors will confer a favor by sending news, reports and papers of interest from any section of the country. Individual experience and theories are also solicited. Contributors must kindly remember that all papers, reports, correspondence, etc., *must be* in our hands by the fifteenth of the month previous to publication.

Advertisements, to insure insertion in the issue of any month, should be sent not later than the tenth of the preceding month. Agents for Germany, Saarbach's News Exchange, Mainz, Germany.

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Editorials.

EUTHANASIA.

EUTHANASIA has found another advocate in the Rev. Merle St. Clair Wright, who, in an address made before the State Medical Society of New York, favored the putting of incurables to an easy and painless death.

"I appreciate the practical difficulties in the way of the application of the doctrine," said Mr. Wright, "but it seems to me that it is not beyond the bounds of possibility. Of course, it

would be necessary to have the advice and approval of men of the highest scientific attainment. The city might be divided into districts and every application should be considered most carefully, not merely by physicians, but by some eminent clergyman selected for the purpose. And, of course, there should be the consent of relatives and the consent even and request of the patient himself. But where all these conditions are fulfilled and where the prolongation of life is simply the prolongation of hopeless agony, it seems to me that it would be proper that such a patient should quietly, decently, modestly be allowed to end his sufferings. It seems to me that such a course would be a step forward in civilization and a step farther away from barbarism."

It is said that this address caused much surprise, because of its source, but that it was received, nevertheless, with hearty applause, the plain inference being that the assembled medicos were in favor of putting incurables to death. We are not in harmony with this view, and, furthermore, we think it does not represent the opinions and wishes of the great majority of American physicians. Every physician can recall a case in practice, in which, all hope of cure being given up, it might have seemed a mercy to put an end to the sufferer's misery and constantly recurring pains. Yet, be it said to their honor, while physicians grasp at the manifold resources of medical art in order to relieve pain, they refuse to shorten by a single instant the life of the most wretched sufferer. To relieve pain and suffering is the noble office of the physician—to kill is the office of the executioner.

When about to abandon the siege of St. Jean d'Acre, Napoleon Bonaparte, who commanded the besiegers, suggested to Larrey, his chief-surgeon, that, before the camp was deserted, lethal doses of opium should be given to the sick and wounded French soldiers who were unable to march, rather than that they should be allowed to fall alive into the hands of the merciless Turks. Larrey's reply did honor to himself as well as to his profession—"It is the business of a physician to save life, not to take it."

Euthanasia procured by a physician would be simply homicide, and it is quite certain that sufferers from cancer cannot be deprived of life, even at their own request, in order to shorten a week, a month, or a year of pain.

Soaring higher and farther than the desire to end human

suffering, claimed by Mr. Wright and those who agree with him, the utilitarian spirits of the day might easily find other applications for the principle involved. For instance, they might contend that untold suffering and misery might be spared, if the incurably insane could be made victims of euthanasia. Why, they might say, allow senile dements to take up the time and consume the patience of relatives or attendants, when their useless lives might be appropriately shortened by an appeal to euthanasia? Or, why should idiots be allowed to prolong their inane lives, and why should asylums be supported out of public funds for the training of feeble-minded children? Then, if the utilitarian argument is to apply to hopeless pain, decadent age, and fatuous childhood, why should it not be extended to persons who have given evidence that they are the unhappy possessors of uncontrollable criminal instincts and passions?

Already we see, in perspective, enormous developments of the principle of euthanasia. Only this difficulty crops up: Should the State look to the noble profession of medicine for aid in a campaign for euthanasia, it will look in vain. We have too much confidence in the good sense and right feeling of the great American people to suppose for a moment that euthanasia will ever be countenanced in the United States. But even if, like other fads, it should become the recognized cult of some extremists, the necessary taking-off of the patients will not be done by medical men; *non tali auxilio.* J. J. C.

THE PREVENTION OF PNEUMONIA.

THE prevention of pneumonia would seem, at the first blush, to be a rather hopeless venture; but an inquiry into its causes, active and predisposing, leads one to think that more may be accomplished in this direction than appears on the surface.

The generally accepted specific cause of pneumonia is the pneumococcus, known also as the micrococcus lanceolatus, because of its lance-shape, and the diplococcus, because it is united in pairs. It is present in the atmosphere and in dust; but, being a parasite rather than a saprophyte, it may be found once out of five times in the saliva taken from healthy people. It may also be found in the nasal mucus, and even in the intestine. It is

present in almost 90 per cent. of all cases of fibrinous pneumonia; but appears to be gifted with a certain architectural ability, so that, even in the respiratory apparatus, it may excite broncho-pneumonia and bronchitis, as well as lobar pneumonia.

"It frequently causes suppurations in the serous membranes, meningitis, pericarditis, pleurisy, peritonitis, characterized by the presence of exudations, which are of a greenish color, of a thick, semi-solid consistency, and rich in fibrin. The pneumococcus may also produce arthritis, otitis, parotitis, endocarditis (malignant or ulcerative). More rarely it invades the whole organism, and develops a septicemia." (Roger.)

The usual avenue of infection is the respiratory passages, probably the lung itself. Dr. Menzer says that it may occur through the tonsils. Dr. Class, of the Chicago Health Department, who has been studying pneumococcus sore throat, both bacteriologically and clinically, says that in a good many cases of pneumonia, tonsillitis of pneumococcus origin frequently preceded the pneumonia. The inference from his observation would be: that the pneumococcus might enter the system by way of the tonsils, and thus cause pneumonia; or that this coccus, gaining increased virulence by growing on the inflamed tonsils, would become so toxic that a pneumonia would result when, by some means, it entered the lungs.

Excessive indulgence in alcohol is one of the most universally recognized predisposing causes of pneumonia. "In the large proportion of cases admitted to hospitals the disease follows a debauch" (King). Many cases also follow exposure to cold and wet. Even robust men, who are exposed to the inclemencies of the weather, are frequently attacked by the disease, so much so, indeed, that it was once thought to have an affinity for persons in full vigor. In many, if not in the majority of, cases, however, there has been some impairment of health; over-work, alcoholism, some chronic disease, bronchitis or nasal catarrh, has lowered the individual's power of resistance, and thus left him more susceptible to the invasion of the pneumococcus. An individual debilitated by over-indulgence in alcohol, indigestible food, etc., fatigue from exhausting toil, or the weakness arising from old age, may catch a pneumococcus sore throat, the pneumococcus being already present in his saliva; or if he already has a tonsil-

litis, he may be exposed to the coccus of pneumonia in a virulent form, by inhaling dust from the floor of a room occupied by a pneumonia patient.

The direct contagion of pneumonia does not appear to have been recognized in the past by physicians, yet there are men practising to-day in Ontario, who are prepared to certify that they have seen epidemics of pneumonia, in which persons, who had been exposed to the infection fell ill in regular order, just the same as has been noted in outbreaks of smallpox.

Successive cases have been noted in the same locality, as in the house referred to by Schroder, which furnished 32 cases to the clinic of Kiel in fifteen years, 6 of them in one year. Besides epidemics of pneumonia, including many cases in rapid succession, have been repeatedly observed in camps, prisons, and on ships. Tyson refers to 410 cases among a ship's crew of 815. Much more might be added on this score; but enough has been given to draw attention to the prophylaxis of a very dangerous disease.

It would seem appropriate, therefore, (1) that care should be taken by physicians and nurses to isolate pneumonia patients, and very great care to provide for the methodical disinfection of their sputa by steam or fire. A pneumonia patient should continue to use a spit-box until cured of the disease. (2) During the season of closed doors and windows, ventilation should be practised, sunshine being allowed to penetrate into, and fresh air being permitted to flow through, rooms which are regularly or occasionally inhabited. (3) Attention should be paid to the hygiene of the mouth and nasal passages by each person, and the wants of children, in this respect, should be attended to by their parents. (4) The gospel of hygienic living—exercise in the open air, with avoidance of over-eating and stimulants—should be widely preached. J. J. C.

EDITORIAL NOTES.

The Pathology of Acute Rheumatism and Allied Conditions —In the *British Medical Journal,* September 19th, 1903, p. 659, appears a progress report on the chemical pathology of acute rheumatism, by Drs. Walker and Ryffel. The authors state that in a previous note they have published their views on the biologi-

cal characters of the micro-organism originally observed by Triboulet. To this organism they venture to apply the distinctive term "micrococcus rheumaticus." By inoculating rabbits with it, they produced all the manifestations of rheumatism, excepting chorea and cutaneous erythemata. In the last note they particularly study the chemistry of the micrococcus, particularly the property it possesses of producing formic acid. They conclude that the "micrococcus rheumaticus" produces a considerable quantity of formic acid, and also at least one other acid of the fatty series. Formic acid is present, not only in the filtered cultures of the organism, but it can also be extracted from the bodies of the micro-organism themselves. The authors remark that ordinary streptococci, such as a streptococcus isolated from a case of erysipelas, only give rise to a small quantity of formic acid. This observation may constitute a means of differentiation between the rheumatic organism and other members of the streptococcus group. Besides formic acid and probably another fatty acid are present in the urine during the course of acute rheumatism, in appreciable amounts, whereas they are either altogether absent from normal urine, or else occur in traces only. Under the influence of the salicylic acid treatment of rheumatic fever, formic acid, in the opinion of the authors, is reduced in quantity in the urine of the patient. The authors have also succeeded in extracting formic acid from the tissues of an animal (rabbit) suffering from acute arthritis, due to the inoculation of the micrococcus rheumaticus. They say further: "The connection of formic acid with the activity of the rheumatic micrococcus is of considerable interest in relation to the evidence of country folklore, since it is currently alleged that persons who keep bees, and are thus frequently subjected to the action of formic acid are peculiarly insusceptible to rheumatism." They also state that there are already indications that the beneficial action of salicylates in rheumatism may find a simple chemical explanation.

Appendicitis and Opium.—Dr. Ch. Krafft, of Lausanne (*Revue de Chirurgie,* 1903, No. 4), discusses, with a good deal of earnestness, the question: Should a physician give opium to a patient who is attacked with appendicitis? First of all he devotes great attention to the chief sign by which colitis (medical appendicitis) is distinguished from periappendicitis (surgical

appendicitis). This sign is not dulness, which is lacking in 30 per cent. of the cases of appendicitis. Neither is it the "wet pasteboard" feeling described by Roux, which does not exist at the beginning of the disease, and is not found at all, unless a phlegmon develops. It is acute pain which is never wanting in such a case, and which is revealed on making methodical palpation. In catarrh of the whole intestinal tract, in colitis, all observers agree that castor oil should be given freely. If the appendix and its envelopes are the sole cause of the trouble, and in such an event, palpation, by irritating the tissues at the McBurney point, will make the case clear, opium should be given. Dr. Krafft then strives to prove: (1) That surgeons do not use opium as a treatment of appendicitis, but simply to allay pain and check peristalsis, until an operation can be done; (2) that purgatives and clysters are dangerous, because the peritoneum, which in periappendicitis is always inflamed, is heavily handicapped in its efforts to encapsulate the disease, if it is disturbed by irrigations administered per os and per rectum. To sum up: The author concludes, that in appendicitis, which he thinks should be called periappendicitis, an operation done at the selected time is the sole rational treatment; opium is an aid to the operation; it soothes the patient, and by the intestinal repose which it procures, favors the formation of adhesions. Clysters and purgatives are useless, and may be dangerous. Their use ought to be condemned as soon as the surgeon demonstrates the existence of tenderness at McBurney's point.

Kernig's Sign in Pneumonia.—Kernig's Sign, *i.e.*, that in the dorsal decubitus, the patient can easily and completely extend the leg, while in the sitting posture the leg cannot be completely extended is recognized as a sign of meningitis. It was recently recognized in a man affected with pneumonia in the right lung of the migratory type, who was under the care of Dr. F. Widal, at the Cochin Hospital, Paris. Drs. Marfan, Sicard and Georget have also made similar observations on its appearance in pneumonia. French, writing on pneumonia, says (Practice of Medicine, p. 125): "Meningitis, attributed to the migration of the pneumococcus, is encountered during the height of the fever in some cases. It usually affects the cerebral cortex, but is much more easily recognized when it attacks the base of the brain. It is then indicated by

severe headache, sluggish response, or unequal dilatation of the pupils, rigidity and retraction of the neck, with a tendency to delirium or stupor." French does not mention the appearance of the Kernig sign in cases of pneumonia which are complicated with meningitis. An editorial writer in *Le Bulletin Medical de Quebec,* Septembre, p. 44, says: "The Kernig sign is found in all cases of irritation or lesion, more or less deep or more or less extensive of the meninges. The absence of this sign does not permit us to exclude the possibility of irritation or lesion of the meninges. It is valuable solely by its presence (Roglet, Th. Paris, 1900). Kernig's sign has been met with outside meningitis, in meningeal hemorrhage (Widal) and in typhoid fever. To-day, it takes its place in the clinical picture of pneumonia, and shows how easily the nerve centres may be attacked by the pneumococcus." J. J. C.

Disorders of Cardiac Function Observed in the Nasal Passages.—In Deutsche Militar Zeitsch., September, 1903, p. 586, Dr. Heyse shows that two different forms of cardiac trouble may take their point of departure from the nasal cavities: (1) The reflex neuroses, which originate in the nasal mucous membrane, and are well known to practitioners; (2) cardiac disorders, resulting from narrowing of the nasal cavity, which are only exceptionally mentioned in medical literature. The last-mentioned disorders show themselves particularly after violent physical exercise, forced marches and races, while the former possess the distinctive character of appearing when the subject is in a state of repose, even when lying down, as in attacks of tachycardia, palpitation of the heart, or precordial distress. The cardiac disorders to which Dr. Heyse alludes are met with in cases of hyperplasia of the turbinated bones, and in deformity of the nasal septum. When these initial lesions become chronic a hypertrophy of the myocardium, accompanied by functional insufficiency, may result. The pathogenesis of these pathological phenomena is interpreted in different ways. In this connection, one thing alone appears to be demonstrated up to the present time, and that is that mouth-breathing cannot replace breathing through the nose, which is indispensable for the perfect working of the functions of the lungs and the heart.

Why Children Like Sweets.—Why are children so fond of sugar, farinaceous food, and potatoes? Why are some children fond of substances which are apparently indigestible, such as clay, lime, coal, and chalk? Dr. Borissoff undertakes to answer these questions in the *Russian Medical Journal,* Vratch. He thinks children like sugar and farinaceous food, because, on account of their active movements, they require respiratory food. These foods play a double part in the nutrition of children. They make up for the loss of heat, which in children is greater than in adults; they make up for the wear and tear of the muscles, which is proportionately greater in them than in adults. In coal, clay and lime children find iron, lime and salts requisite for the building up of their tissues. To show the justice of these views, Dr. Borissoff made the following experiments: Cocks and hens were enclosed separately in cages in which oats had been put, as well as portions of phosphate and carbonate of lime in saucers. The cocks did not touch the lime; but the hens took about one gramme a day per capita. Dr. Borissoff thinks that the taste of hens for lime depends on the same reasons as the love of children for sugar. Hens, which lay eggs, require salts of lime for the formation of the shell of the egg, so that in picking lime they obey a natural instinct. Cocks, which do not lay eggs, do not touch lime.

The Sterilization of Catheters.—Dr. Goldberg, in *Centralblatt fur Harn und Sexual Organe,* 1903, p. 451, reports the results of a careful and minute work done in order to obtain positive data as to the sterilization of catheters. He concludes that exposure to the vapors of formalin for twenty-four hours will sterilize a catheter of large calibre, but not one of the smaller kind. Steam at 212 degrees F. gives excellent results, but the surest and most trustworthy procedure is to immerse the catheters in boiling water for from five to ten minutes.

The Etiology of Typhoid Fever.—Dr. Schuder reports on the etiology of typhoid fever in *Zeitschr. fur Hyg. und Inf., t.* xxxviii. pp. 342-352. He says in substance: Although the agent by which typhoid fever is propagated and its method of operating are well known, carefully prepared statistics of epidemics of typhoid fever, showing exactly how the disease is propagated, seem to be lacking. Dr. Schuder endeavors to supply the deficiency and publishes a table of 650 cases of epidemic typhoid

fever. In 70 per cent. the vehicle of the disease was water, in 17 per cent. milk, in 3 1-2 per cent. foods of all kinds, and in 9 1-2 per cent. other factors.

PERSONALS.

Dr. Oskar Klotz, a graduate of Toronto University, and until recently house surgeon at the Ottawa Isolation Hospital, has been appointed to the fellowship of pathology at McGill University.

Brefney Ralph O'Reilly, M.D.,C.M. (gold medallist, 1903), passed successfully the written and oral exams. in midwifery and gynecology, held in London in October, for the conjoint degree L.R.C.P. (Lond.) and M.R.C.S. (Eng.). Dr. O'Reilly is taking a practical course in University College Hospital, London, and intends taking a course at the Rotunda, Dublin, also.

Mr. Wilfrid P. Western, 6 Glen Road, Toronto, about a year ago commenced to do massage work in the city, and has met with the support of many practitioners. He is certainly an expert at his work, having not only the natural facility for it, but possesses correct hands, and has a wonderful grip for muscle kneading. He is versed in the Battle Creek Sanitarium and German methods, having had training under a Dresden physician for a year and a half, during which time he studied both anatomy and physiology. Mr. Western is a non-loquacious manipulator, and requires his patient during operation not only to rest his brain by closing his eyes, but to, of course, relax all of his muscles. Mr. Western was in charge of the Men's Massage Clinic at the Boston Dispensary for six months in 1902, and holds a most complimentary certificate from that institution.

Dr. John C. Mitchell, of the Toronto Asylum staff, has been appointed by the Ontario Government medical superintendent of the new Provincial Epileptic Hospital now under course of erection at Woodstock, which, it is expected, will be completed early next year. The appointment has been made now to give the superintendent an opportunity of visiting some of the best institutions in other countries before it is necessary to under-

take the duties of the opening of the new hospital. Dr. Mitchell will be allowed leave of absence from his present position from time to time during the coming winter to enable him to better equip himself with the full knowledge and experience to be gained by visiting similar institutions on the continent and in the Old Country. He will at his own expense spend three months in Europe gathering information as to the most modern methods of treatment for epileptic patients. Dr. Mitchell has been connected with the Toronto Asylum for over two years, and is a past president of the Ontario Medical Association.

ITEMS OF INTEREST.

Polk's Medical Register.—The eighth revised edition of this well-known work is now under way, and will appear in due time. Send for descriptive circulars, and do not be deceived by imitators. Polk's Medical Register and Directory has been established sixteen years. R. L. Polk & Co., Publishers, Detroit, Mich.

The Daily Medical Journal will be published January 1st, 1904. We need a physician as staff correspondent in every town in this Province, to supply us with scientific, social, institutional and personal news, and will pay regular newspaper rates for this service, with instructions, stationery and badge free. Address, Mr. J. Antonowvitsch, 154 East 72nd Street, New York, N.Y.

Myopia and School Life.—Examinations of over 200,000 pairs of eyes and careful tabulation of the results in the Boston public schools show that nearly all children enter the primary schools with normal eyes. In the higher grades one-fourth of the pupils are myopic, and in universities this increases until from 60 per cent. to 70 per cent. of the students are myopic. In other words, nearsightedness increases steadily from the lower to the higher grades, and in exact proportion to the length of time devoted to the eyestrain of school life.—*Annals of Gynecology and Pediatry*, Boston, Mass., May, 1903.

A Private Ambulance.—With commendable business foresight, the F. W. Matthews Co., 457 Queen Street West, Toronto, have installed a private ambulance, which they place at the disposal of the profession. The company are prepared to answer calls at any hour, day or night, for the removal of cases (any but contagious) from the home to the hospital, or *vice versa*. So long as they are within the city limits the charge is but $2.00 per call, and for outside the city limits the charge is in proportion. The ambulance is very handsome and is in every respect up-to-date. It runs on rubber tires, is electrically lighted, carries an emergency kit, and is furnished with a pneumatic mattress.

Death of Dr. D. S. Oliphant, of Toronto.—Dr. David Sewell Oliphant, who when he retired three years ago was the oldest active practitioner in Ontario, died November 13, in his 88th year. He was born at Keene, N.H., and spent the early part of his life in New Orleans. In that city, during the yellow fever epidemic of 1860, he won an enviable reputation by his successful treatment of those afflicted with the disease. He lost his property in the Civil War, and nearly forty years ago came to Toronto, where he lived until his death. He was widely known as a homeopathist. He was married in 1847, and his wife survives, with two daughters, Mrs. William Galbraith and Mrs. Gallagher, both of Toronto. The funeral was private.

Ontario Medical Library.—The Executive Committee of the Ontario Medical Library Association held two meetings last month to discuss a plan of the association for obtaining a suitable building to establish a library. We understand that a house in Queen's Park is in view, and all the current medical journals and the most recent medical books will be on file there. A medical reference and circulating library will also be established. The Toronto Medical, Toronto Clinical and Toronto Pathological Societies will hold their regular meetings in the new building. The committee in charge of the matter consists of Dr. J. F. W. Ross, President, and Dr. H. J. Hamilton, Dr. A. A. Macdonald, Dr. H. T. Machell, Dr. J. T. Fotheringham, Dr. W. J. Greig, Dr. H. B. Anderson, Dr. H. A. Bruce, Dr. R. A. Reeve, Dr. N. A. Powell, Dr. R. A. Pyne and Dr. A. McPhedran. The committee will meet again to finally decide the matter this month.

Genuine Hygiene in the Public Schools.—It is refreshing to realize that educators and those interested in educational methods are at length beginning to realize the importance of having hygiene taught in the public schools from the standpoint of the sanitary scientist rather than of the faddist with regard to some presumed evils. There are good grounds for dissatisfaction with the present methods of teaching hygiene. As suggested by Dr. Putnam, of Providence, R. I., in her paper on the "Department of Hygiene and Public Schools," in order to secure the proper teaching of hygiene it will be necessary to secure special training on the part of teachers in this branch, and also to commit the management of the department in the high schools of our cities, at least, to some one who has not only theoretic, but practical, knowledge of this progressive and important subject.—*American Medicine.*

Jackson Health Resort.—The attention of Canadian physicians is called to this institution as one that offers exceptional advantages and attractions. Under personal care of regularly edu-

cated and experienced physicians. Location in a hillside park overlooking the beautiful Genesee Valley country. Pure spring water, nearly identical with the noted springs of Contrexeville, in France. Clear, dry atmosphere, free from fogs and malaria. Thorough drainage and sewerage systems. Elegant fire-proof main building, and twelve cottages, steam-heated and designed to meet every requirement of invalids or seekers of rest and quiet. All forms of fresh and salt-water baths, electricity, massage, Swedish movements, inunction, etc., scientifically administered. Especial provision for quiet and rest, also for amusement and regular out-door life. Freedom from taxations of fashionable life, and from excitements and temptations of popular resorts. Electric bells, electric lights, safety elevator, library, daily papers, open fires and every appliance for comfort, health and good cheer. It is on the Delaware, Lackawanna and Western R. R. from New York or Buffalo, without change. Jackson Health Resort was established in 1858.

"The New York World" Thrice-a-Week Edition.—The *Thrice-a-Week World* long ago established itself in public favor, and it is now recognized as the strongest publication of its kind in the United States. Advertisers and publishers seeking clubbing combinations—and they know best—universally testify to this. It is widely circulated in every State and Territory of the Union, and even in remote South Africa and on the goldfields in the deserts of Australia. These are the things that tell. Next year we have the Presidential campaign, in which all Americans are deeply interested. Already the issues are being discussed, and the two great parties are preparing for the first moves. You will not want to miss any details, and if you subscribe now your year's subscription will cover the campaign from beginning to end. The *Thrice-a-Week World* is absolutely fair in its political news. Partisan bias is never allowed to affect its news columns, and Democrat and Republican alike can obtain in its pages truthful accounts of all the great political contests. In addition to all the news, the *Thrice-a-Week World* furnishes the best serial fiction, elaborate market reports and other features of interest. The *Thrice-a-Week World's* regular subscription price is only $1 per year, and this pays for 156 papers.

Occasional Christian Science Treatment.—*Ethel* (who has been eating green apples): Oh, my! Mother, I have cramps. *Mother* (who believes in Christian Science): My love! I tell you that you have not got cramps. *Ethel:* But, ma, these cramps are just awful. *Mother:* There now, dear, just think you've not got cramps, and you'll soon be well.

Selected Articles.

VERONAL, A NEW HYPNOTIC.

BY DR. ARONHEIM, OF GEVELSBERG.

SEVERAL weeks ago I received a quantity of veronal (diethylmalonylurea) from E. Merck, of Darmstadt, with the request to use it in suitable cases and test its hypnotic property. The supply was employed in the following cases:

1. Mr S. L., 63 years of age, was suffering from anemia, anorexia and insomnia in a high degree, in consequence of carcinoma of the stomach. The sleeplessness was her main complaint; hence she begged for a powder. On June 4 she received 0.5 Gm. (7 1-2 grn.) veronal; directed to take it in the evening dissolved in half a cup of peppermint tea. After this and the subsequent powders, she slept well for several hours, and felt considerably refreshed and strengthened in the morning.

2. C. S., 75 years old, was afflicted with exudative erythema of the face, head and back of the neck, the itching of which disturbed sleep very much. Besides an ointment consisting of zinc oxide 3, bismuth subnitrate 3, anthrasol 5, and lanolin to make 50, he received methylatropine bromide 0.003, and veronal 1 Gm. (15 grn.). He slept well for several nights after taking this powder.

3. Mrs. E. R., aged 55 years, had suffered since arriving at the climacteric with simple melancholia. She said she slept at most two and a half hours. After 0.5 Gm. doses of veronal, according to her own statements and those of her daughter, she slept about five hours; and in the morning she was always well save for a slight mental dulness, and rejoiced over the nightly rest.

4. Miss L., 60 years of age, had had severe injury to a finger of the right hand six weeks before, necessitating amputation of the right middle finger. Owing to severe nocturnal pain in the wounded hand 1 Gm. veronal was prescribed; she slept soundly from 10 p.m. until 6 o'clock the next morning.

5. Mrs. J. B., 40 years of age, was afflicted, for three days, with violent febrile erysipelas of the head and face. The previous medical treatment had consisted of methylatropine bromide 0.002, phenacetin 0.5, ichthyol and anthrasol 3 each, mercury

bichloride 0.3, lanolin to make 30. On account of insomnia she received 0.5 Gm. veronal; as a result she had a good sleep for several hours.

6. A. T., 42 years old, had advanced phthisis. Slept well after taking a powder consisting of 0.002 methylatropine bromide and 0.5 Gm. veronal.

7. W. B., 56 years of age, in consequence of concussion of the brain and left-sided intracranial hemorrhage was suffering from aphasia and paresis of the right upper and lower extremities, and showed great motor unrest. After 1 Gm. veronal there was deep, sound sleep, and an improved general condition in the morning.

8. R. H., 54 years of age, was afflicted for months with polyneuritis chronica alcoholica; exceedingly violent pains in the atrophic peroneal musculature of both legs, and in consequence insomnia. He received three 1 Gm. powders of veronal, and slept for several hours after each.

9. D. v. B., 55 years old, received 1 Gm. veronal on account of insomnia attending bronchitis; slept in consequence from 11 o'clock in the evening till 6 o'clock in the morning.

10. W. B., 45 years of age, ill with catarrhal bronchitis of both lower lobes, received for the night cough methylatropine 0.002, veronal 0.5 Gm.; slept after it about five hours without being disturbed by coughing; the next morning he felt perfectly well.

11. F. H., 58 years old, was suffering from pulmonary phthisis. On request he received as a hypnotic powder methylatropine bromide 0.002 and veronal 0.5 Gm.; slept four hours without coughing, and had no unpleasant after-symptoms the following morning.

12. The 45 year old Miss M. K. was suffering for weeks with general pruritus; could not sleep at night owing to intolerable itching; besides an ointment of anthrasol 10, tincture benzoin q. s., lanolin and vaselin equal parts to make 50, she received methylatropine bromide 0.002, veronal 0.5 Gm., and after each powder slept for several hours.

13. F. K., 25 years of age, had the same ailment, and received the same treatment, with the same success.

14. E. K., 8 years old, was affected with bronchitis of both lower lobes posteriorly; received for the night, which was disturbed by the irritating cough, methylatropine bromide 0.0005, veronal 0.2 Gm. (3 grn.), with good result.

15. J. K., 5 years of age, suffering for three years with perityphlitis, slept well after taking powders consisting of methylatropine bromide 0.0005 and veronal 0.2 Gm., without the appearance of untoward accessory effects.

16. W. B., 20 years old, suffering from insomnia caused by

a tendinous felon of the right middle finger, on request for a hypnotic received veronal 1 Gm. Returned with the statement that he had slept well again for a week.

Since the above favorable experience I have prescribed the hypnotic in various cases of insomnia in men, women, and children, in doses of 1, 0.5, and 0.2 Gm. (15. 7 1-2 and 3 grn.) often in combination with methylatropine bromide), and in every case the results were favorable. Unpleasant by-effects were not observed in any patient; on questioning, every one remarked that he felt rested and could with a clear head attend to his usual work in the morning, provided bed-riddenness did not prevent so doing.

I can accordingly join in the opinion of the other physicians who have had experience with veronal, that this hypnotic is an excellent acquisition to our materia medica.

HOLD FAST TO THAT WHICH IS GOOD—IN THERAPEUTICS.

BY J. J. DOOLEY, M.D., NEW YORK.

THE combination of albumen with urine is, in every case, evidence of pathological conditions.

This fact impresses upon the mind of the progressive physician of to-day the further and additional fact that the kidney is a more important factor in diagnosis than the pulse.

While the latter may indicate certain febrile movements the former enables the physician to discover the cause or causes of such movements, and thus enables him to begin at the beginning in his efforts to eradicate the disease with which he has to contend.

It is for this reason the late Professor Gross, in closing his lectures on surgical pathology, always admonished his students to "watch the kidneys from start to finish."

Flush the kidneys for the health of the body as you would flush the sewer for the health of a city or community.

This has been my motto since I began the practice of medicine, and I have followed it with much satisfaction to myself and my patients.

While I seek the remedies suited to this purpose in the pharmacopeia, I more frequently resort to nature's remedy—Buffalo Lithia Water—which I find better suited to the majority of cases than any other therapeutic agent with which I am acquainted.

In hyperemia of the kidneys, either active or passive, especially that form following interstitial pneumonia in which there

is marked destruction of the capillaries in the pulmonary parenchyma, this water produces beneficial results which are truly amazing. Every trace of albumen quickly disappears, and the normal specific gravity of the urine is promptly restored without hydremia or thinning of the blood serum (dropsy).

I have found Buffalo Lithia Water equally effective in acute parenchymatous nephritis, especially when due to pregnancy or other functional derangements.

It also affords much relief in chronic nephritis, nephrophthisis pyelitis and renal cirrhosis. In fact it is my habit to prescribe Buffalo Lithia Water in all stages of Bright's disease.

I find that it reduces febrile disturbances in the earlier stages of the disease, and insures rest and physical comfort. As the disease progresses it seems to prevent the mental depression or melancholia usually present in this trouble.

The prompt and permanent benefit following the liberal administration of Buffalo Lithia Water in malarial hematuria is truly remarkable, the absence of both blood cells and albumen being noted within a few hours.

Buffalo Lithia Water is not only a prompt eliminator of extraordinary potency in the class of kidney ailments briefly referred to, but its solvent powers in nephrolithiasis, or renal calculus and stone in the bladder, are equally great, and have long been recognized by leading physicians and surgeons throughout the civilized world.

I prefer, however, to speak of it first as a preventative in the latter class of ailments. This property in this water seems to be due to the fact that it neutralizes and eliminates uric and oxalic acids wherever found in the human system, and chemists are agreed that these elements are essential to the formation of stone in the bladder.

The amorphous renal gravel—that is, the powdery sediments which constitute the starting-point and the basis of what is ordinarily called renal gravel, is rapidly dissolved by Buffalo Lithia and discharged without discomfort via the normal channels before it has had time to assume a definite concrete form or shape.

To accomplish this result, I administer this water *ad libitum*, and in quantity limited only by the stomach capacity and comfort of the patient.

That Buffalo Lithia Water is the most powerful solvent of organized stone in the bladder, known to the medical profession, is an incontrovertible fact and one known to the profession for more than half a century. Whatever be the character of the stone in the bladder—whether a phosphate, an oxalate or a urate —it attacks it with equal energy.

It seems to dissolve the acid-base of the stone which at first

becomes quite porous and then disintegrates or falls to pieces, and the resulting detritus or debris is finally expelled from the bladder.

This theory is based on the fact that this water acts with extraordinary vigor on uric, oxalic and phosphoric acids, whether alone or in combination with other acids or basic salts.

It also attacks gall-stones with much force and aids in their elimination and expulsion from the alimentary tract.

In nervousness and insomnia due to brain fag or defective metabolism, I have found Buffalo Lithia Water of decided value, also in alcoholism and morphinism where the secretions are defective or totally suspended. In this class of ailments I attribute its good results to its property of removing from tissues all dead cells and other waste products whose presence is undoubtedly a bar to the proper performance of many of the normal functions.

I have also found Buffalo Lithia Water of decided therapeutic value in certain forms of stomach indigestion where there are sour eructations, and also in intestinal indigestion when the generation of gases is a marked and disagreeable symptom. In fact, I am firmly of the opinion that the good work of this valuable water begins in the stomach where it neutralizes morbid acid secretions, and paves the way to improve digestion and assimilation.

This accounts in a measure for its value as a preventative of uremia and its sequelæ—such as nervousness, epileptic-like convulsions, maniacal manifestations and coma.

In cystitis or catarrhal conditions of the urinary bladder Buffalo Lithia Water seems to exercise a specific action by allaying all irritation and inflammation, and thus securing lasting relief and comfort for the patient.

In conclusion I would impress upon the minds of the physicians two important points in connection with this water: first, get the genuine Buffalo Lithia Water; second, see that your patients drink it regularly and freely.

LACTO-GLOBULIN AS A THERAPEUTIC AGENT.

THE following are some interesting notes as to the use of Lacto-Globulin. They serve to give an idea of the wide field covered by this preparation:

Dyspepsia (Excess of chlorhydric acid).—Woman, aged 52, ill for two months. Treated by milk diet, bismuth. Some improvement. On a diet of Lacto-Globulin, well in five days; ordinary diet resumed.

Rheumatic Gout (With valvular heart trouble).—Female, aged 50, much emaciated. Lacto-Globulin only food retained by stomach. It was administered alone during fifteen days. Ordinary feeding gradually resumed. Weight increased to normal, and health returned to such an extent that she was able to leave the house for the first time in seven years.

Gastritis (Alcoholic).—Male, aged 32. Nothing retained by stomach. On diet of Lacto-Globulin gastric irritation subsided.

Phthisis (advanced case).—Persistent vomiting. After all diet and remedial agents were exhausted without result, patient given Lacto-Globulin, which was retained, and afterwards given with the most beneficial results.

Pneumonia (senile).—Male, aged 84. Lacto-Globulin only food taken for eight days, and its use continued during a period of sixty days. Strength maintained owing to the fact that patient was enabled to take a sufficient daily supply of albumen to prevent asthenia from ensuing.

Rheumatism (Acute articular).—Boy, aged 13, temperature 103 at onset, varied between 102 to 103 on milk diet and salicylates. On sixth day placed on exclusive diet of Lacto-Globulin. In thirty-six hours temperature normal. Improvement permanent.

Diarrhea (in phthisis).—Use of Lacto-Globulin controlled it in three cases.

Diarrhea (Chronic).—(*a*) Woman aged 31, has had diarrhea for twelve years. Is much benefited by use of Lacto-Globulin. (*b*) Miss K., has suffered from attacks for last eight years. Diarrhea becomes impossible to control. On occurrence of attacks takes Lacto-Globulin, when it quickly ceases.

Chloro-Anemia.—Two cases recovered in sixty days without any other form of treatment.

Anemia.—Child, aged 4, underweight and weak. With Lacto-Globulin appetite improved and weight increased.

Atrophy (Infantile).—Child, aged eight months. By persistent use of 1-20 grain hydrarg. chlor. mite and diet of Lacto-Globulin, child recovered.

Rectal Feeding.—According to Latschenberger, von Voit, Bauer, Eichhorst and Czerny, albuminates in perfect solution are absorbed without being transformed into peptone. According to Gauthier, Para-Globulin in solution has the property of passing rapidly by exomesis through animal membranes such as those of the bladder and intestines. This property is not common to ordinary albumen or analogous substance. Lacto-Globulin possesses this quality and is particularly adapted to rectal feeding. It renders this method easy and effective, and does not tire the intestines.

HOW DROWNING FEELS.

"I AM collecting statistics," said a clerk in the coroner's office, "on the sensations of drowning persons. From would-be suicides, from shipwrecked sailors, from old books and magazines, I have gathered a great number of facts, all pointing to the conclusion that drowning is always a pleasant sensation.

"Admiral Beaufort, when a boy, came near drowning. He fell overboard from a dock, and, as he couldn't swim, he sank and for five or six minutes was under the water. He describes his sensations in this way:

"'From the moment that all exertion had ceased a calm feeling of the most perfect tranquillity succeeded the previous tumultuous sensations—it might be called apathy, certainly not resignation, for drowning no longer appeared to be an evil. I no longer thought of being rescued, nor was I in any bodily pain. On the contrary, my sensations were now of a pleasurable sort, partaking of that dull but contented sort of feeling which precedes the sleep produced by fatigue. Though the sensations were thus deadened, not so the mind; its activity seemed to be invigorated in a ratio which defies all description, for thought rose after thought with a rapidity of succession that is not only indescribable, but probably inconceivable by anyone who has not himself been in a similar situation.'

"Another man," continued the coroner's clerk—"this chap had tried suicide and failed—told me that after the first moment of struggle and revolt that begins drowning he heard church bells ringing and was amazed at the sense of comfort and peace that he had. He seemed to be floating through space. In the blue sky forms clothed in white darted, flashing their golden wings. Then suddenly a great darkness fell, and the man awoke to the horrors of resuscitation. For they were rolling him, it seems, upon a barrel.

"I have statistics of twenty cases of drowning, and in each case the sensations were pleasant."—*Philadelphia Record.*

A Roof-Garden Dormitory.—A roof-garden dormitory is to be installed at the City Hospital, Philadelphia. The idea is that of Dr. Martin, the new Director of Health and Charities, who thinks that the carrying out of such a plan will be the means of giving those suffering from tuberculosis nine hours more of each clear day in which to breathe the open air. In the daytime the cots will be removed, and the roof, with flowers and shrubbery, will be used as a promenade and recreation ground for the consumptives.—*Med. Record.*

The Physician's Library.

BOOK REVIEWS.

The Practical Medicine Series of Year-Books. Comprising ten volumes on the year's progress in medicine and surgery. Issued monthly, under the general editorial charge of GUSTAVUS P. HEAD, M.D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. Volume VIII., materia medica and therapeutics, preventive medicine, climatology, suggestive therapeutics, forensic medicine. Edited by Geo. F. Buller, Ph.G., M.D.; Henry B. Favell, A.B., M.D.; Norman Bridge, A.M., M.D.; Daniel R. Brower, M.D.; Harold N. Moyer, M.D. July, 1903. Volume IX., physiology, pathology, bacteriology, anatomy, dictionary. Edited by W. A. Evans, M.S., M.D.; Adolph Gehrmann, M.D., William Healy, A.B., M.D. Volume X.; Skin and Venereal Diseases, by William L. Baum, M.D., Professor of Skin and Venereal Diseases, Chicago Post-Graduate Medical School; Nervous and Mental Diseases, by Hugh T. Patrick, M.D., Professor of Neurology in the Chicago Polyclinic, Clinical Professor of Nervous Diseases in the North-Western University Medical School. With the collaboration of Charles L. Mix, A.B., M.D., Professor of General Medicine in the Post-Graduate Medical School of Chicago. Chicago: The Year-Book Publishers, 40 Dearborn Street. August, 1903.

These volumes are uniform in size and binding, and average from 250 to 300 pages. They are nicely arranged, and are of a convenient size to read and handle.

Volume VIII. devotes 154 pages to materia medica and therapeutics, 53 to preventive medicine, 39 to climatology, and 69 to suggestive therapeutics and forensic medicine. We were very much pleased with this volume, especially with the section on materia medica and therapeutics. The extracts are full enough to give one all that is required on the drugs or remedial measures. Many of the newer remedies and alkaloids receive notice, but the old standard remedies receive a good deal of attention. The name and date of the journal from which the extract is taken is given at the bottom of the page, and proves very valuable to those wishing a more extensive reference. In suggestive therapeutics, we find a reference to an article in the CANADIAN JOURNAL OF MEDI-

CINE AND SURGERY by our old friend, Dr. J. H. Richardson, on Christian Science.

In Volume IX. we were rather surprised to find that Forbes (*Journal of Pathology and Bacteriology*, May, 1903) found diphtheria bacilli in the discharges from the ears in all of twenty patients who had otorrhea from scarlatina. This volume has some good illustrations of intestinal parasites and their eggs. The hook-worm—the newly found parasite of the Southern States—receives especial notice.

In Volume X. 97 pages are devoted to skin and venereal diseases, and 126 to diseases of the nervous system.

We congratulate the publishers on the neat appearance of these volumes, as well as on the character of the arrangement and selections, and feel we can recommend them to our friends.

W. J. W.

A Text-Book of the Practice of Medicine. Designed for the use of students. By JAMES MAGOFFIN FRENCH, M.D., Lecturer on the Theory and Practice of Medicine, Medical College of Ohio; Attending Physician, St. Mary's Hospital; Consulting Physician, St. Francis Hospital for Incurables, Cincinnati. Illustrated by ten full-page plates and fifty wood engravings. New York: William Wood & Co. Canadian Agents: Chandler & Massey Limited, Toronto, Montreal and Winnipeg.

This excellent manual is largely intended for the use of students of medicine. In the first 43 pages reference is made to the principles of medicine, and descriptions are given of the various pathological processes occurring in diseases. The main portion of the work is devoted to the description of the various diseases treated in works on the practice of medicine.

In Part III. on Clinical Methods of Examination, reference is made to chemical and microscopical examinations applicable to clinical study. A useful work, and one which reflects great credit on the author.

J. J. C.

A Text-Book of Operative Surgery. For Students and Practitioners. By WARREN STONE BICKHAM, Phar.M., M.D., Assistant Instructor in Operative Surgery, College of Physicians and Surgeons, New York, etc. 559 illustrations. Philadelphia, New York, London: W. B. Saunders & Company, publishers. Canadian Agents: J. A. Carveth & Co., Toronto and Montreal.

A refreshing presentation to the reader of the best *technic* of modern surgeons, in the operations mentioned in this work, together with a brief summary of the surgical anatomy of the structures involved, is among the striking features of this book. There is a good deal of horse sense in combining the two, for

while one may urge against it the well-nigh thread-bare argument of "spoon-feeding," yet there is much to be said in its favor on behalf of the over-worked student. While it may be easy for him to digest each department of his work, his busy brain does not get sufficient intervals of rest in which mental assimilation is able to go on. In a book like this, however, it is a case of "assimilation made easy." The arrangement followed is in each class of operations as follows: Surgical anatomy, surface anatomy, surgical considerations, instruments required, the operation and its general description, preparation of the patient, position, etc., and then the operation in detail. We should think the work will find a place among the many already on the market, and that it will fill that place admirably. The bookmaking and the illustrations are excellent, for which the publishers are to be congratulated.

S.

General Pathology. By Dr. Ernst Ziegler. Tenth revised edition. Translated and edited by Aldred Scott Warthin, Ph.D., M.D. Royal, 8vo, 784 pages, sumptuously illustrated by 586 engravings in black and many exquisite colors. New York: Wm. Wood & Co. Canadian agents: Chandler & Massey Limited, Toronto and Montreal. 1903. Muslin, $5 net; leather, $5.75 net.

Ziegler's "Pathology" needs no introduction to the medical profession, as for over two decades it has been looked upon as one of the foremost text-books on the subject. The tenth edition is in many respects superior to its predecessor, as the process of revision has been extended into many of the chapters, and the entire work reflects to a nicety the high standing, as a pathologist and scientist, of the author. The illustrations are particularly good, each being a masterpiece in itself. We can safely say that the tenth edition of Ziegler represents one of the most important achievements of the nineteenth century in the field of general pathology and pathological anatomy.

Clinical Examination of the Urine and Urinary Diagnosis. A Clinical Guide for the use of Practitioners and Students of Medicine and Surgery. By J. Bergen Ogden, M.D., formerly Instructor in Chemistry, Harvard University Medical School, Boston; Assistant in Clinical Pathology, Boston City Hospital, etc. Second revised edition. Handsome octavo volume of 418 pages, illustrated, including 11 plates, 9 of them in colors. Philadelphia, New York, London: W. B. Saunders & Company. Canadian Agents: J. A. Carveth & Co., Toronto and Montreal. 1903. Cloth, $3.00, net.

Here is a work eminently in demand, since it combines the chemistry and clinical aspects of the urine; the latter are gener-

ally only obtainable by an extensive search through the larger works on medicine, surgery and pathology. This second revised edition is divided into two parts as was the first edition. It contains many important changes, especially in Part I. in connection with the determination of urea, uric acid and total nitrogen; and the subjects of cryoscopy and beta-oxybutyric acid have been given a place. In Part II. special attention has been given to differential diagnosis of disturbances and diseases of the kidney and urinary passages, both local and general, medical and surgical, a brief enumeration of the prominent clinical symptoms of each disease; and, finally, the peculiarities of the urine in certain general diseases of the body. The author has spared neither pains nor time in making this book a complete clinical guide to urinary diagnosis for both students and practitioners. W. H. P.

Practical Gynecology. A comprehensive text-book for students and physicians. By E. E. MONTGOMERY, M.D., LL.D., Professor of Gynecology, Jefferson Medical College; Gynecologist to the Jefferson Medical College and St. John's Hospitals; Consulting Gynecologist to the Philadelphia Lying-in Charity, and the Kensington Hospital for Women. Second revised edition, with 539 illustrations, the greater number of which have been drawn and engraved specially for this work, for the most part from original sources. Philadelphia: P. Blakiston's Son & Co. Canadian agents: Chandler & Massey Limited, Toronto, Montreal, and Winnipeg. 1903.

It is but three years since the author first placed his work in the hands of the profession, so that he should feel encouraged that his labors have been endorsed sufficiently to necessitate the rewriting of his book in so short a period. We took occasion to congratulate Dr. Montgomery on the first edition of his volume, and after looking through the second edition, we feel that he is deserving of renewed praise, as he has succeeded in placing at the disposal of his confreres a thoroughly complete treatise on gynecology, and one that for years to come should occupy a foremost place in that science.

Handbook of Diseases of the Ear for the Use of Students and Practitioners. By RICHARD LAKE, F.R.C.S. (Eng.), Surgeon Royal Ear Hospital, Lecturer on Practical Otology, Medical Graduates College. Crown octavo; pp. 232. Illustrated. London: Balliere, Tindall & Cox. 6 shillings.

Here is the medical book I have been looking for for years—one without any introduction, or any preface, or apology for being on the earth. Presumably this book was written because

the author felt that he had something to say worth saying, or because his publishers made it worth his while. Whatever the reason the book needs no apology. If you want a readable work on diseases of the ear—not too long and not too short—and have six shillings, or the equivalent thereof, trade the shillings for the book, and you will say all the good things about it, which I am tempted to say. J. M.

Manual of Medicine. By THOMAS KIRKPATRICK MUNRO, M.A., M.D., Fellow of, and Examiner to, the Faculty of Physicians and Surgeons, Glasgow; Physician to Glasgow Royal Infirmary, and Professor of Medicine in St. Mungo's College; formerly Examiner in the University of Glasgow, and Pathologist to the Victoria Infirmary. Philadelphia and New York: W. B. Saunders & Co. London: Balliere, Tindall & Cox. Canadian agents: J. A. Carveth & Co., Toronto.

Munro's "Manual of Medicine" has been written in order to provide students with a fully up-to-date volume for their purposes while at college, and yet is hardly intended for use by medical practitioners, as it does not cover sufficient ground for the latter purpose. What we have stated on several occasions in the past applies particularly well to this volume, viz., that too many of the so-called students' manuals published in recent years have not been sufficiently far advanced, and altogether too cursory in character to enable a student graduating in medicine to have the knowledge he should possess in order to pass the necessary examination in practice of medicine. Munro's "Manual of Medicine," on the other hand, has the advantage of being a more complete treatise on the subject of medicine than most manuals are, and yet does not attempt to encroach on the field held by the regular text-book.

A Text-Book of Obstetrics. By BARTON COOKE HIRST, M.D., Professor of Obstetrics in the University of Pennsylvania. Fourth edition, enlarged and thoroughly revised. Handsome octavo, 900 pages, with 746 illustrations, 59 of them in colors. Philadelphia, New York, London: W. B. Saunders & Company. Canadian Agents: J. A. Carveth & Co., Toronto. 1903. Cloth, $5.00, net; sheep or half morocco, $6.00, net.

Many changes have been made in this edition in order to present the latest teaching in the various branches of the subject. Special attention has been given to the diseases of the genital organs, associated with or following child-birth. This is an important feature which will be of great value to the conscientious obstetrician who always desires to leave his patient in the best possible condition after the trying ordeal of labor. The illustra-

tions are excellent, many of the old ones having been replaced in this edition by newer and better ones, while a large number that are entirely new have been added. Numerous references are given to articles and books which the author found most helpful, or which have been epoch-making in the history of obstetrics.

A. E.

Nose and Throat Work for the General Practitioner. By GEORGE L. RICHARDS, M.D., Fellow American Laryngological, Rhinological and Otological Society; Fellow American Otological Society; Associate Editor *Annals of Otology, Laryngology and Rhinology;* Otologist and Laryngologist Fall River Union Hospital, Fall River, Mass.

This is one of the most satisfactory small works on the nose and throat which have come into our hands. Not too elaborate, and not too brief, it is intended as a working guide for the student and the practitioner who has had but little experience in this work. There are no long-winded dissertations on pathology, but it is replete with practical information, evidently based on personal experience, yet there is sufficient reference to the ideas and methods of others.

J. M. M.

The Medical News Visiting List—1904. Thirty patients per week. Philadelphia and New York: Lea Bros. & Co.

For nearly twenty years "The Medical News Visiting List" has been published, and during that time has rendered less laborious the task of book-keeping to many a practitioner. The 1904 list is an improvement upon any predecessor; the text portion having been practically all rewritten. The list is wallet shaped, pocket size and bound handsomely in grained leather; the paper being tough and suitable for either pen or pencil. The list is published in four styles, weekly, monthly, perpetual (undated, for thirty patients weekly per year), and another, undated, for sixty patients weekly per year.

W. A. Y.

The Pathology of the Typhoid Ulcer.—A very neat brochure under this caption was recently issued by the Arlington Chemical Co., of Yonkers N.Y. The three colored plates illustrating "Swollen Peyer's Patches," "Superficial Necrosis" and "Deep Ulceration" are so excellent as to make it worth while any physician sending for a copy.